Watershed Forest Management Plan
Marsh Sanctuary

Owner:	Marsh Sanctuary/Wildlife Preserve, Inc.
Address:	114 South Bedford Road, Mount Kisco, NY 10549
Phone:	(914) 241-2808
Property Location:	114 South Bedford Road
Town:	Mount Kisco, Bedford, New Castle, NY
County:	Westchester County
Tax Map Number:	80.51-2-1; 80.60-1-2
Total Acreage:	52 acres
Managed Acres:	52 acres
Forested:	52 acres
Watershed:	Croton River Basin

Forester Information:

Company Name:	JN Land Trust Services
Foresters Name:	Jim Nordgren
Company Address:	38 Bouton Road, South Salem, NY 10590
Phone Number:	914 763 5740
Date Prepared:	March 7, 2015

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INTRODUCTION

The Marsh Sanctuary is a 156-acre nature Sanctuary located in Mount Kisco, Bedford and New Castle New York. This forest management plan pertains to the 52 acre parcels on South Bedford Road and Sarles Street. The Sanctuary is owned by the Marsh Sanctuary Incorporated, a not-for-profit organization which oversees the programs, landscape and building renewal, and property maintenance and by Wildlife Preserve, Inc. The Sanctuary's motto, listed on its website, is "Protecting lands and wildlife, serving the Mount Kisco community for over 40 years". The initial land for the Sanctuary was donated in 1956 by Norman and Cornelia Marsh. Since that time the Sanctuary has received several donations of adjoining property. Facilities include the Brookside Cottage, Amphitheater and adjacent barn, a stable and attached house, a separate caretaker's house and a community garden. Three parking areas provide access to nearly four miles of trails that connect to Leonard Park and other local parks and preserves. The trails are open to the public from dawn to dusk.

REGIONAL SETTING AND HISTORY

Marsh Sanctuary is located in Mount Kisco, a small, 3.1 square mile, densely populated village/town located in northern Westchester County. Relative to the surrounding towns, Mount Kisco has a large number of small businesses and retail stores and a large percentage of multi-family units housing. The socioeconomic make up of the village can be characterized as diverse. Although 23% of Mount Kisco's land is classified as open space, the bulk of this is located in the Marsh Sanctuary-Leonard Park greenway. This combination of dense housing and commercial development and limited open space makes the close proximity of the Marsh Sanctuary's hiking trails, stables, woods, fields and streams uniquely desirable.

The Mount Kisco area was settled in the 1670's. It was an important center of activity during the Revolutionary War, both as a base for loyalists and for a meeting between General Washington and Rochambeau. With the completion of the railroad to New York City in 1847, development became concentrated around the train station area in the center of town. The railroad brought urban dwellers to Mount Kisco who purchased large properties and built estates between 1850 and the early 1900's. It was during this period that the Leonard family bought Brookside Cottage from a local shoemaker. In 1907 Martha Leonard created the present day amphitheater and surrounding gardens which drew crowds from New York City.

PHYSICAL AND NATURAL CHARACTERISTICS

A. Geology & Hydrology

The Marsh Sanctuary is located in a geographic region know as the Manhattan Prong. Bedrock of the Manhattan Prong is composed mainly of metamorphosed Fordham Gneiss,

Inwood Marble, Manhattan Schist and Hartland Formation. Gneiss is a hard rock that resists erosion and because of this it is generally found in Mount Kisco's higher elevation hills, including the hills of the Marsh Sanctuary. Schist is relatively softer and erodes more easily and therefore tends to be found at lower elevations. Hartland Formation also consists of gneiss and schist. Inwood marble, composed of very soft limestone, erodes easily, creating low-lying areas that tend to collect water and form wetlands. A band of inwood marble runs through the center of the village beneath the Branch Brook. The bedrock beneath the Marsh Sanctuary is Fordham gneiss.

The bedrock within Mount Kisco, and the surrounding region, follows a pattern of long ridges and valleys following the north-south direction of the glaciers as they advanced from Canada toward Long Island. Evidence of glaciation can also be seen in the scarring of exposed bedrock in this north-south pattern. Glacial deposition and thousands of years of erosion led to the accumulation of soil, silts and sediments in valleys and wetlands. The combined effect of glaciers, erosion and deposition of material carried by water and wind created Mount Kisco's present-day topography of hilly terrain, rock outcroppings, boulders and rocky, shallow soil across most of the town. Only low lying valleys accumulated sufficient soil depth and soil moisture to support agriculture. These flat areas were also logical places first for footpaths and later for roads, the railroad and houses. These valleys also channeled the streams that provided water for livestock and housing, some of which were dammed and became reservoirs for New York City. The consequence of this pattern is that the rugged, dry and thin-soiled hilly areas of town were the first to be abandoned by farmers and are now relatively undeveloped, and in many cases permanently protected lands, covered with maturing forests. In contrast, the fertile valleys that were once prime farmland now tend to be, somewhat ironically, covered with roads and buildings.[1]

The Sanctuary's streams and wetlands flow westerly into the Kisco River, which begins just west of the Sanctuary. The Kisco River then flows northward into the New Croton Reservoir, a drinking water source for New York City, located 4 miles to the northwest. Byram Lake, located less than one mile to the southeast of the Sanctuary, is the source of all water to residents in Mount Kisco.

B. Vegetative Communities

The Marsh Sanctuary, and the land surrounding it, is home to a rich variety of mature mixed hardwood forests, hemlock groves, young second-growth forests, old fields, meadows, floodplain forests, open wetlands, ponds and rocky outcroppings. An inventory of flora found during field investigations in October 10, 15 and 16, 2014, can be found in Appendix A.

C. Wildlife

The rich and varied flora of the Sanctuary is unusual for an urban setting such as Mount Kisco. The Sanctuary, and the unfragmented landscapes surrounding it, particularly Leonard Park, Butler and Westmoreland Sanctuaries, Merestead, Byram Lake and Meyer Preserve-all located with an mile and a half of the Sanctuary--support a level of biodiversity not found in

[1] Frederick P. Clark Associates, "Town of Pound Ridge Environmental Synthesis Report", 1978, page 4, 17.

other parts of Westchester County. Species of conservation concern expected to be found in this greenway include:[2]

Mammals: river otter-observed in streams at Marsh Sanctuary

Reptiles and amphibians: black rat snake, box turtle, hognose snake, ribbon snake, worm snake, four-toed salamander, fowlers toad, gray tree frog, marbled salamander, black racer, spotted salamander, spotted turtle, wood frog, wood turtl

Birds: American redstart, woodcock, Baltimore oriole, barred owl, black-and-white warbler, black-throated blue warbler, black-throated green warbler, blue-gray gnatcatcher, brown thrasher, Canada warbler, bluebird, kingbird, towhee, wood-pewee, indigo bunting, ovenbird, pileated woodpecker, rose-breasted grosbeak, scarlet tanager, veery warbling vireo, wood thrush, worm-eating warbler, yellow-billed cuckoo, yellow-throated vireo

See New York Breeding Bird Atlas of birds observed in the Mount Kisco vicinity 2000-2005 on page 43-45.

FOREST STANDS/VEGETATIVE COMMUNITIES

This management plan inventories the Marsh Sanctuary's plants and wildlife according to the New York State Ecological Communities classification system (Reschke, 1990)[3]. Forest stands, which can also be referred to as ecological communities, or vegetative communities, are groups of plants and animals that interact and share a common environment. Forest stands tend to have the same suite of plants and animals wherever they are located across a region. An oak-hickory forest, for example, will typically have similar canopy, understory and groundcover plants wherever it is located. Identifying and mapping vegetation according to forest stands is a useful way to organize, represent and share the plant and wildlife patterns, conservation values and management recommendations of a particular location.

The type of forest stand that exists in a particular space is determined by many factors including: geology (bedrock and soil conditions), hydrology (moist or dry conditions), aspect (exposure to sunlight and wind), topography (hilltop, mid-slope or bottomlands), microclimate (local variation in temperature and humidity), time (early, mid or late-stage plant succession), previous usage (farmland, timberland, residential) and wildlife impact (in this area, deer predation). Because of these relationships, forest stands can tell us much about existing conditions without having to conduct more exhaustive studies. The presence of a red cedar stand, for example, reveals that the land was formerly pastureland. A basswood tree tells us that the soil is moist and alkaline while a blueberry shrub suggests more acidic soil. Chestnut oaks indicate shallow, dry soil while elm trees indicate wetter conditions.

[2] Miller, N.A. and M. W. Klemens. "Eastern Westchester Biotic Corridor", (MCA Technical Paper No. 4, 2002), Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York, page 10.

[3] Reschke, C. "Ecological Communities of New York State", (New York Natural Heritage Program, New York State Department of Environmental Conservation, 1990).

Low-bush blueberry and little bluestem grass point to impoverished soil. Hemlocks grow in shady, moist ravines while hop hornbeams are only found mid-slope. Similarly, insects, birds and other wildlife tend to also be associated with specific vegetative communities.

ASSESSING FOREST HEALTH

A forest that has a diversity of tree species, ages and sizes is able to resist diseases, invasive plants and rising temperatures better than an even-aged forest made up of just a few species of trees. Quantitative tools can be used to gauge forest health by measuring and comparing the diameter, size and density of trees and soil conditions.

A. Basal Area is the cross-sectional area of all trees in a stand. It is used to estimate timber growth rates. Forest growth typically slows when basal areas are greater than 100 square feet/acre, depending on the tree species.

B. Stocking Levels measure how crowded a forest stand is. It is a function of the types of trees and the sizes of trees. Forest health decreases when trees are too crowded, which corresponds to a stocking level of 100%. At this point, tree thinning can improve forest health.

C. Size Class describes the diameter of the trees in a stand. A healthy forest has a diversity of trees size classes, ranging from mature trees to mid-sized trees to saplings, also referred to as vertical diversity. This ensures that the forest can regenerate whenever there is a disturbance caused by storms, disease, logging or natural maturation. Diversity of tree ages and sizes also promotes a diversity of other plants and wildlife. Deer predation of saplings restricts vertical diversity. By protecting naturally occurring saplings from deer browse, the forest can regenerate.

D. Soil Site Class is a measure of soil productivity. Most soils in Westchester County are classified as II (average productivity) and are slightly acidic and relatively shallow due to the nature of the underlying bedrock and the scouring caused by glaciers. Very dry, shallow soils and very wet soils may be classified as III (poor productivity). Other soils overlying Inwood marble are alkaline and calcareous, which support a variety of rare and unusual plant and animal species.

E. Riparian Areas are the transition zones between streams, lakes, wetlands and other water bodies and the adjacent upland (dry) areas. Riparian areas provide important ecological functions including: filtering pollutants and sediments, regulating water temperature, stabilizing stream banks and enhancing aquatic habitats. Transition zones, also called ecotones, also have greater biodiversity due to the overlapping nature of their habitats. Because of this, disturbance to the natural vegetative cover in riparian areas should be limited. Where natural vegetation does not occur, planting and protecting shrubs and trees that are able to survive in wet conditions will improve water quality.

SILVACULTURE RECOMMENDATIONS

A. Birds and Wildlife

Healthy forests made up of native plants of a variety of ages, sizes and species also support a wider variety of birds and other wildlife. Whether forests are thinned for commercial purposes, to remove invasive plants, or to promote biodiversity, tree growth and wildlife habitat can be improved by:

- Removing invasive plants and replacing them with native grasses, forbs, shrubs and trees
- Creating openings in the canopy to allow sunlight to reach lower strata, improving vertical and horizontal diversity and promoting understory growth
- Releasing (thinning surrounding trees) to prevent crowding and shading of desirable mast trees such as oak, hickory, walnut, black cherry, serviceberry and crabapple
- Releasing and/or planting evergreens that provide winter cover and shelter
- Releasing desirable seed trees for regeneration and wildlife food
- Leaving some dead trees standing (snags) for cavity dwelling birds and mammals

B. Native Plants

Non-native invasive plants are crowding out native plants in several areas at the Marsh Sanctuary. Birds, insects and other wildlife have evolved with and depend on native plants for food, nectar, shelter and breeding sites. Most non-native plants do not provide these services to native fauna. Once invasive plants are removed either mechanically or with the selective use of herbicides, where permitted, enough native seedlings and seed beds typically remain to allow natural regeneration to occur. By protecting young native seedlings and saplings from deer browse and keeping the plants clear of returning invasives by hand pulling and weed whacking, nature will see to it that the right native plants grow in just the right areas to thrive. This method of 'letting nature do the work' not only saves labor, time and money, but also reduces disturbance to soil and existing plants caused by digging and planting and prevents the introduction of genotypes that are not native to this particularly ecosystem.

LANDOWNER GOALS

Goals and objectives of the Marsh Sanctuary are[4]:

- To educate the public about the environment through volunteer sessions, lectures, workshops, internships and guided walks
- To maintain the community garden to demonstrate local food production, composting, best-management practices for soil use, enjoyment of the outdoor environment and sustainable living
- To renovate the stable and attached house for a demonstration kitchen, nature center, library, and meeting rooms

[4] Several goals taken from: Marsh Sanctuary Master Plan Draft Outline https://sites.google.com/a/marshsanctuary.org/home/marshsanctuarymasterplan and Marsh Sanctuary website https://sites.google.com/a/marshsanctuary.org/home/

- To maintain the Sanctuary for recreation including: hiking, running, snowshoeing, environmental education, nature study, wildlife observation
- To teach visitors about the positive impacts of freshwater wetlands, wetland habitats, their ecology, wetland maintenance and invasive species
- To teach visitors about native plant gardening
- To develop a system of horseback riding trials interconnecting with the Bedford Riding Lanes Association network of trails in Mount Kisco, Bedford and Pound Ridge
- To consider renovating the existing stable into an equine center for the urban community of Mount Kisco
- To consider developing a system of bike trails in the north sector of the Sanctuary
- To maintain well-marked, safe and dry hiking trails
- To maintain the fields, open wet meadows, shrubland, wetlands, streams, ponds and woods for wildlife habitat, water protection and other ecosystem services
- To protect the quality of water resources including the pond, seeps, wetlands, streams, and riparian buffer areas
- To prevent and/or control soil erosion
- To improve forest health by reforestation with shrubs and small trees and by managing local deer herds
- To remove invasive shrubs, vines and trees for the benefit of native plants and wildlife

NEAR-TERM RECOMMENDATIONS (2015-2016):

Hemlock Grove
- Save a few hemlocks from wooly adelgid disease by applying imidacloprid (Merit) and dinotefuran (Safari) insecticides to the bark in April.

Landscaped Yard
- Remove porceleinberry by streams by hand pulling or weed wacking before it goes to seed in the summer.
- Remove the small to medium sized Norway and Japanese maples and their saplings and seedlings.

Meadows
- Brushhog the two large fields once every year or two to maintain field habitat and prevent invasives from becoming established.
- Weed wack undesirable plants such as mugwort, mile-a-minute vine, honeysuckle, multi-flora rose, barberry and other invasive plants between mowings.

