

Forest Stewardship Plan

(10-Year Planning Period)

Town of Pelham
Little Island Pond Conservation Area
Pelham, NH
21.5 Acres
December 19, 2005

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NH LPF #363
12 Peacock Hill Rd.
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Property Owners: Town of Pelham
Location: Little Island Pond Conservation Area (LCHIP Parcel)
Total Acreage: 21.53 +/- Acres
Map/Lot Numbers: Map 30, Lot 11.254
Date Prepared: December 13, 2005

General Description of the Property

This small woodlot is a delightful piece of property located between Dutton Road and Little Island Pond in eastern Pelham, NH. The property is found at the northern end of the Nature's Way subdivision, being the northernmost lot on the cul-de-sac. Directly north of this parcel is South Shore Road, which lies south of Little Island Pond. The land is mostly wooded with a few areas of shrubby wetlands. This parcel was acquired by the Town through the LCHIP program offered by the State, designed to help towns purchase sensitive pieces of property through matching grants. This parcel will be an excellent addition to the existing Town properties, offering recreation, visual and sound buffers to adjacent neighborhoods, and providing a beautifully wooded piece of property for local residents to observe sound forest management practices at work. At the same time, this property cuts down on the number of homes being built in this small area of Pelham and provides a wooded buffer in an area with a number of wetlands.

Boundaries

Promised Land Survey, LLC (LLS #827) surveyed the boundaries for this property in 2003, and the corners are all in place. The boundary lines were blazed and painted in 2005 and are highly visible, with the exception of some areas across the swampy ground on the southern border where there is high water.

Access

Access to this property may be a bit of a struggle. The parcel has a 20' right-of-way to the north, out to South Shore Road, although that access point comes out into a wet area. The other option is coming off the cul-de-sac at the end of Nature's Way. This means of access will be better for the long-term, with a more central landing area, but will require building a permanent truck bridge across the stream that flows northeast out of the wetlands found along the southern edge of this property.

Forest Types & Harvest History

Forests with varying composition in terms of species, age, and density are able to respond with more resilience to catastrophic events than monocultures. Most trees in unmanaged, overgrown forests are chronically short of much-needed nutrients, sunlight, and water, and are therefore constantly living in a stressed environment. Pre-stressed trees are much more susceptible to disease than their healthy counterparts growing in a well-spaced, healthy forest. Forests are broken down into management units called stands, which are areas of trees with similar species composition, size, and frequency of occurrence. This property consists of white pine-based stands and wetland areas. The white pine areas are either almost completely white pine, or a white pine and hardwood

mix. Little forest management has taken place on this site for quite some time, and the forest is fairly dense. The soils appear to grow white pine well on this site, and thus the best ways to prevent disease outbreaks are to vary the age classes of the stands as well as allow the trees to grow with healthy spacing, as opposed to the crowded conditions they are currently facing. This property, despite the high stocking of sawtimber softwoods, has a high amount of exceptional white pine regeneration found growing on the forest floor. This regeneration will likely explode in growth as soon as a harvest takes place and the saplings are able to get the sunlight they need in order to mature into healthy, pole-sized trees.

Although no relevant information is currently available about the harvest history of this property, the numerous stone walls found throughout the property indicate that this land was at one time used for agriculture, most likely pasturing animals between the mid-1800s into the early 1900s.

Soils, Terrain, & Hydrology

Forests are essential for preventing erosion of existing soil and maintaining clean water. One of the qualities that make this woodlot so important is the fact that it is so close to a number of different wetland areas and streams, as well as at least two vernal pools found within the property. Two perennial streams flow across this property. One is located in the northwest corner, flowing in a southerly direction. The other stream is associated with the wetlands along the southern and eastern boundaries, with the stream flowing east and then north.