Meadows-Kiosk
- Mow more frequently to control the stilt grass and locust saplings. Remove the many down logs before mowing.
- Rake and over-seed the stilt grass with a paddock mix containing ryegrass, timothy, fescue, bluegrass and clover (non-native). The grass should be cut frequently during the first year to keep stilt grass from shading out other more desirable grasses.

- Cut locust saplings, treat with herbicides, dabbing a small amount of glyphosate or trichlopyr directly onto the cut stem, within twenty minutes of cutting.

Open Wet Meadow-Northern Parcel

- Continue planting native trees and shrubs along both sides of the stream as part of the 'Trees for Tribs' program.
- Remove prior year plantings from protective plastic tubes. Support if necessary by loosely tying them to stakes.

Open Wet Meadow Southern Portion

- Cut and treat bittersweet vine in the four flowering dogwoods to prevent re-sprouting.
- Cut isolated beech, birch and black cherry so that the meadow does not succeed into shrubland and forest.

Old Field

- Brushhog/saw the invasive barberry and multi-flora rose.
- Remove locust from the western section of the field, treat with herbicides, dabbing a small amount of glyphosate or trichlopyr directly onto the cut stem, within twenty minutes of cutting.

Pond

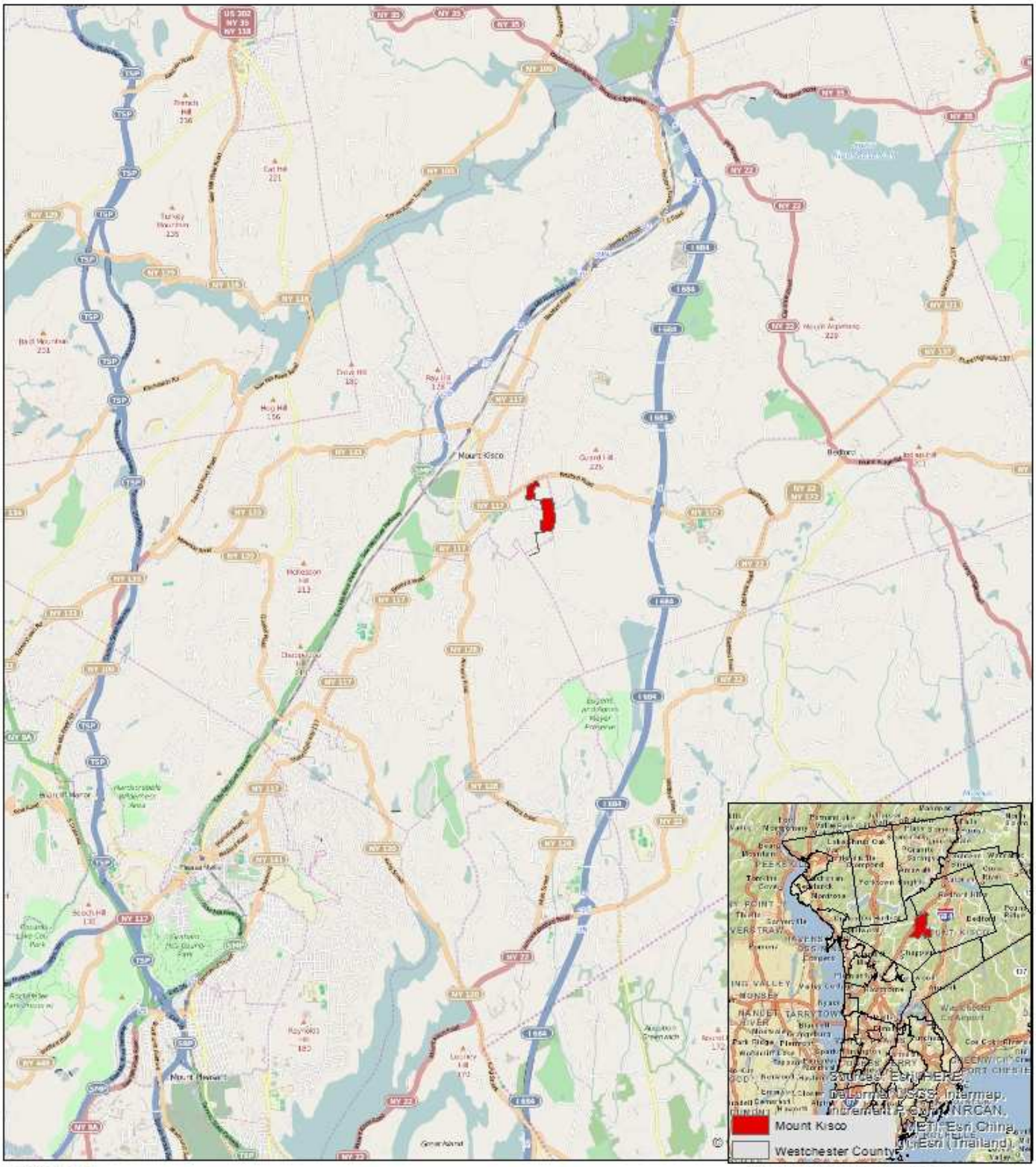
- Expand current plan of re-vegetating the north bank with native plants in a way that mimics the natural groupings of native plants that grow around the rest of the pond.
- Protect existing and new plants from deer.
- Limit spread/begin removing porceleinberry.
- Cut and treat Japanese knotweed and swallowwort.

Sanctuary-wide

- Continue to encourage deer hunting.
- Renew outreach to neighbors ('key abutters') east of the Sanctuary to educate them about the value of the Sanctuary and about potential conservation easement and fee donations on their property.
- Continue agroforestry. Agroforestry-combining forestry and agriculture (trees and shrubs with crops and/or livestock) to create sustainable land-use systems, can be useful for public education, especially at the Community Garden. Examples include forest farming of crops like berries and fruits under the protection of a forest canopy. Fruit and berry crops can be more productive when grown with trees and shrubs that can support wild pollinators and shield shrubs from wind, frost and snow damage. Windbreaks and riparian forest buffers are other examples of agroforestry.

Marsh Sanctuary Location Map

51 Acre South Bedford Road Parcels Only



Legend

Marsh Sanctuary

Owner: Marsh Sanctuary
Mt. Kisco, Bedford, New Castle, NY
Westchester County
Tax #: 80.60-1-2; 80.51-2-1
Author: Jim Nordgren
Date: March 3, 2015

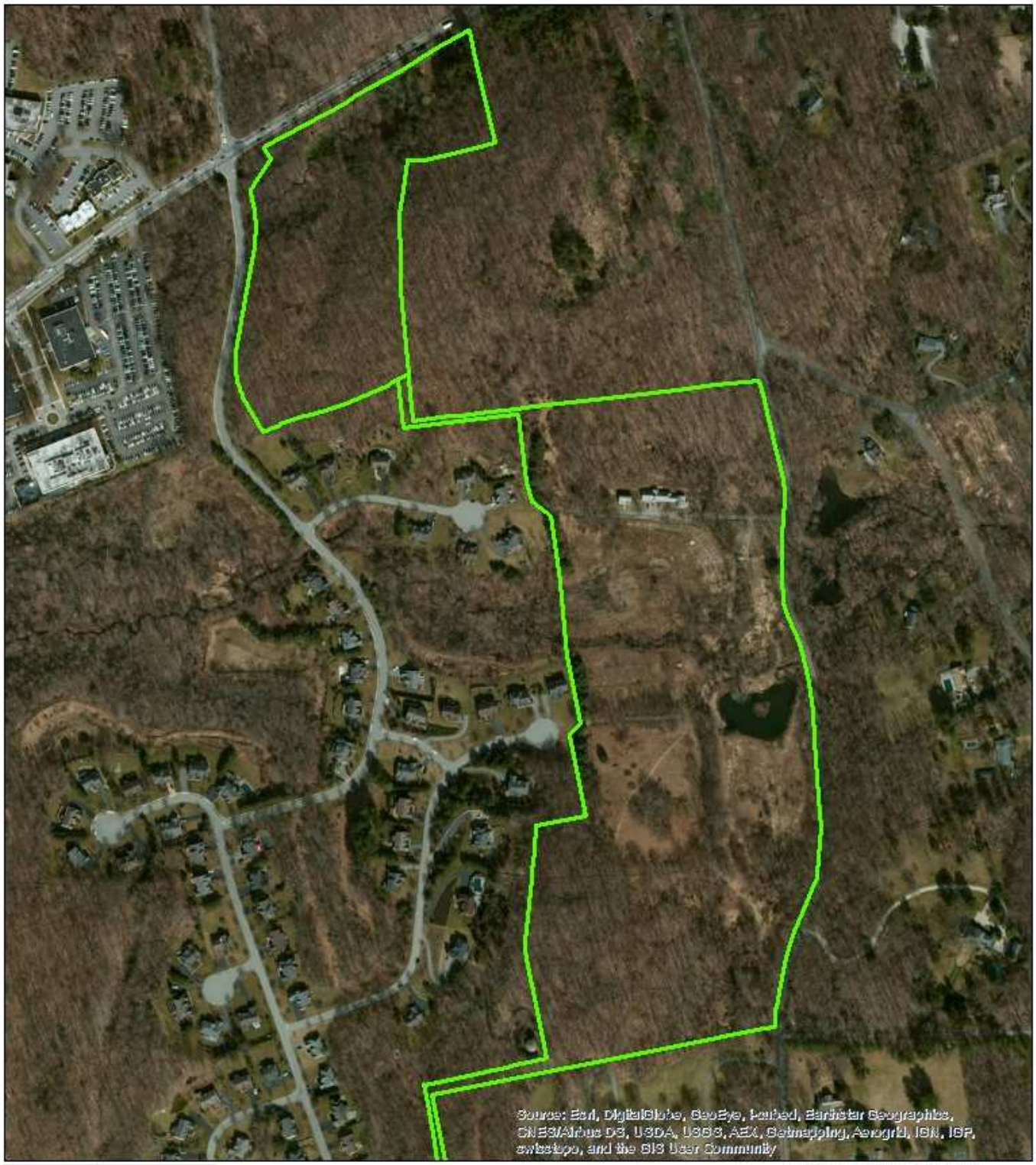
N

1 inch = 8,249 feet

9,000 4,500 0 9,000 Feet

Marsh Sanctuary Aerial Map

51 Acre South Bedford Road Parcels Only



Legend

Marsh Sanctuary

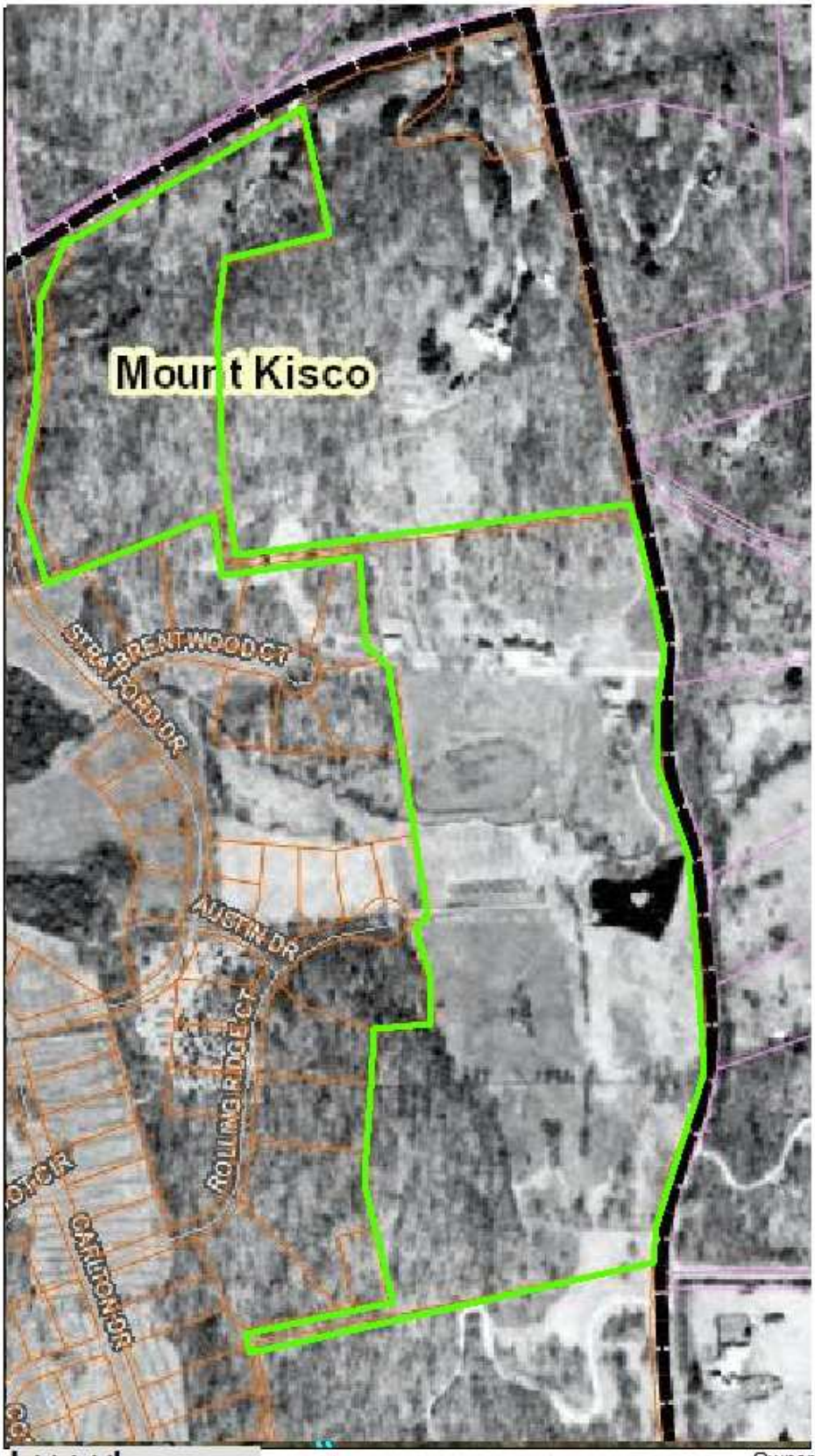
N

1 inch = 411 feet

475 237.5 0 475 Feet

Owner: Marsh Sanctuary
Mt. Kisco, Bedford, New Castle, NY
Westchester County
Tax #: 80.60-1-2; 80.51-2-1
Author: Jim Nordgren
Date: March 3, 2015

Marsh Sanctuary 1947 Aerial Map



Legend

Marsh Sanctuary

1 inch = 411 feet

475 237.5 0 475 Feet

N

Owner: Marsh Sanctuary
Mt. Kisco, Bedford, New Castle, NY
Westchester County
Tax #: 80.60-1-2; 80.51-2-1
Author: Jim Nordgren
Date: March 3, 2015

Marsh Sanctuary
Surrounding Open Space Map

Legend

- MARSH SANCTUARY
- NATURE PRESERVES
- LOCAL PARKS & OPEN SPACE
- COUNTY PARKS & PARKWAY LANDS
- WATER SUPPLY LANDS

N

1 inch = 2,500 feet

2,600 1,300 0 2,600 Feet

Owner: Marsh Sanctuary
Mt. Kisco, Bedford, New Castle, NY
Westchester County
Author: Jim Nordgren
March 2, 2015

Marsh Sanctuary Streams & Wetlands Map

51 Acre South Bedford Road Parcels Only

Legend

- Marsh Sanctuary
- DEC Wetlands
- Wetland Soils
- Streams & Rivers

N

1 inch = 411 feet

475 237.5 0 475 Feet

Owner: MarshSanctuary
Mt. Kisco, Bedford, New Castle, NY
Westchester County
Tax #: 80.60-1-2; 80.51-2-1
Author: Jim Nordgren
Date: March 3, 2015

Marsh Sanctuary
Plant Community/Stands Map-Northern Section

Legend

- Marsh Sanctuary
- Floodplain Forest Stand
- Chestnut Oak-Hickory Stand
- Hemlock Grove
- Landscaped Yard
- Streams & Rivers

N

1 inch = 153 feet

175 87.5 0 175 Feet

Owner: Marsh Sanctuary/
Wildlife Preserve, Inc.
Mt. Kisco, NY
Westchester County
Tax #: 80.51-2-1
Acres: 12.8
Author: Jim Nordgren
Date: March 3, 2015

Marsh Sanctuary
Plant Community/Stands Map-Southern Section

Legend

- Marsh Sanctuary
- Meadow Stands
- Open Wet Meadow Stands
- Old Field Stands
- Oak-Hickory Stands
- Locust Stands
- Pond
- Streams & Rivers

N

1 inch = 250 feet

290 145 0 290 Feet

Property Owner: Marsh Sanctuary
Mt. Kisco, NY
Westchester County
Tax #: 80.60-1-2
Acres: 38.7
Author: Jim Nordgren
Date: March 3, 2015

PROPERTY WIDE DESCRIPTION

Marsh Sanctuary

This 156-acre Sanctuary is owned by the Marsh Sanctuary and Wildlife Preserve, Inc. This forest management plan pertains to the 52 acre parcels on South Bedford Road and Sarles Street. Aerial photographs reveal two distinct parcels connected by a 150-yard strip of woods. The 12.8 acre northern parcel is entirely wooded except for 1 acre of landscaped lawn around the cottage. The 38.7 acre southern parcel has five distinct open areas in various stages of succession that total approximately 18 acres of open land. Aerial photographs from 1947 indicate that more of this parcel was open field at that time. Today approximately 8 acres of previously open field have reverted to uniform, young locust woods. The Sanctuary's northern border fronts on South Bedford Road and is across from a wooded wetland north of the road. Offices and a subdivision are found to the west. Large lot residences are found at the southern and eastern borders. A wooded lot on the northeastern border is slated for subdivision into residences. Two tributaries flow westward across the Sanctuary, one at the northern border and a second that feeds a pond in the center of the southern parcel. Both streams flow into the Kisco River and then into the Croton River Reservoir to the northwest. A 520 foot hilltop east of the northern parcel slopes westward, reaching 460 feet above sea level along the Sanctuary's eastern border and continuing to slope westward to a low point of 380 feet above sea level at the stream culvert at the northwestern border. A water tower is located on a 560 foot hill at the southern parcel's southwestern corner. Land there slopes easterly and southerly down to a low point of 360 feet above sea level at the pond and the open wet meadow in the center of the parcel. The relatively few stone walls indicate that the terrain in the northern parcel was too hilly and rocky for farming and pasturing. One stone wall surrounds the meadow in the southern parcel, the rest of the land being either too wet or too steep for agriculture. Most of the Sanctuary's soils are Chatfield and Hollis soils, which tend to be shallow and rocky, or Leicester loam, Sun loam and Woodbridge soils which are classified as wetland soils. The exception is found in the southern parcel where Charlton loam is found at the sites of the present-day community garden and the open wet meadow. Three trails, each approximately ¼ mile in length, run north and south through the northern parcel. A short .15 mile long trail connects these trails to the .8 miles of southern parcel trails, a portion of which is used by horseback riders. Parking is available at the Brookside Cottage on South Bedford Road, across from the stables on Sarles Street and at the southeastern corner of the Sanctuary near the Sarles Street-Byram Lake Road intersection.

STAND DESCRIPTIONS-NORTHERN PARCEL

Stand 1:

Forest Type: Floodplain Forest

Acres: 3 acres

Species Composition: 80% red maple, 20% ash. The canopy is closed except for one opening caused by two dead ash trees. The understory consists of many tall, overly mature nannyberry, spicebush and winterberry shrubs. Groundcover is absent beneath the closed canopy in the center of the floodplain due to frequent water inundation. In the open area to the east, a large, one-third of an acre patch of pachysandra covers both sides of the stream

Average Height: 80 feet

Basal Area:[5] 125 square feet per acre

Trees per Acre: 145

Stocking Level: 75%

Size Class: Pole timber (6″-12″ diameter) and saw timber (greater than 12″ diameter).

Soil Site Class:[6] III. The soil is classified as Fluvaquents, a wetland soil. Fluvaquents are deep, poorly drained, frequently flooded soils formed in recent alluvial deposits in areas where water frequently shifts the soil through scouring or erosion.

Recommendations and Work Schedule: This is a good area to plant trees to shade the stream. Now the dense pachysandra prevents any other plants from becoming established. Native trees that can grow in these moist, sunny conditions include black gum (tupelo), silver maple, pin oak, swamp white oak and river birch. Native shrubs that would do well here include alder, buttonbush, silky dogwood, winterberry, sweet pepperbush, spicebush and blueberry in wetland buffers. Planting should not be done in the summer months. Deer netting, tubing, chicken wire or wire weld cages should be used until the plants grow to about 5 feet in height, above the deer browse line.

Pachysandra patch

Aging spicebush

Aging nannyberry

[5]Basal area is the cross-sectional area of all trees in a stand. It is used by foresters to gauge timber growth rate. Growth typically slows when basal area is greater than 100 square feet/acre, depending on the tree species.

[6] Soil site class varies from I-III and is a measure of soil productivity. Most soils in Westchester County are classified as II (average productivity).

Some of the existing native shrubs growing here are overly mature. By protecting their base with deer netting, chicken wire or welded wire fencing, the shrubs will naturally resprout, extending the life of the plants even after the existing vegetation dies back.

Native ground covers can be planted in the pachysandra patch. Native groundcovers that do well in moist shady areas such as this include ostrich, cinnamon and sensitive ferns, Solomons seal, false Solomons seal, mayapple, phlox, bleeding hearts, columbine, bloodroot, white wood aster, wild geranium, and bluebells. All can be planted among the pachysandra. Deer hunting can be encouraged so that the ground cover and understory can recover.

Riparian Areas: The entire area is a riparian area and will benefit from added vegetative cover above the pachysandra and beneath the red maples. The boardwalk provides hikers with a dry stream crossing without damaging the stream embankment.

Footbridge over stream

Access System: Light equipment to plant and/or protect trees and to remove isolated invasive shrubs can be carried in along the existing hiking trail.

Wildlife Habitat: Riparian Forest

This 3 acre stand is too small for most wildlife but sheltered wetlands such as this provide food, water and cover for birds year round and are especially beneficial for migrating birds.

Fisheries Habitat: River dace were observed in the stream and observers report seeing river otter here also. The stream habitat will be improved with any additional native trees and/or shrubs.

Management Implications: Planting should be done in the dormant season. Deer netting, tubing, chicken wire or welded wire cages should be used until the plants grow to about five feet in height, above the deer browse line.

Recreation and Aesthetics: Increasing the variety of native shrubs, trees and groundcover along this highly visible road and hiking trail will improve aesthetics and create excellent opportunities for nature education.

Forest Health, Invasive Species: The ash and any remaining elms are suffering from disease. The sparse understory indicates that this area, like all forests in the region, is suffering from an overpopulation of deer. Pachysandra is an invasive plant and it has taken up a large portion of this stand in a very sunny, moist, productive area that is ideal for many native plants.

Stand 2:

Forest Type: Chestnut Oak-Hickory Forest

Acres: 7 acres

Species Composition: 25% chestnut oak, 25% red oak, 25% white oak, 15% hickory, 10% black birch. Large oaks dominate the canopy, which is 80% closed. The understory consists of serviceberry, witch hazel, ironwood and beech and sugar maple saplings. Pennsylvania sedge, low bush blueberry, Christmas ferns and many chestnut oak seedlings make up the groundcover. At least five double trunk oaks

Chestnut oak

point to prior logging here and aerial photographs from 1947 indicate the area was reforested by then, so logging must have taken place in the early 20th century, perhaps during or soon after the 1907 tornado impacted the area.
Average Height: 80-100 feet
Basal Area: 135 square feet per acre
Trees per Acre: 180
Stocking Level: 90%
Size Class: Saw timber (greater than 12" diameter).
Soil Site Class: II. Soil maps indicate that this west facing slope consists of Charlton loam at the base, Charlton-Chatfield mid-slope and hilltop with Chatfield-Hollis rock outcrops in between. Charlton loam is a very deep, well drained and moderately productive loamy soil. Charlton-Chatfield complex soils are very deep, well drained and moderately productive soils with moderate erosion hazard. Chatfield-Hollis rock outcrop complex consist of moderately deep, well drained and somewhat excessively drained Chatfield soils; shallow, well drained and somewhat excessively drained Hollis soils and areas of rock outcrop. They are moderately productive soils and are typically found on hillsides with very steep bedrock escarpments. Surface runoff is rapid and erosion hazard is severe.
Recommendations and Work Schedule: None, shade tolerant saplings will fill in gaps created in the canopy. Deer hunting can be encouraged so that the ground cover and understory can recover.
Riparian Areas: None
Access System: Light equipment can be brought in via the existing hiking trail.
Wildlife Habitat: Mature Forest
Because of development and fragmentation, large blocks of interior forest are increasingly rare in the region. The following species require mature, unfragmented forest habitat and are included on the NY State DEC's Species of Greatest Conservation Need list (see Appendix C for a complete list and explanation of rankings):
Coopers hawk *Accipiter cooperii* SC S4
Red-shouldered hawk *Buteo lineatus* SC S4B, SZN
Sharp-shinned hawk *Accipiter striatus* SC S4
Scarlet tanager *Piranga olivacea* NR
Wood thrush *Hylocichla mustelina* S5
Worm-eating warbler *Helmitheros vermivorus* S4
Many other migratory birds, including Eastern wood pewee, Veery, Ovenbird, American redstart, Scarlet tanager, Yellow-throated vireo, Warbling vireo, Red-eyed vireo, Black and white warbler, Blue-gray gnatcatcher, Brown creeper and others also depend on interior forests such as this.
Fisheries Habitat: None
Management Implications: None
Recreation and Aesthetics: Three scenic trails wind through this stand.
Forest Health, Invasive Species: This is a healthy forest stand with a maturing canopy and many shade tolerant understory trees and shrubs. The sparse understory indicates that this area, like all others in the region, is suffering from an overpopulation of deer.

Stand 3:
Forest Type: Hemlock Grove
Acres: 2 acres
Species Composition: 70% hemlock with hickory, black birch, ash and black cherry. The canopy is 90% closed. The understory consists of a large, 14" diameter serviceberry along with witch hazel and winterberry shrubs, ironwood and beech, red maple, red oak and black birch saplings. Pennsylvania sedge and some barberry, pachysandra, garlic mustard and greenbriar vine make up the groundcover.
Average Height: 70 to 100 feet
Basal Area: 95 square feet per acre
Trees per Acre: 140
Stocking Level: 70%
Size Class: Pole timber (6"-12" diameter) and saw timber (12" diameter and greater).
Soil Site Class: II. These hemlocks grow on a west facing slope made up of Chatfield-Charlton and Chatfield-Hollis soils. Chatfield-Charlton soils are moderately deep, well-drained and somewhat excessively drained Chatfield soil and very deep, well drained Charlton soil. These soils are typically found on the tops and sides of hills such as this that are underlain by highly folded bedrock. The soils are moderately productive, but erosion hazard is severe and the soils are prone to seasonal droughtiness. Chatfield-Hollis rock outcrop complex soils are made up of moderately deep, well drained and somewhat excessively drained Chatfield soil; shallow, well drained and somewhat excessively drained Hollis soil and areas of rock outcrop. These soils are typically found on hillsides and surface runoff is rapid and erosion hazard is severe.
Recommendations and Work Schedule: The hemlocks are infected with wooly adelgid, atype of aphid and will die if not treated. Because the hemlocks are growing on soils that have severe erosion hazard, the loss of these hemlocks will created erosion that will deposit soil into the stream. It may be possible to save a few hemlocks from wooly adelgid disease by applying imidacloprid (Merit) or dinotefuran (Safari) insecticides to the bark, as the New York DEC is doing in upstate New York. Deer hunting can be encouraged so that the ground cover and understory can recover.
Riparian Areas: The portion of the hemlock grove abutting the stream is a riparian area. As mentioned above, if left untreated, the diseased hemlocks will die and severe erosion will occur, impacting the stream negatively. If the hemlocks can be saved with the insecticide mentioned above, the riparian vegetation will be intact. Other evergreen trees that can tolerate shady, wet conditions such as this include non-native Norway spruce and native white spruce. These may be good replacement trees if the hemlocks die.
Access System: The stand can be reached by the driveway and existing trail.
Wildlife Habitat: Conifer Forest
Evergreens such as these hemlocks provide valuable shelter for birds and other wildlife through the winter as well as nesting, feeding and roosting sites during the rest of the year. Many other animals eat the hemlock seed cones.
Fisheries Habitat: As mentioned, river dace were observed in the stream and observers report seeing river otter here also. Protecting the hemlocks from disease will help maintain good fisheries habitat.
Management Implications: Hemlock treatments are most effective when applied in April.

Recreation and Aesthetics: The hiking trail goes through this stand, protecting the hemlocks will improve the aesthetics.
Forest Health, Invasive Species: The hemlocks are thinning due to wooly adelgid infestation.

Stand 4:
Forest Type: Landscaped Yard
Acres: 1 acre
Species Composition: Plants here are part of the original gardens planted by Martha Leonard in 1907. Ornamentals include yews, a forsythia hedge, four very large azaleas, rose of Sharon, lilac, privet, many Japanese maples and a smoketree. Several large sugar maples, a large black walnut and a large white pine along with medium sized ash and two red cedars grow by the stream. The understory by the stream is made up of many large rhododendrons and witch hazels along with some American holly shrubs and elm saplings. The groundcover consists of large swaths of pachysandra and English ivy, some of which has grown up the trunks of trees, and a very large 400 square foot patch of wisteria growing just south of the amphitheater. Native groundcover is found closer to the stream and includes snakeroot, jewelweed, sensitive and cinnamon ferns, white wood and New York asters and goldenrod.

The landscaped yard area transitions gradually into a more natural area to the west.
The canopy has openings created by two large, dead ash trees and three diseased hemlocks. Several large sugar maples, ash and beech along with several small to medium sized sassafras, a red oak, and at least five medium Norway maples and several Japanese maplesgrow by the stream. The understory has many naturally occurring spicebush and winterberry shrubs by the stream, several elm, beech, black cherry and ironwood saplings, several medium sized sassafras trees, a flowering dogwood tree, a blueberry shrub, a few non-native honeysuckle shrubs, Japanese maples and many Japanese maple seedlings. The groundcover includes nettles, Massachusetts and Christmas ferns, some stilt grass, porcelainberry and wisteria escaping from the pergola by the house.


Native winterberry and spicebush shrubs shading stream

Average Height: 60-100 feet
Basal Area: 60 square feet per acre
Trees per Acre: 25
Stocking Level: 30%
Size Class: Pole timber (6”-12” diameter) and saw timber (12” and greater diameter).

Soil Site Class: III. The soils are classified as Fluvaquents, which are wetland soils. Fluvaquents are deep, poorly drained, frequently flooded soils formed in recent alluvial deposits in areas where water frequently shifts the soil through scouring or erosion.
Recommendations and Work Schedule: The large patch of wisteria should be removed either by frequent mowing, hand pulling, or weed wacking. It is too large an area to safely apply enough herbicide to kill it. Wisteria on the pergola should be monitored to be sure it does not continue to spread. Poceleinberry should be removed by hand pulling or weed wacking before it goes to seed in the summer. English ivy of the trees should be hand pruned to prevent it from harming the trees. The large patch of pachysandra growing by the stream should be monitored and removed if it expands by hand pulling or spraying with glyphosate. Alternatively, native groundcovers that do well in moist shady areas such as ostrich, cinnamon and sensitive ferns, Solomons seal, false Solomons seal, may apple, phlox, bleeding hearts, columbine, bloodroot, white wood aster, wild geranium, and bluebells can be planted among the pachysandra. These natives may eventually outshade the pachysandra. The small to medium sized Norway and Japanese maples and their saplings and seedlings should be removed. The small patches of Japanese honeysuckle and barberry should be removed. All trunks should be treated with a herbicide to prevent resprouting. Any bare ground should immediately be seeded to discourage invasive plants. The openings in the canopy created by dying ash and hemlocks invite invasives and should be filled in over time by planting and protecting native trees and shrubs. Deer netting, tubing, chicken wire or welded wire cages should be used until the plants grow to about 5 feet in height, above the deer browse line. Plant native trees that can grow in moist , shady conditions such as these, including black gum (tupelo), pin oak, swamp white oak, red maple, white spruce and Norway spruce (non-native). Some diseased hemlocks can be saved from wooly adelgid disease by applying imidacloprid (Merit) or dinotefuran (Safari) insecticides to the bark, as the New York DEC is doing in upstate New York.
Riparian Areas: A 4′ wide, 6″ deep stream flows through this stand eastward into the Kisco River located .4 miles to the west. Several river dace were found in the stream. The entire stand is considered a riparian area. The dense understory and groundcover creates a natural, vegetated canopy that will continue to filter pollutants and sediments, regulate water temperature, stabilize stream banks and enhance aquatic habitats, so no management recommendations are suggested other than replacing invasive vegetative cover with native plantings.
Access System: This area is accessible from the driveway and parking area along South Bedford Road.
Wildlife Habitat: Lawn/Gardens
This landscaped area has several vertical layers including a watercourse, a thick groundcover, a dense understory, several medium sized trees and many large. This type of vertical and horizontal layering creates diverse habitats that favor wildlife. The small size-1 acre-and close proximity to the heavily traveled road make it less suitable to wildlife, though many wildlife have been sighted, including river otters, in this small, lush stand.
Fisheries Habitat: River dace were observed in the stream and observers report seeing river otter here also. The road next to the stream contributes silt, sediments, hydrocarbons and other pollutants which limit the type of aquatic species that can live in this stream. The heavily vegetated embankments counteract to some extent the negative impacts from the roadway.

Management Implications: Care should be taken to not disturb the stream bank or the vegetation surrounding the stream. Work should be avoided during the nesting season. Planting and transplanting should be done when plants are dormant.
Recreation and Aesthetics: These gardens, the hiking trails and the stream, located next to the amphitheater, are a major public attraction.
Forest Health, Invasive Species: Trees are healthy and diverse; the understory is dense, indicating a healthy forest stand. The Norway maples, wisteria and English Ivy should be removed or contained. Japanese maples are an important part of this landscaped area but should be monitored to prevent the spread of seedlings. Other Japanese saplings can be removed.

STAND DESCRIPTIONS-SOUTHERN PARCEL

Stand 5:

Forest Type: Meadow

Acres: 6.5 acres

Species Composition: These two, adjacent fields are in early stages of succession and are separated by an old dirt road lined with rows of 60 foot tall quacking aspen, black birch, black and scarlet oak, red maple and black cherry trees. A third .5 acre field is located next to the kiosk at the parking lot along Sarles Street. The northern field is 2 acres in size; the southern field is 4 acres in size. Herbs and grasses typical to any unmowed field in northern Westchester that would expected to be found here include: Achillea millefolium (yarrow), Apocynum cannabinum (dogbane), Artemisia vulgaris (common mugwort), Asclepias incarnata (swamp milkweed), Asclepias syriaca (common milkweed), Asclepias tuberose (butterfly weed), Aster divaricatus (white wood aster), Aster ericoides (many-flowered aster), Aster novae-angliae (New England aster), Aster novi-belgii (New York aster), Aster racemosus (small-flowered white aster), Aster umbellatus (flat-topped aster), Bidens frondosa (common beggarticks), Carex sp. (sedge), Centaurea maculosa (spotted knapweed), Chrysanthemum leucanthemum (ox-eye daisy), Cichorium intybus (chicory), Cirsium arvense (Canada thistle, creeping thistle), Cirsium vulgare (bull thistle), Clinopodium vulgare (wild basil), Coronilla varia (crown vetch), Dactylis glomerata (orchard grass), Daucus carota (queen Anne's lace), Dianthus armeria (Deptford pink), Erechtites hieracifolia (pilewort), Erigeron annuus (daisy fleabane), Eupatorium dubium (eastern Joe Pye weed), Eupatorium purpureum (Joe Pye weed), Euthamia graminifolia (grass-leaved goldenrod), Galium asprellum (bedstraw), Hieracium casepitosum (field hawkweed), Hypericum perforatum (common St. Johnswort), Impatiens capensis (orange jewelweed), Juncus tenuis (path rush), Liaria vulgaris (butter and eggs), Lotus corniculatus (birds foot trefoil), Lychnis flos-cuculi (ragged robin), Lythrum salicaria (purple loosestrife), Monarda

Northern meadow

Southern meadow

didyma (bee-balm), Oenothera biennis (common evening primrose), Oxalis stricta (yellow wood sorrel), Panicum clandestinum (deer-tongue grass), Phytolacca Americana (pokeweed), Polygonum sagittatum (arrow tearthumb), Potentilla recta (sulphur cinquefoil), Prunella vulgaris (selfheal, heal all), Pycnanthemum virginium (mountain mint), Ranunculus acris (common buttercup), Rubus hispidus (bristly dewberry), Rubus phoenicolasius (wineberry), Rubus spp. (raspberry), Rudbeckia hirta (black-eyed susan), Rumex spp. (dock), Schizachyrium scoparium (little blue stem grass), Solanum carolinense (horse nettle), Solidago Canadensis (Canada goldenrod), Solidago speciosa (showy goldenrod), Solidago graminifolia (flat-topped goldenrod), Sparganium spp. (Bur-reed), Spirea alba (meadowsweet), Trifolium pratense (red clover), Trifolium repens (white clover), Verbascum thapsus (common mullein), Verbena hastata (blue vervain), Vernonia noveboracensis (New York ironweed), Rubus hispidus (bristly dewberry), Rubus phoenicolasius (wineberry), Rubus spp. (raspberry), Viola sp. (violet).

In addition to these herbs, the northern field has high bush blueberry shrubs, many small willows and two isolated black cherry trees; the southern field also has an isolated copse of chestnut oak, black oak and beech trees trees and an impressive 500 square foot patch of high bush blueberry shrubs. The field by the kiosk is over run with stilt grass, wineberry and locust saplings.


Blueberry patch

Average Height, Basal Area, Trees per Acre, Stocking Level, Size Class: N/A

Soil Site Class: II. These fields have Charlton loam soil, a very deep, well drained, moderately productive loamy soil. This soil is formed in glacial till derived mostly from schist, gneiss, and granite. Charlton soils are well suited to pasture and hay and that has likely been the use of these fields for the past several hundred years.

Recommendations and Work Schedule: The two large fields should be brushhogged once every year or two to maintain field habitat and prevent invasives from becoming established. Mowing should be done as late in the year as possible, allowing the plants to stand through the winter for wildlife food and cover. Between mowings, undesirable plants such as mugwort, mile-a-minute vine, honeysuckle, multi-flora rose, barberry and other invasive plants can be individually weed wacked. The high bush blueberries should be left for birds and other wildlife and for their aesthetic value.

The field by the kiosk needs to be mowed more frequently to control the stilt grass and locust saplings. Before it can be mowed the many down logs must be removed. To keep stilt grass from shading out other more desirable grasses, the area should be raked again and overseeded with a paddock mix containing ryegrass, timothy, fescue, bluegrass and clover. While not all native, these grasses are easily established, have wildlife value, and can outcompete stilt grass. The grass should be cut frequently during the first year to keep stilt grass from growing. Thereafter, as the grasses become established


Stilt grass in kiosk meadow

the meadow can be cut less frequently with a goal of eventually introducing native cool season grasses such as little bluestem, big bluestem, switch grass/panic grass and purple love grass. When locust saplings are cut they must immediately be treated with herbicides, dabbing a small amount of glyphosate or trichlopyr directly onto the cut stem within twenty minutes of cutting. If this is not done the locust will resprout exponentially the next season.
Riparian Areas: The northern border of the northern field is part of the riparian area associated with the pond outlet. This hedgerow of shrubs and trees should be left standing to protect the stream's water quality.
Access System: This area is accessible by the hiking trail.
Wildlife Habitat: Grassland
Due to the loss of farmland, reforestation and development, grassland fields such as these are increasingly rare and many of the species that depend on this habitat are in steep decline. The following species require such habitat and are included on the New York State Department of Environmental Conservation's Species of Greatest Conservation Need list and/or on the Cornell University Cooperative Extension's list of Grassland Birds of Management Concern (see Appendix C for a complete list and explanation of rankings):

American woodcock *Scolopax minor* S5
Eastern Bluebird *Sialia sialis*
Blue-winged warbler *Vermivora pinus* S5
Prairie warbler *Dendroica discolor* S5

These fields may also be suitable habitat for field sparrows *Spizella pusilla* and may provide foraging habitat for migrating kestrels *Falco sparverius.* Populations of both species are in steep decline.

The shrubland habitat on the perimeter of these two meadows may be acceptable habitat for birds such as rufous-sided towhees, indigo buntings and cardinals.

Many butterflies, moths, bees, wasps, damsel and dragonflies and other beneficial insects can also be expected to visit these meadows.

Fisheries Habitat: None
Management Implications: The meadows should not be disturbed during nesting season; brushhogging should be done as late into winter as possible.
Recreation and Aesthetics: Keeping this habitat and/or returning it to meadow adds greatly to the aesthetics of the hiking trails and the parking lot/kiosk area. Opportunities for hiking, nature study and education and photography will increase.
Forest Health, Invasive Species: Invasive plants are just beginning to become established here, with bi-annual brushhogging they can easily be kept in control. The smaller field by the kiosk is exceptional and is now dominated by invasive stilt grass, wineberry and locust.

Stand 6:
Forest Type: Open Wet Meadow
Acres: 7 acres

Species Composition: Two wet meadows surround the pond, one to the south and one to the northwest. The wet meadow south of the pond is dominated by native plants including winterberry, tussock sedge, marsh and sensitive ferns and goldenrods along the several seeps flowing through the meadow and bayberry, blueberry, maleberry and gray dogwood in the drier portions. Trees include at least 30 crabapples, 4 flowering dogwoods and a few small, isolated black birch and beech trees. The wet meadow to the northwest of the pond is dominated by goldenrod, meadowsweet and mugwort and in wetter areas, cattails and willows. Multi-flora rose and raspberries make up hedgerows on the perimeter. A 'Trees for Tribs' planting along the stream at the southern edge of this wet meadow has many willow, oak alder and black spruce saplings.

Southern wet meadow looking at pond

Average Height, Basal Area, Trees per Acre, Stocking Level, Size Class: N/A

Soil Site Class: III. These wet meadows have Sun loam and Leicester loam soils, both classified as wetland soils. Leicester soils are found in the southern wet meadow. These are very deep, poorly drained soils formed in acidic glacial till derived mostly from schist, gneiss, and granite. Leicester soils are found in low-lying depressional areas and drainage ways intersecting glaciated hills. Sun soils are found in the northern wet meadow. These are also very deep, poorly drained soils but are formed in glacial till derived primarily from limestone and sandstone with smaller amounts of schist, shale and granite in some areas. The sun soils are found in low areas or depressions on till plains. Cleared areas are used mainly for pasture or long-term hay, as may have been the case here in the past.

Recommendations and Work Schedule:

Northern wet meadow: Continue planting native trees and shrubs along both sides of the stream as part of the 'Trees for Tribs' program. Prior year plantings are ready to have their protective plastic tubes removed and reused on new plants. Newly released trees and shrubs may need to be supported for a season by loosely tying them to stakes. The large patch of mugwort just south of the community garden should be weed wacked to prevent it from expanding further into the meadow. It may not be possible to eradicate such a large patch without overuse of herbicides, so control may be the best option. Multi-flora rose growing on the perimeter of the meadow should also be monitored and removed by cutting and treating the stems with herbicide.

Southern wet meadow: Isolated beech, birch and black cherry should be cut so that the meadow does not succeed into shrubland and forest. The many crabapple trees can be left for food for birds and other wildlife. As they continue to grow, they should be thinned so that they too do not overtake the meadow. The four flowering dogwoods should have the bittersweet vines in them cut and treated to prevent resprouting.

Riparian Areas: Both wet meadows are considered riparian areas which buffer the streams flowing through their centers. The existing plant cover will continue to cool and filter the water resource and provide food, cover, nesting and roosting opportunities for insects, amphibians, reptiles, birds and other wildlife. Additional 'Trees for Tribs' plantings will increase the protective qualities of the riparian buffer.

Access System: These areas are accessible from the Sarles Street parking lot and by the hiking trail.
Wildlife Habitat: Marsh
Open wet meadows are valuable wildlife habitat. Because of draining and/or reforestation of wetlands, they are becoming very rare habitats in the region. The following species require open wet meadow habitat and are included on the NY State DEC's Species of Greatest Conservation Need list (see Appendix C for a complete list and explanation of rankings)
Bog turtle *Clemmys muhlenbergii* E (T) S2 (likely extirpated from the region)
Spotted turtle *Clemmys guttata* SC S3 YES
Fisheries Habitat: The streams feeding these meadows are most likely too shallow and intermittent to support fish.
Management Implications: Planting, shrubs and tree removal must be done in drier seasons and is ideally done in dormant seasons. No activity should be undertaken during nesting season. Any herbicide use should be minimal because of the proximity to water and should notbe undertaken during the spring breeding/nesting season.
Recreation and Aesthetics: Keeping both wet meadows from reverting to shrubland or forest or from being dominated by invasive plants will add to the aesthetics and the educational opportunities at the Sanctuary.
Forest Health, Invasive Species: Both wet meadows have a great diversity of native plants; invasive plants have not become established yet.

Stand 7:
Forest Type: Old Field
Acres: 5 acres

Species Composition: This former pastureland has common pasture grasses including little bluestem, orchard grass, deer tongue grass and fescue. Other plants include goldenrod and stands of bayberry. Invasive shrubs, including barberry and multi-flora rose and invasive stilt grass, are gradually overtaking this field. A large stand of locust is encroaching on the western part of this field.
Average Height, Basal Area, Trees per Acre, Stocking Level, Size Class: N/A
Soil Site Class: II. Most of this old field has Charlton loam soils. These are very deep, well drained, moderately productive loamy soils that are well suited to pasture and hay, which was what this field was used for in the past.
Recommendations and Work Schedule: Brushhogging and sawing where necessary the invasive barberry and multi-flora rose and treating the cut stems with a herbicide will prevent invasives from overtaking this field. Stilt grass covers too wide an area to rake and overseed. Annual brushhogging of this field may allow the pasture grasses to out compete the stilt grass. Once that occurs brushhogging can be done less frequently. The locusts should be removed from the western section of the field so they do not overtake the field. When locust saplings are cut they must immediately be treated with herbicides, dabbing a small amount of glyphosate or trichlopyr directly onto the cut stem within twenty minutes of cutting. If this is not done the locust will re-sprout exponentially the next season. Weed wacking any new shoots again in the growing season will prevent re-growth.

Riparian Areas: Much of this field is a riparian area buffering the seep that becomes a tributary emptying into the pond to the north. By removing invasive plants, native grasses and other forbs will recover, providing greater plant diversity and creating a healthier vegetative buffer that will better filter pollutants and sediments, regulate water temperature, stabilize stream banks and enhance aquatic habitats.
Access System: This field can be easily accessed by Sarles Street.
Wildlife Habitat: Successional Old Field
Due to the loss of farmland, reforestation and development, fields are increasingly rare and many of the species that depend on this habitat are in steep decline. The following species require such habitat and are included on the New York State Department of Environmental Conservation's Species of Greatest Conservation Need list and on the Cornell University Cooperative Extension's list of Grassland Birds of Management Concern (see Appendix C for a complete list and explanation of rankings):
American woodcock *Scolopax minor* S5
Eastern Bluebird *Sialia sialis*
Blue-winged warbler *Vermivora pinus* S5
Prairie warbler *Dendroica discolor* S5

This field may also be suitable habitat for field sparrows *Spizella pusilla* and may provide foraging habitat for migrating kestels *Falco sparverius.* Populations of both species are in steep decline.

Many butterflies, moths, bees, wasps, damsel and dragonflies and other beneficial insects are attracted to the grasses and wildflowers found in this field.
Fisheries Habitat: None
Management Implications: The field should not be disturbed during nesting season; brushhogging should be done as late into winter as possible.
Recreation and Aesthetics: A horseback riding trail runs through this field. Keeping the field reverting to shrubland or forest or from being dominated by invasive plants will add to the aesthetics and the educational opportunities at the Sanctuary.
Forest Health, Invasive Species: Invasive plants are just becoming established here.

Stand 8:
Forest Type: Oak-Hickory Forest
Acres: 8 acres
Species Composition: 60% oak, 30% hickory, 10% sugar maple. The canopy is 90% closed. This forest type is found at the highest points of the southern parcel, at the northern border and the southwestern border where a water tower is located. The northern stand is very sparse, made up of red and black oak, pignut hickory and sugar maples. Three non-native sweet cherry trees grow here also. There is no understory or groundcover due to deer browsing. The southern stand has red, white and chestnut oaks, pignut hickories, sugar maples and a basswood. Here the


View west of Mount Kisco

understory is denser, made up of hophornbeam trees and sugar maple and black birch saplings. The goundcover consists of Pennsylvania sedge and a few barberry shrubs.
Average Height: 80-100 feet
Basal Area: 120 square feet per acre
Trees per Acre: 140
Stocking Level: 70%
Size Class: Pole timber (6″-12″ diameter) and saw timber (12″ and greater diameter)
Soil Site Class: II. Soils on these hilltops and hillsides are made up of Chatfield-Charlton complex and Chatfield-Hollis rock outcrop complex soils. Chatfield-Charlton soils consist of moderately deep, well-drained and somewhat excessively drained Chatfield soil and very deep, well drained Charlton soil. They are located on the tops and side of hills such as this that are underlain by highly folded bedrock. The soils are moderately productive, but erosion hazard is severe and the soils are prone to seasonal droughtiness. Chatfield-Hollis rock outcrop complex are moderately deep, well drained and somewhat excessively drained Chatfield soils; shallow, well drained and somewhat excessively drained Hollis soils and areas of rock outcrop. They are moderately productive soils. These soils are typically found on hillsides with very steep bedrock escarpments. Surface runoff is rapid and erosion hazard is severe.
Recommendations and Work Schedule: Deer hunting can be encouraged so that the very sparse ground cover and understory can recover. If time and resources permit, this process can be accelerated by planting and protecting native shrubs and saplings where deer have browsed the understory. Planting should not be done in the summer months. Deer netting, tubing, chicken wire or welded wire cages should be used until the plants grow to about 5 feet in height, above the deer browse line.
Riparian Areas: None
Access System: These stands can be accessed via the hiking trail.
Wildlife Habitat: Mature Forest
Because of development and fragmentation, large blocks of interior forest are increasingly rare in the region. Both of these stands may be too small in area to support the species that rely on mature, unfragmented woods. The following species require mature, unfragmented forest habitat and are included on the NY State DEC's Species of Greatest Conservation Need list (see Appendix C for a complete list and explanation of rankings):
Coopers hawk *Accipiter cooperii* SC S4
Red-shouldered hawk *Buteo lineatus* SC S4B, SZN
Sharp-shinned hawk *Accipiter striatus* SC S4
Scarlet tanager *Piranga olivacea* NR
Wood thrush *Hylocichla mustelina* S5
Worm-eating warbler *Helmitheros vermivorus* S4
Many other migratory birds, including Eastern wood pewee, Veery, Ovenbird, American redstart, Scarlet tanager, Yellow-throated vireo, Warbling vireo, Red-eyed vireo, Black and white warbler, Blue-gray gnatcatcher, Brown creeper and others also depend on interior forests such as this.
Fisheries Habitat: None
Management Implications: Because this is a mature forest stand with few diseased trees and few invasives, it is less a priority than other stands.

Recreation and Aesthetics: Mature woods such as these with little understory, while poor from a diversity and wildlife habitat perspective, create pleasant views for hikers.
Forest Health, Invasive Species: This is a healthy, mature forest with few invasives but lacks understory and groundcover due to deer browsing.

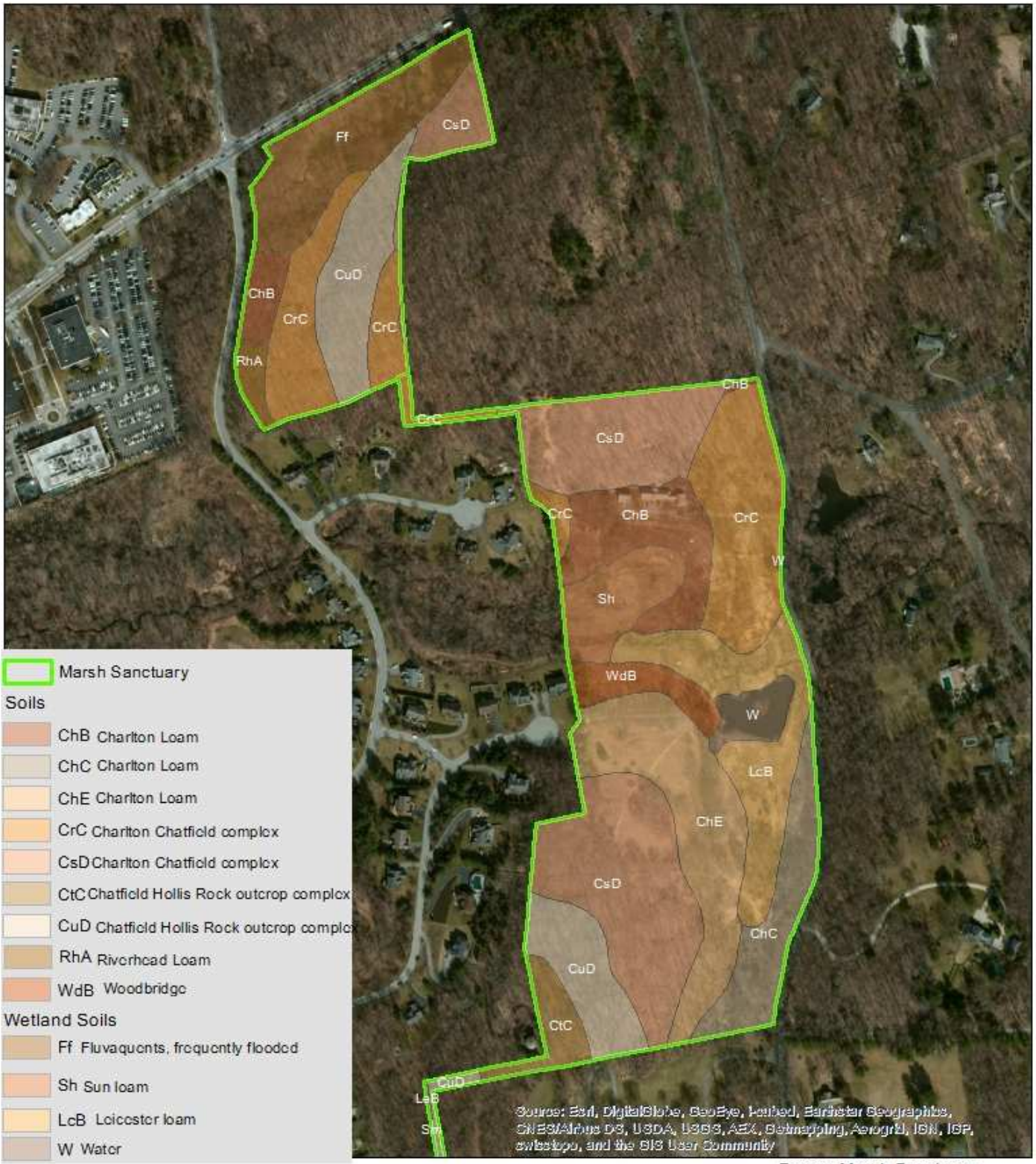
Stand 9:
Forest Type: Locust Woods
Acres: 8 acres
Species Composition: 90% locust, 10% ash. The canopy is 50% open. Locusts have taken over these areas that were open field as recently as 1947. Their aggressive growth has prevented any other trees, shrubs or groundcover to grow with the exception of other invasive plants such as ailanthus (tree of heaven), pokeweed, barberry, burning bush, multi-flora rose, wineberry, bittersweet vines and stilt grass.
Average Height: 70 feet
Basal Area: 75 square feet per acre
Trees per Acre: 100
Stocking Level: 50%
Size Class: Pole timber (6"-12" diameter)
Soil Site Class: II. The most common soils found in these locations are Charlton-Chatfield complex soils which are very deep, well drained and moderately productive soils with moderate erosion hazard.
Recommendations and Work Schedule: Since these stands are completely dominated by invasive plants, removing them all is a challenge. It may make sense to begin by simply cutting and treating all the vines that are damaging the locust trees. At a minimum locusts groves should be controlled so that they do not spread further into the Sanctuary. Ailanthus trees should be girdled or cut and treated with herbicide to prevent re-seeding and re-sprouting. The next step may be to remove barberry shrubs growing in selected forest canopy openings by cutting and treating the barberry. Once that is done some areas can be selected for planting and protecting of native trees and shrubs. Recommended trees include red oak and white oak, hickories, black gum (tupelo) and perhaps Norway spruce (non-native). These are somewhat shade resistant, will do well as temperatures continue to rise, and will benefit wildlife.
Riparian Areas: None
Access System: These stands are accessible from Sarles Street and the hiking trail.
Wildlife Habitat: Young Successional Woods
Invasive plants have little benefit for insects, birds or other wildlife.
Fisheries Habitat: None
Management Implications: Since this is such a large scale undertaking, it may make sense to experiment with small patches each year in order to see which methods are successful in reclaiming these woods.
Recreation and Aesthetics: To even a casual observer, single age, single species woods covered with vines make for a poor hiking experience. Vines kill the branches and trees which can create a safety hazard as they fall. The cost of keeping trails free of downed limbs and trees also increases in stands such as these.

Forest Health, Invasive Species: Poor health due to the dominance of invasive species.

Stand 10:
Forest Type: Pond
Acres: 1 acre
Species Composition: The south, southeast and southwest banks of the pond have an impressive array of native shrubs and trees including several large arrowwood viburnum shrubs, thickets of gray dogwood shrubs, silky dogwood, alder and winterberry shrubs and willow and flowering dogwood trees. At least 15 new shrubs have been planted on the north bank of the pond including chokeberry, winterberry, buttonbush and gray dogwood shrubs, flowering dogwood trees, pasture roses and spireas.
Average Height, Basal Area, Trees per Acre, Stocking Level, Size Class: N/A
Soil Site Class: III. Aquatic
Recommendations and Work Schedule: The current plan of revegetating the north bank with native plants in a way that mimics the natural groupings of native plants that grow around the rest of the pond should be continued. Plants should be protected from deer at least during the winter with deer netting, tubing, chicken wire or welded wire cages. Invasive porceleinberry is taking over the stream embankment and covering some plants and should be at least kept from spreading and removed if possible. Japanese knotweed is covering at least 100 feet of shoreline around the spillway and should be removed by cutting and treating with herbicide. Invasive swallowwort is beginning to grow on the north side of the trail and should be removed by either weed wacking or by cutting and treating with a herbicide.
Riparian Areas: The entire shoreline/bank is a riparian area. Be removing invasives and planting native plants that normally grow in wet areas such as this, water quality will be improved.
Access System: This is accessible by the trail that loops around the pond.
Wildlife Habitat: Aquatic habitat such as this is very beneficial for a wide range of insects, amphibians, reptiles, fish, birds, mammals and other wildlife.
Fisheries Habitat: The pond most likely has common, pollution tolerant fish including white sucker, pumpkinseed, bluegill, golden shiner and blacknose dace.
Management Implications: Invasive shrubs should not be removed during nesting season and herbicides should be used carefully around the pond and stream and should not be applied in spring. Planting is best done when plants are dormant and should not be done in hot, dry conditions. Deer protection is necessary until the plants grow above the deer browse line of 5 feet.
Recreation and Aesthetics: Removing knotweed from the spillway will reveal the attractive stonework and the cascading water to hikers. By leaving openings between the shrubs at the northern shoreline viewing areas for hikers will be maintained.
Forest Health, Invasive Species: The less traveled south, east and west banks of the pond are free of invasives. The heavily traveled north bank has large patches of porceleinberry and Japanese knotweed.

Marsh Sanctuary Soils Map

51 Acre South Bedford Road Parcels Only



Owner: Marsh Sanctuary
Mt. Kisco, Bedford, New Castle, NY
Westchester County
Tax #: 80.60-1-2; 80.51-2-1
Author: Jim Nordgren
Date: March 3, 2015

N

1 inch = 411 feet

475 237.5 0 475 Feet

Marsh Sanctuary 100 Foot Riparian Buffer Map

51 Acre South Bedford Road Parcels Only

Legend

- Marsh Sanctuary
- 100 Foot Riparian Buffer
- DEC Wetlands
- Wetland Soils
- Streams & Rivers

N

1 inch = 411 feet

475 237.5 0 475 Feet

Owner: MarshSanctuary
Mt. Kisco, Bedford, New Castle, NY
Westchester County
Tax #: 80.60-1-2; 80.51-2-1
Author: Jim Nordgren
Date: March 3, 2015

Marsh Sanctuary Equipment Access Map

51 Acre South Bedford Road Parcels Only

Marsh Sanctuary
Equipment Access
Streams & Rivers
Stream Crossing
Culvert
Wetland Soils
DEC Wetlands
100 Foot Riparian Buffer
Pond
15 to 25% Slopes
Over 25% Slopes
Parking Lot

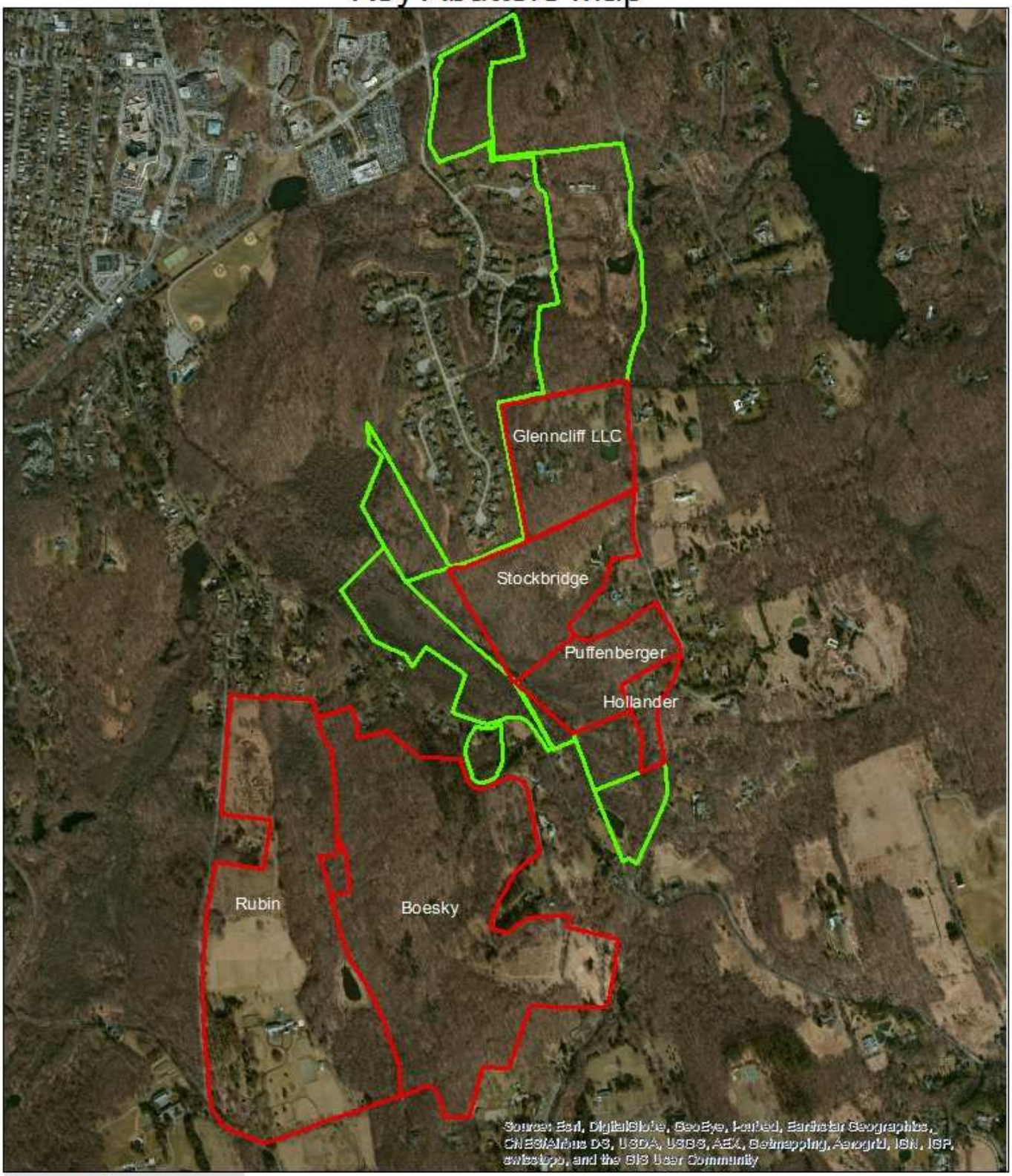
1 inch = 394 feet

470 235 0 470 Feet

N

Owner: MarshSanctuary
Mt. Kisco, Bedford, New Castle, NY
Westchester County
Tax #: 80.60-1-2; 80.51-2-1
Author: Jim Nordgren
Date: March 3, 2015

Marsh Sanctuary
Key Abutters Map



Legend

- Key Abutters
- Marsh Sanctuary

N

1 inch = 1,098 feet

1,100 550 0 1,100 Feet

Owner: Marsh Sanctuary
Mt. Kisco, Bedford, New Castle, NY
Westchester County
Author: Jim Nordgren
March 2, 2015

APPENDIX A

Inventory of Flora & Fauna October 10, 15, 16, 2014

Trees:

Acer negundo (box elder)
Acer platanoides (Norway maple)
Acer rubrum (red maple)
Acer saccharum (sugar maple)
Ailanthus altissima (tree of heaven)
Amelanchier arborea (serviceberry)
Betula lenta (black birch)
Carpinus caroliniana (ironwood)
Carya glabra (pignut hickory)
Carya ovata (shagbark hickory)
Carya tomentosa (mockernut hickory)
Cercis canadensis (red bud)
Cornus florida (flowering dogwood)
Fagus grandifolia (American beech)
Fraxinus americana (white ash)
Juglans nigra (black walnut)
Juniperus virginiana (red cedar)
Liriodendron tulipifera (tulip tree)
Malus spp. (crabapple)
Ostrya virginiana (hophornbeam)
Picea abies (Norway spruce)
Pinus strobus (white pine)
Platanus occidentalis (American sycamore)
Populus tremuloides (quaking aspen)
Prunus avium (sweet cherry-non-native)
Prunus serotina (black cherry)
Quercus alba (white oak)
Quercus prinus (chestnut oak)
Quercus rubra (red oak)
Quercus velutina (black oak)
Robinia pseudoacacia (black locust)
Salix spp. (willow)
Sassafras albidum (sassafras)
Tsuga canadensis (eastern hemlock)
Ulmus americana (American elm)

Shrubs:

Alnus serrulata (smooth alder)
Aronia arbutifolia (red chokeberry)
Berberis thunbergii (Japanese barberry)
Cephalanthus occidentalis (buttonbush)

Cornus oblique (silky dogwood)
Cornus racemosa (gray stemmed dogwood)
Elaeagnus umbellata (autumn olive)
Euonymus alatus (winged euonymus)
Euonymus atropurpurea (wahoo)
Hamamelis virginiana (witch hazel)
Ilex verticillata (winterberry)
Ligustrum sp. (privet)
Lindera benzoin (spicebush)
Lonicera morrowii (Morrow's honeysuckle)
Lyonia ligustrina (maleberry)
Myrica pensylvanica (bayberry)
Rhamnus spp. (buckthorn)
Rhododendron maximum (rhododendron)
Rosa multiflora (multiflora rose)
Rubus phoenicolasius (wineberry)
Rubus spp. (blackberry)
Spiraea tomentosa (steeplebush)
Syringa vulgaris (lilac)
Vaccinium angustifolium (low-bush blueberry)
Vaccinium corymbosum (high-bush blueberry)
Viburnum dendatum (arrowwood viburnum)
Viburnum lentago (nannyberry viburnum)
Viburnum sieboldii (siebold viburnum)- *burnt rubber smell when crushed*

Vines:
Ampelopsis brevipedunculata (porcelain berry)
Celastrus orbiculatus (Asiatic bittersweet)
Cuscuta gronovii (dodder)
Cynanchum louiseae, Vincetoxicum nigrum (black swallow-wort)
Fallopia convolvulus (black bindweed)-non native
Parthenocissus quinquefolia (Virginia creeper)
Persicaria perfoliata (mile-a-minute)
Rubus flagellaris (dewberry)
Smilax rotundifolia (greenbrier)
Toxicodendron radicans (poison ivy)
Vitis sp. (grape)
Wisteria floribunda (Japanese wisteria)

Herbs:
Achillea millefolium (yarrow)
Alliaria petiolata (garlic mustard)
Alopecurus spp. (foxtail grass)
Apocynum androsaemifolium (dogbane, Indian hemp)
Artemisia vulgaris (common mugwort)
Asclepias incarnata (swamp milkweed)

Ascelepias syriaca (common milkweed)
Aster divaricatus (white wood aster)
Aster novi-belgii (New York aster)
Boehmeria cylindrical, (false nettle)
Centaurea maculosa (spotted knapweed)
Chimaphila maculata (spotted wintergreen)
Clinopodium vulgare (wild basil)
Daucus carota (Queen Anne's lace)
Erechtites hieracifolia (pilewort)
Erigeron annuus (daisy fleabane)
Eupatorium rugosum (Ageratina altissima) (white snakeroot)
Euphorbia cyparissias (cypress spurge)
Euthamia graminifolia (grass-leaved goldenrod)
Impatiens capensis (orange jewelweed)
Iris versicolor (blue flag iris)
Pachysandra terminalis (pachysandra)
Phytolacca americana (pokeweed)
Pilea pumila (clearweed)
Polygonum cuspidatum (Japanese knotweed)
Polygonum hydropiperoides (mild water pepper)
Polygonum pensylvanicum (smartweed)
Pycnanthemum virginium (mountain mint)
Rubus phoenicolasius (wineberry)
Rubus spp. (raspberry)
Rudbeckia hirta (black-eyed Susan)
Solidago caesia (blue-stemmed goldenrod)
Solidago Canadensis (Canada goldenrod)
Spiraea tomentosa (steeple bush)
Typha latifolia (common cattail)
Verbena hastata (blue vervain)

Sedges:
Carex pensylvanica (Pennsylvania sedge)
Carex stricta (tussock sedge)
Juncus tenuis (path rush)

Grasses:
Microstegium vimineum (stilt grass)
Panicum clandestinum (deer-tongue grass)
Schizachyrium scoparium (little bluestem)
Setaria italica (fox-tail bristle grass)

Ferns and allies:
Athyrium filix-femina (lady fern)
Dryopteris intermedia (intermediate wood fern)

Onoclea sensibilis (sensitive fern)
Osmunda cinnamomea (cinnamon fern)
Osmunda regalis (royal fern)
Polystichum acrostichoides (Christmas fern)

Thelypteris simulate (Massachusetts fern)
Thelypteris palustris (marsh fern)

Mammals-expected to be observed:
Peromyscus leucopus (white-footed mouse)
Myotis lucifugis (brown bat)
Tamias striatus (eastern chipmunk)
Sciurus carolinensis (gray squirrel)
Tamiasciurus hudsonicus (red squirrel)
Glaucomys volans (flying squirrel)
Procyon lotor (raccoon)
Didelphis virginiana (opossum)
Mephitis mephitis (skunk)
Mustela erminea (short tailed weasel)
Mustela frenata (long tailed weasel)
Ondatra zibethicus (muskrat)
Martes pennanti (fisher)
Vulpes vulpes (red fox)
Urocyon cinereoargenteus (gray fox)
Lynx rufus (bobcat)
Canis latrans (eastern coyote)
Odocoileus virginianus (white-tailed deer)

Birds-expected to be observed:
Branta Canadensis (Canada goose)
Anas platyrhynchos (mallard)
Aix sponsa (wood duck)
Ardea herodias (great blue heron)
Butorides virescens (green heron)
Philohela minor (American woodcock)
Meleagris gallopavo (wild turkey)
Cathartes aura (turkey vulture)
Coragyps atratus (black vulture)
Buteo jamaicensis (red-tailed hawk)
Accipiter striatus (sharp-shinned hawk)
Bubo virginianus (great horned owl)
Otus asio (screech owl)
Strix varia (barred owl)
Zenaida malnoura (mourning dove)
Archilochus colubris (ruby-throated hummingbird)

Megaceryle alcyon (belted kingfisher)
Dryocopus pileatus (pileated woodpecker)
Melanerpes carolinus (red-bellied woodpecker)
Colaptes auratus (yellow-shafted flicker)
Sphyrapicus varius (yellow-bellied sapsucker)
Picoides pubescens (downy woodpecker)
Picoides villosus (hairy woodpecker)
Tyrannus tyrannus (eastern kingbird)
Myiarchus crintus (great crested flycatcher)
Contopus virens (pewee)
Sayornis phoebe (eastern phoebe)
Tachycineta bicolor (tree swallow)
Hirundo rustica (barn swallow)
Cyanocitta cristata (blue jay)
Corvus brachyrhynchos (American crow)
Parus atricapillus (black-capped chickadee)
Parus bicolor (tufted titmouse)
Sitta carolinensis (white-breasted nuthatch)
Certhis familiaris (brown creeper)
Troglodytes aedon (house wren)
Troglodytes hiemalis (winter wren)
Thryothorus ludovicianus (Carolina wren)
Dumetella carolinensis (gray catbird)
Mimus polyglottos (northern mockingbird)
Turdus migratorius (American robin)
Sialia sialis (eastern bluebird)
Hylocichla mustelina (wood thrush)
Hylocichla guttata (hermit thrush)
Catharus fuscescens (veery)
Polioptila caerulea (blue-gray gnatcatcher)
Regulus calendula (ruby-crowned kinglet)
Bombycilla cedrorum (cedar waxwing)
Vireo olivaceus (red-eyed vireo)
Vireo flavifrons (yellow-throated vireo)
Vireo gilvus (warbling vireo)
Mniotilta varia (black and white warbler)
Helmitheros vermivorus (worm-eating warbler)
Dendroica coronata (yellow-rumped warbler)
Dendroica pensylvanica (chestnut-sided warbler)
Setophaga ruticilla (redstart)
Vermivora cyanoptera (blue-winged warbler)
Dendroica petechia (yellow warbler)
Dendroica discolor (prairie warbler)
Dendroic pinus (pine warbler)
Seiurus aurocapillus (ovenbird)
Geothlypis trichas (common yellowthroat)

Sturnus vulgaris (European starling)
Agelaius phoeniceus (red-winged blackbird)
Quiscalus quiscula (common grackle)
Molothrus ater (cowbird)
Icterus galbula (Northern oriole)
Piranga olivacea (scarlet tanager)
Cardinalis cardinalis (northern cardinal)
Passerina cyanea (indigo bunting)
Pheucticus ludovicianus (rose-breasted grosbeak)
Haemorhous purpureus (purple finch)
Carpodacus mexicanus (house finch)
Cardeulis tristis (American goldfinch)
Pipilo erythrophthalmus (rufous-sided towhee)
Junco hyemalis (slate colored junco)
Passer domesticus (house sparrow)
Spizella passerina (chipping sparrow)
Spizella pusilla (field sparrow)
Melospiza melodia (song sparrow)
Zonotrichia albicollis (white throated sparrow)

Amphibians and Reptiles-expected to be observed:
Ambystoma maculatum (spotted salamander)
Bufo americanus (American toad)
Chelydra serpentina (snapping turtle)
Chrysemys picta (painted turtle)
Coluber constrictor (black racer)
Hyla versicolor (gray tree frog)
Notophthalmus viridescens (red spotted newt)
Hyla crucifer (spring peeper)
Plethodon cinereus (redback salamander)
Rana palustris (pickerel frog)
Rana catesbeiana (bull frog)
Rana clamitans (green frog)
Rana sylvatica (wood frog)
Thamnophis sirtalis (Eastern garter snake)

Fish of ponds and lakes- observed
Rhinichthys atratulus, blacknose dace

APPENDIX B

Possible Birds at Marsh Sanctuary:

From Breeding Bird Atlas, Block # 6056C (Mount Kisco vicinity) 2000-2005[7]

Canada Goose	*Branta canadensis*	6/1/2004
Mute Swan	*Cygnus olor*	5/30/2004
Wood Duck	*Aix sponsa*	6/10/2004
Mallard	*Anas platyrhynchos*	6/5/2004
Mallard x Am. Black Duck Hybrid	*Anas platyrhynchos x A. rubripes*	//2004
Wild Turkey	*Meleagris gallopavo*	6/1/2004
Great Blue Heron	*Ardea herodias*	6/30/2004
Green Heron	*Butorides virescens*	6/1/2004
Turkey Vulture	*Cathartes aura*	5/30/2004
Cooper's Hawk	*Accipiter cooperii*	6/10/2004
Red-tailed Hawk	*Buteo jamaicensis*	4/10/2004
Killdeer	*Charadrius vociferus*	5/29/2004
Spotted Sandpiper	*Actitis macularius*	5/29/2004
Rock Pigeon	*Columba livia*	5/15/2004
Mourning Dove	*Zenaida macroura*	6/1/2004
Yellow-billed Cuckoo	*Coccyzus americanus*	6/10/2004
Eastern Screech-Owl	*Megascops asio*	4/10/2004
Great Horned Owl	*Bubo virginianus*	4/10/2004
Chimney Swift	*Chaetura pelagica*	//2004
Ruby-throated Hummingbird	*Archilochus colubris*	6/1/2004
Belted Kingfisher	*Megaceryle alcyon*	5/30/2004
Red-bellied Woodpecker	*Melanerpes carolinus*	6/1/2004
Downy Woodpecker	*Picoides pubescens*	6/3/2004
Hairy Woodpecker	*Picoides villosus*	6/3/2004
Northern Flicker	*Colaptes auratus*	6/5/2004
Pileated Woodpecker	*Dryocopus pileatus*	6/10/2004
Eastern Wood-Pewee	*Contopus virens*	6/10/2004
Willow Flycatcher	*Empidonax traillii*	6/17/2004

[7] http://www.dec.ny.gov/cfmx/extapps/bba/index.cfm?RequestTimeout=250

Eastern Phoebe	*Sayornis phoebe*	6/7/2004
Great Crested Flycatcher	*Myiarchus crinitus*	6/1/2004
Eastern Kingbird	*Tyrannus tyrannus*	7/10/2004
Yellow-throated Vireo	*Vireo flavifrons*	6/17/2004
Warbling Vireo	*Vireo gilvus*	6/17/2004
Red-eyed Vireo	*Vireo olivaceus*	6/17/2004
Blue Jay	*Cyanocitta cristata*	6/17/2004
American Crow	*Corvus brachyrhynchos*	6/17/2004
Tree Swallow	*Tachycineta bicolor*	6/17/2004
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	6/18/2004
Bank Swallow	*Riparia riparia*	6/18/2004
Cliff Swallow	*Petrochelidon pyrrhonota*	6/18/2004
Barn Swallow	*Hirundo rustica*	6/17/2004
Black-capped Chickadee	*Poecile atricapillus*	6/18/2004
Tufted Titmouse	*Baeolophus bicolor*	6/10/2004
Red-breasted Nuthatch	*Sitta canadensis*	6/17/2004
White-breasted Nuthatch	*Sitta carolinensis*	6/17/2004
Carolina Wren	*Thryothorus ludovicianus*	6/10/2004
House Wren	*Troglodytes aedon*	6/18/2004
Eastern Bluebird	*Sialia sialis*	6/17/2004
Veery	*Catharus fuscescens*	6/10/2004
Wood Thrush	*Hylocichla mustelina*	6/10/2004
American Robin	*Turdus migratorius*	6/10/2004
Gray Catbird	*Dumetella carolinensis*	//2004
Northern Mockingbird	*Mimus polyglottos*	6/10/2004
Cedar Waxwing	*Bombycilla cedrorum*	6/10/2004
Blue-winged Warbler	*Vermivora pinus*	6/17/2004
Yellow Warbler	*Dendroica petechia*	6/10/2004
Pine Warbler	*Dendroica pinus*	6/10/2004
Prairie Warbler	*Dendroica discolor*	6/10/2004
Black-and-white Warbler	*Mniotilta varia*	6/17/2004
American Redstart	*Setophaga ruticilla*	6/17/2004

Worm-eating Warbler	*Helmitheros vermivorum*	6/17/2004
Ovenbird	*Seiurus aurocapilla*	6/17/2004
Louisiana Waterthrush	*Seiurus motacilla*	5/30/2004
Common Yellowthroat	*Geothlypis trichas*	//2004
Hooded Warbler	*Wilsonia citrina*	6/17/2004
Eastern Towhee	*Pipilo erythrophthalmus*	6/17/2004
Chipping Sparrow	*Spizella passerina*	6/18/2004
Field Sparrow	*Spizella pusilla*	6/10/2004
Song Sparrow	*Melospiza melodia*	6/10/2004
Swamp Sparrow	*Melospiza georgiana*	6/10/2004
Scarlet Tanager	*Piranga olivacea*	6/10/2004
Northern Cardinal	*Cardinalis cardinalis*	6/10/2004
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	6/10/2004
Indigo Bunting	*Passerina cyanea*	6/17/2004
Common Grackle	*Quiscalus quiscula*	6/10/2004
Brown-headed Cowbird	*Molothrus ater*	6/17/2004
Orchard Oriole	*Icterus spurius*	6/18/2004
Baltimore Oriole	*Icterus galbula*	6/10/2004

APPENDIX C

NY State Department of Environmental Conservation Species of Greatest Conservation Need:

(Habitat, Typical Name, Scientific Name, State Status [Federal Status], Heritage Rank. E—Endangered, T—Threatened, SC—Special Concern. S1—fewer than 5 occurrences, S2—6 to 20 occurrences, S3—21 to 100 occurrences, S4—apparently secure, S5—demonstrably secure, SH—historically known from New York State, but not seen in the past 15 years).

Wetland/Marsh:

Least bittern Ixobrychus exilis (WEST CTY ES list)
American bittern *Botaurus lentiginosus* SC S4 YES
American black duck *Anas rubipes* S2
Bog turtle *Clemmys muhlenbergii* E (T) S2
Spotted turtle *Clemmys guttata* SC S3 YES

Forest/Opening:

Eastern box turtle *Terrapene carolina* SC S3 YES

Forest/Stream:

Wood turtle *Clemmys insculpta* SC S3 YES
Spotted turtle *Clemmys guttata* SC S3 YES

Stream:

Jefferson salamander*Ambystoma jeffersonianum* SC S3 YES

Vernal Pool:

Blue-spotted salamander *Ambystoma laterale* SC S3 YES
Marbled salamander *Ambystoma opacum* SC S3

Mature Forest:

Coopers hawk *Accipiter cooperii* SC S4
Kentucky warbler *Oporornis formosus* S2
Louisiana waterthrush *Parkesia motacilla* NR
Red-shouldered hawk *Buteo lineatus* SC S4B, SZN
Scarlet tanager *Piranga olivacea* NR
Sharp-shinned hawk *Accipiter striatus* SC S4
Wood thrush *Hylocichla mustelina* S5
Worm-eating warbler *Helmitheros vermivorus* S4

Forest/Opening:

Eastern box turtle *Terrapene carolina* SC S3 YES

Forest/Stream:

Wood turtle *Clemmys insculpta* SC S3 YES
Spotted turtle *Clemmys guttata* SC S3 YES

Stream:

Jefferson salamander *Ambystoma jeffersonianum* SC S3 YES

Vernal Pool:

Blue-spotted salamander *Ambystoma laterale* SC S3 YES
Marbled salamander *Ambystoma opacum* SC S3

Early-Successional/Shrub

American woodcock *Scolopax minor* S5
Blue-winged warbler *Vermivora pinus* S5
Prairie warbler *Dendroica discolor* S5 WCES-SC

Ruffed grouse *Bonasa umbellus* NR
Brown thrasher *Toxotoma rufum* NR
Yellow-breasted chat *Icteria virens* SC S3
New England cottontail *Sylvivagus transitionalis* SC (Candidate SH

Watershed Forestry Program
33195 State Highway 10
Walton, NY 13856
(607) 865-7790

Watershed Management Plan Summary Page

(to be included with each Forestry Plan submitted)

Landowners Name: MARSH SANCTUARY/WILDLIFE PRESERVE, INC.

Mailing Address: 114 SOUTH BEDFORD RD.
MOUNT KISCO, NY 10549

Phone Number: 914 241-2808

Property Location

Road/address: 114 SOUTH BEDFORD RD.

Township MT. KISCO, BEDFORD + NEWCASTLE **County** WESTCHESTER

Property Information

Tax Map Number (S.B. 80.51-2-1 80.60-1-2 **Total Acreage:** 52

Watershed Forest Managed/forested acre- 52 ***SIP/FIP Acreage:**

***Forest Tax Law Acreage:** ***Riparian Area Acreage:** 19

Forester Information:

Company name: JN LAND TRUST SERVICES

Foresters name: JIM NORDGREN

Company mailing address: 38 BOUTON RD., SOUTH SALEM, NY 10590

Phone Numbers: 914 763-5740 **Fax:**

Car/pager: **e-mail:** JIM@JNLANDTRUSTSERVICES.COM

WFP office use only

Application received:

Application approved:

Est. funding amount $

Actual funded amount $

WAC received plan:

Plan submitted to DEC:

First evaluation returned:

Second evaluation returned:

Plan approved by:

Overview of Watershed Agricultural Council Cost-Share Programs for Landowners, January 2011

You have received your management plan, but how will you take the next step and implement its recommendations? The Watershed Agricultural Council's Forestry Program can work with you in implementing your plan and achieving your ownership objectives by providing technical assistance and cost-sharing programs that provide funding for a wide range of management activities. Below is a summary of the Forestry Program's landowner assistance programs for your reference.

Management Assistance Program (MAP)
This program provides funding for:
• Tree Planting
• Timber Stand Improvement (TSI) / precommercial thinning
• Riparian Area and Forest Wetland Improvement
• Wildlife Habitat Improvement including
-- Wild crop tree/fruit tree release and pruning
-- Seep protection and enhancement
-- Snag and cavity tree development
-- Creation of forest openings for wildlife
-- Establishment of wildlife seeding in forest openings
• Invasive Plant Control
Two grant rounds are held per year, with deadlines of February 15 and July 15. Participants may receive up to $2,575 ($2,652 in 2013) of MAP funding per round and up to $5,304 of MAP funding per year. Only practices specifically recommended in your forest management plan are eligible for funding.

Best Management Practice (BMP) Program
This program loans portable, temporary bridges, arch culverts, and rubber tire mats to loggers for use in stream crossings during timber harvests. Free samples of BMP materials required for your project are available such as: silt fencing with stakes, pipe culverts, grass seed, hay bales, biodegradable bar and chain oil, erosion control blankets and straw wattles. This program also provides cost-share funding for installing BMPs such as water bars, both as part of active timber harvests and to address existing erosion problems on your property.

Want to learn more about management?
The Watershed Agricultural Council's Forestry Program supports numerous landowner workshops annually, often at low or no cost to participants. Topics for these workshops include forest taxation, forest health, forest road remediation, wildlife management and the production of non-timber products in woodlots.
For a firsthand look at management in action, visit one of the Forestry Program's **model forests**. These outdoor classrooms allow you to see real timber harvests, BMPs and other management tools in practice. All model forests feature free admission. The Forestry

Program currently partners with three locations:

1. Lennox Model Forest – Back River Road, Delhi, NY

This model forest is across the street from the 4-H Camp Shankitunk and is open to the public daily from dawn to dusk. The forest is owned by Delaware County and managed by Cornell Cooperative Extension of Delaware County.

2. Frost Valley YMCA Model Forest – Frost Valley Road, Claryville, NY

Located on the campus of the Frost Valley YMCA Camp, this forest is open to the public but requires all visitors to check in at the Camp's Administration Desk before entering the model forest. For more information, please contact Frost Valley at (845) 985-2291 or visit their website at www.frostvalley.org/environmental-science/watershed-model-forest.html.

3. Siuslaw Model Forest – Route 23, Acra, NY

Located across the street from the Agro forestry Resource Center (ARC), this forest is owned and managed by Cornell Cooperative Extension of Greene County. The ARC also hosts a wide variety of free and low-cost workshops for the public. For more information, please contact the ARC at (518) 622-9820 or visit their website at www.agroforestrycenter.org.

For more information on any of these programs and to obtain grant applications, please contact:

Watershed Agricultural Council Forestry Program
33195 State Highway 10
Walton, NY 13856
(607) 865-7790
www.nycwatershed.org

2015-2030 WORK SCHEDULE

2015-2016: See Near Term Recommendations, pages 9-10

2017:

- Mow kiosk meadow frequently until other grass outcompetes stilt grass.
- Over-seed meadow at kiosk again with paddock mix.
- Brushhog the two large fields once to prevent invasives from becoming established.
- Continue to remove porceleinberry around pond and streams by hand pulling or weed wacking before it goes to seed in the summer.
- Remove the large patch of wisteria in yard by frequent mowing, hand pulling, or weed wacking.
- Hand prune English ivy in the yard trees to prevent it from harming the trees.
- Remove or plant with native groundcover the large patch of pachysandra growing by the stream.
- Maintain plant protections.
- Continue to cut bittersweet vines.
- Cage mature spicebush, winterberry and nannyberry in floodplain forest to allow resprouting.
- Maintain trail and check for erosion.
- Install bluebird houses in meadows.
- Continue to encourage deer hunting.

2018:

- Mow kiosk meadow until stilt grass eliminated.
- Weed wack invasive plants from two meadows.
- Continue to remove porceleinberry around pond and streams by hand pulling or weed wacking before it goes to seed in the summer.
- Continue to remove the large patch of wisteria in yard by frequent mowing, hand pulling, or weed wacking.
- Continue planting native groundcover in the large patch of pachysandra growing by the stream.
- Monitor and re-treat invasives.
- Maintain plant protections.
- Plant and protect native shrubs and saplings such as tupelo, red maple, pin oak, swamp white oak, white spruce and Norway spruce (non-native) in canopy openings in yard and floodplain forest.
- Introduce native cool season grasses such as little bluestem, big bluestem, switch grass/panic grass and purple love grass in the meadow.
- Weedwack undesirable plants such as mugwort and others in meadow.
- Clean out and repair bluebird houses.
- Maintain trail and check for erosion.
- Renew outreach to neighbors ('key abutters') east of the Sanctuary to educate them about the value of the Sanctuary and about potential conservation easement and fee donations on their property.
- Consider additional opportunities for agroforestry.

2019:

- Mow kiosk meadow until stilt grass eliminated.
- Brushhog the two large fields once to prevent invasives from becoming established.
- Control locust spread/remove locusts beginning at perimeter of locust stands. Cut and treat immediately with herbicides within twenty minutes of cutting.
- Girdle/cut and treat ailanthus trees in locust stand to prevent reseeding.
- Cut and treat barberry shrubs growing in selected forest canopy openings.
- Select some areas for planting and protecting of native trees and shrubs.
- Continue to remove porceleinberry by hand pulling or weed wacking before it goes to seed in the summer.
- Weedwack the large patch of mugwort just south of the community garden to prevent it from expanding further into the meadow.
- Monitor/remove multi-flora rose growing on the perimeter of the northern meadow by cutting and treating the stems with herbicide.
- Monitor and re-treat invasives.
- Maintain plant protections.
- Plant common, swamp and orange milkweed in the center of the meadow.
- Maintain trail and check for erosion.
- Continue to encourage deer hunting.
- Continue outreach to neighbors ('key abutters') east of the Sanctuary to educate them about the value of the Sanctuary and about potential conservation easement and fee donations on their property.

2020:

- Weed wack invasive plants from two meadows.
- Re-treat hemlocks from wooly adelgid disease by applying imidacloprid (Merit) and dinotefuran (Safari) insecticides to the bark in April.
- Monitor and re-treat invasives.
- Maintain plant protections.
- Clean out and repair bluebird houses .
- Maintain trail and check for erosion.
- Continue outreach to neighbors ('key abutters') east of the Sanctuary to educate them about the value of the Sanctuary and about potential conservation easement and fee donations on their property.

2021:

- Brushhog the two large fields once to prevent invasives from becoming established.
- Monitor and re-treat invasives.
- Maintain plant protections.
- Maintain trail and check for erosion.
- Continue to encourage deer hunting.
- Continue outreach to neighbors ('key abutters') east of the Sanctuary to educate them about the value of the Sanctuary and about potential conservation easement and fee donations on their property.

2022:

- Weed wack invasive plants from two meadows.
- Monitor and re-treat invasives.

- Maintain plant protections.
- Maintain trail and check for erosion.

2023:

- Brushhog the two large fields once to prevent invasives from becoming established.
- Monitor and re-treat invasives.
- Maintain plant protections.
- Maintain trail and check for erosion.
- Clean out and repair bluebird houses .
- Continue to encourage deer hunting.
- Continue outreach to neighbors ('key abutters') east of the Sanctuary to educate them about the value of the Sanctuary and about potential conservation easement and fee donations on their property.

2024:

- Weed wack invasive plants from two meadows.
- Monitor and re-treat invasives.
- Maintain plant protections.
- Maintain trail and check for erosion.

2025:

- Update 2015 Management Plan.
- S Brushhog the two large fields once to prevent invasives from becoming established.
- ave a few hemlocks from wooly adelgid disease by applying imidacloprid (Merit) and dinotefuran (Safari) insecticides to the bark in April.
- Monitor and re-treat invasives.
- Maintain plant protections.
- Maintain trail and check for erosion.
- Clean out and repair bluebird houses.
- Continue to encourage deer hunting.
- Continue outreach to neighbors ('key abutters') east of the Sanctuary to educate them about the value of the Sanctuary and about potential conservation easement and fee donations on their property.

2026:

- Monitor and re-treat invasives.
- Maintain plant protections.
- Maintain trail and check for erosion.

2027:

- Brushhog the two large fields once to prevent invasives from becoming established.
- Monitor and re-treat invasives.
- Maintain plant protections.
- Maintain trail and check for erosion.
- Clean out and repair bluebird houses .
- Continue to encourage deer hunting .
- Continue outreach to neighbors ('key abutters') east of the Sanctuary to educate them about the value of the Sanctuary and about potential conservation easement and fee donations on their property.

2028:

- Monitor and re-treat invasives.
- Maintain plant protections.
- Maintain trail and check for erosion.
- Clean out and repair bluebird houses .

2029:

- Brushhog the two large fields once to prevent invasives from becoming established.
- Monitor and re-treat invasives.
- Maintain plant protections.
- Maintain trail and check for erosion.
- Clean out and repair bluebird houses .
- Continue to encourage deer hunting .
- Continue outreach to neighbors ('key abutters') east of the Sanctuary to educate them about the value of the Sanctuary and about potential conservation easement and fee donations on their property.

2030:

- Monitor and re-treat invasives.
- Maintain plant protections.
- Maintain trail and check for erosion.

SIGNATURE CLAUSE

As owner, I have reviewed this management plan with our forester and I understand the contents and agree that it reflects our goals and intention for the management of his property.

Jason Garrith Naturalist 3/11, 2015

Name Title Date

DEFINITION OF TERMS

Basal Area: The cross-sectional area of all trees in a stand as measured at breast height (4.5 feet from the ground) and expressed per unit of land area.
Brushhog: A mower attached to a tractor that can cut through dense plant growth
Corduroy: Logs placed close together perpendicular to the direction of travel to protect the integrity of the underlying soils.
Crown Cover: The ground area covered by the crowns of trees or woody vegetation expressed as a percent of total ground area.
Calcareous bedrock: Bedrock producing alkaline soils containing calcium carbonate from underlying limestone.
Conservation easement: A legal agreement between a landowner and land trust or unit of government that limits, for conservation purposes, the type or amount of development on the property.
Forbs: Herbaceous flowering plants that are distinguished from grasses, shrubs and trees.
Hydric soils: Wetland soils formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions (conditions without oxygen).
Hydrophytic vegetation: An assemblage of one or more plant species growing in a common aquatic environment or on a substrate that is at least partially deficient in oxygen as a result of excessive water content.
Invasive plants: Plants, sometimes nonnative, that thrive and spread due to the lack of insects, diseases, or foraging animals that naturally keep their growth in check.
Loam soils: Soils composed of equal concentrations of sand, silt and clay that contain more nutrients, moisture and humus than sandy soils, have better drainage and infiltration of water and air than silty soils, and are easier to till than clay soils.
Pole timber: A tree with diameter at breast height (d.b.h.) of between 6 to 12 inches.
Riparian area: The transitional area between wetlands, streams or rivers and uplands. Riparian areas are plant communities contiguous to and affected by surface and subsurface hydrologic features of perennial or intermittent lotic (flowing) and lentic (relatively still) water bodies (rivers, streams, lakes, or drainage ways).
Saw timber: A tree with diameter at breast height (d.b.h.) greater than 12 inches.
Shrubland: A plant community characterized by vegetation dominated by shrubs, often also including grasses and forbs.
Stocking levels: A description of the number of trees, basal area, or volume per acre in a forest stand compared with a desired level for balanced health and growth.
Tree release: Encouraging the growth of desirable trees, whether for commercial or wildlife habitat purposes, by cutting less desirable neighboring trees shading or crowding out desirable trees.
Stream bank: The land area immediately adjacent to and which slopes toward the bed of a watercourse and which is necessary to maintain the integrity of the watercourse.
Thinning: Cutting of some trees to reduce crowding and shading of more desirable trees. The result is larger, faster growing desirable trees.

Timber stand improvement: Thinnings done to improve the composition and/or productivity of a forest stand. TST methods may include removing vines, thinning, removal of deformed and/or diseased trees and pruning.
Vernal pools: Relatively open areas of surface water formed in depressions within uplands that are inundated to a minimum depth of six inches for three to four months during the growing season (usually March through June) and that are devoid of fish and contain amphibians (adults, egg masses or larval stages) during the growing season. Vernal pools are the exclusive breeding habitats of several amphibians that are becoming increasingly rare throughout the northeast, notably: Eastern wood frog (Rana sylvatica), Jefferson salamander (Ambystoma jeffersonianum; NYSDEC listed special concern); marbled salamander (Ambystoma opacum; NYSDEC listed special concern), blue spotted salamander (Ambystoma laterale; NYSDEC listed special concern), and spotted salamander (Ambystoma maculatum).
Water Bars: A drainage structure made of logs or other material used to manage stormwater on roads trails.
Wetland: All areas that comprise hydric soils and/or are inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation.

New York State Department of Environmental Conservation
Division of Lands & Forests, Region 3
21 South Putt Corners Road, New Paltz, NY 12561-1620
Phone: (845) 256-3004 • **FAX:** (845) 255-1701
Website: www.dec.ny.gov

Joe Martens
Commissioner

Endangered and Threatened Species Report
Includes NYS Wetlands, Classified Streams, and Federal Wetlands

Owner Name: **Marsh Sanctuary/Wildlife Preserve Inc.**
Town and County: **Mount Kisco, Westchester County**

Reason for Review:

_____RPTL 480-A application

_____RPTL 480-A 5 year update

_____Stand analysis

X_____Other purpose (Forest Stewardship Plan)

The above named property was checked for the presence of threatened and endangered plants and animals using the New York State Natural Heritage maps on GIS. Results are noted below. This is a listing of known historical or recent sightings and is not necessarily meant to be a definitive listing. Rare species may occur on a property and not be listed on the Natural Heritage maps.

- Species and location will not be divulged except to the landowner. NYS wetland and streams are based on DEC maps on the DEC GIS database. COE wetlands are based on maps within the DEC GIS database.

Review of Natural Heritage Significant Habitat Database:

Endangered/Threatened Species: NA

NYS Protected Wetlands: State Regulated Freshwater Wetland K-46

NYS Classified Streams: Class C Stream

Federal Wetlands: PUBHh

Reviewed by: *Robert Mackenzie* Title: Forester 1 Date: 3/13/15

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STATEMENT OF QUALIFICATIONS

Jim Nordgren has completed open space plans, natural resource inventories, baseline documentation reports and management plans for Open Space Institute, Scenic Hudson, Northeast Wilderness Trust, LandVest, Watershed Agricultural Council, North Salem Open Land Foundation, Pound Ridge Land Conservancy, Putnam County Land Trust, Westchester Land Trust, Oblong Land Conservancy, Weantinoge Heritage Land Trust, Town of Lewisboro and the Castine, Maine Golf Course. He is proficient in GPS and GIS technology. He has researched, drafted and signed purchase option agreements, buy/sell agreements, conservation easements and fee purchase agreements for the Northeast Wilderness Trust and the Westchester Land Trust. He successfully applied for Land Trust Alliance Accreditation for the Northeast Wilderness Trust. Mr. Nordgren earned his Masters in Environmental Management at the Yale School of Forestry, 2007. He is a qualified Watershed Forester for the New York Watershed Agricultural Council.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov

Joe Martens
Commissioner

April 15, 2015

Jim Nordgren
Inland Trust Services
38 Bouton Road
South Salem, NY 10590

Re: Forest management plan for the Marsh Sanctuary located at 114 South Bedford Road
Town/City: Mount Kisco. County: Westchester.

Dear Jim Nordgren :

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no recent records of rare or state-listed animals or plants, or significant natural communities, at this site or in its immediate vicinity. Our database does have historical records from the early-mid 1900s of one rare plant and one rare animal from the area; please see the enclosed report for additional information on these records.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, from NatureServe Explorer at http://www.natureserve.org/explorer, and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our database. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

Our database is continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

Sincerely,

Andrea Chaloux

Andrea Chaloux
Environmental Review Specialist
New York Natural Heritage Program

New York Natural Heritage Program

Report on Historical Records of Rare Animals, Rare Plants, and Natural Communities

The following rare plants and rare animals have historical records at your project site, or in its vicinity.

The following rare plants and animals were documented in the vicinity of the project site at one time, but have not been documented there since 1979 or earlier, and/or there is uncertainty regarding their continued presence. There is no recent information on these plants and animals in the vicinity of the project site and their current status there is unknown. In most cases the precise location of the plant or animal in this vicinity at the time it was last documented is also unknown.

If suitable habitat for these plants or animals is present in the vicinity of the project site, it is possible that they may still occur there. We recommend that any field surveys to the site include a search for these species, particularly at sites that are currently undeveloped and may still contain suitable habitat.

COMMON NAME	*SCIENTIFIC NAME*	*NYS LISTING*	*HERITAGE CONSERVATION STATUS*
Reptiles			
Bog Turtle	*Glyptemys muhlenbergii*	Endangered *and Federally Listed as Threatened*	Imperiled in NYS and Globally Uncommon
1950s: The turtles were found on a lawn. There is a marsh with thick organic muck and standing water adjacent to the lawn. The vegetation in the marsh includes skunk cabbage, tussock sedge, *Sphagnum* species, ferns, poison ivy, alder, arrowwood, multiflora rose, and red maple. Many water birds were observed.			10253
Vascular Plants			
Rattlebox	*Crotalaria sagittalis*	Endangered	Critically Imperiled in NYS
1915-09-26: Mount Kisco. Sandy soil.			1989

This report only includes records from the NY Natural Heritage database. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, from NatureServe Explorer at www.natureserve.org/explorer, and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).