Riparian and wetland areas are the places that open water and upland sites meet. A riparian zone is the general term for the area where water and land meet, whereas a wetland is an area in a riparian zone that specifically has hydric, or wet, soils as well as vegetation that grows on that type of soil. Riparian areas are important for a number of reasons. They offer critical habitat for many wildlife species, providing shelter, food, water, and travel corridors. They are also very useful for flood control by acting as a sponge during times of high water volume, and then releasing that water slowly and consistently over time. Without wetlands, streams would fluctuate greatly between periods of high flow and dry streambeds. Finally, riparian areas are key for filtering water as it travels from upland sites to the open water, keeping out many chemical impurities and keeping water silt-free.

Overall, the soils on this property are either well-drained or moderately well-drained, sandy, and appear to grow white pine and mixed oaks well, with the exception of the wetland areas. These areas of high water table have a number of exposed rocks (the smaller soil particles have been washed away with flowing water) and are loamier than the drier soils. There are also some vernal pools in hollows of the rolling terrain that hold water through most of the year. This rolling terrain slopes in all directions, never with more than 15% slopes. Most of the property generally slopes to the north.

Wildlife

Biological diversity can be described as the variety of plants and animals located in a given tract of land or landscape and the communities that are formed by that variety of species. Two of the biggest threats to biological diversity today are loss of habitat to

non-forest uses and invasive species. This property receives a fair amount of wildlife use for feeding, shelter, and nesting, mostly due to the varied habitats offered. The immediate transition between uplands and wetlands along the southern border, as well as the gradual transition found along the eastern boundary, provides diversity of habitats for both habitat specialists and habitat generalists. One of the key features for wildlife on this property is the presence of flowing water. The vernal pools located within the property are also quite beneficial to amphibians and various reptiles. The presence of such species also brings in a number of birds and predators, making these vernal pools a gathering place for a host of forest species. Deer use this relatively large area of forestland in this built-up area of Pelham around the pond. Finally, with the pond in mind, it may help to leave some large, poorly-formed white pines to grow into a “super-canopy” to provide nesting and perching trees for large raptors, due to the close proximity to Little Island Pond and Peters Pond.

Timber Cruise

A detailed timber cruise was completed on the property using about a 300’ by 300’ spacing, which yielded 11 plots of tree data. This data was used to tabulate the current tree growth on the property and the field notes made during this cruise helped to create the Stand Map in this management plan. A cruise is a statistical sample that is used to determine the volumes of various forest products growing on the property. This cruise generates volumes in terms of cords (for all trees 6-11” in diameter, or trees larger than 11” that are not suitable for sawtimber) and board feet (for trees 12” and greater in diameter that could be sold and sawn into boards). The diameter of a tree is measured at 4.5’ above the ground, which is an industry standard referred to as diameter at breast height (DBH). From this intensive cruise, a total of three stands are shown for this property. These stands will be the basis for the methodical analysis of the forest management plan, and are depicted on the following Stand Map.

Landowner Goals & Objectives

The Town of Pelham has been very proactive in protecting various areas around the town from development by keeping areas open for recreational use and maintaining areas of forestland for wildlife habitat. Many of these parcels are associated with wetland areas that benefit greatly from the forested buffer they have instead of having pavement and lawns in the riparian zones. The Town continues to educate citizens and developers alike, explaining the benefits of forested lands around built-up areas. The general goals of the Town can best be summed up with the key words of the New Hampshire Tree Farm System, of which the Town is a member: wood, water, wildlife, and recreation. The Town is interested in managing their woodlots for long-term, sustainable forest management. They are interested in generating periodic revenue from timber harvests that encourage quality wood growth on residual trees as well as encourage regeneration, in order to grow tomorrow’s forest beneath the forest of today. The Town owns many of their properties in order to protect sensitive wetland sites and waterways by maintaining a forested buffer between the open water and built-up areas. Because Pelham is a town with many people, the municipal officials recognize that families, individuals, and schoolchildren benefit from having wooded areas for walking and nature watching, as

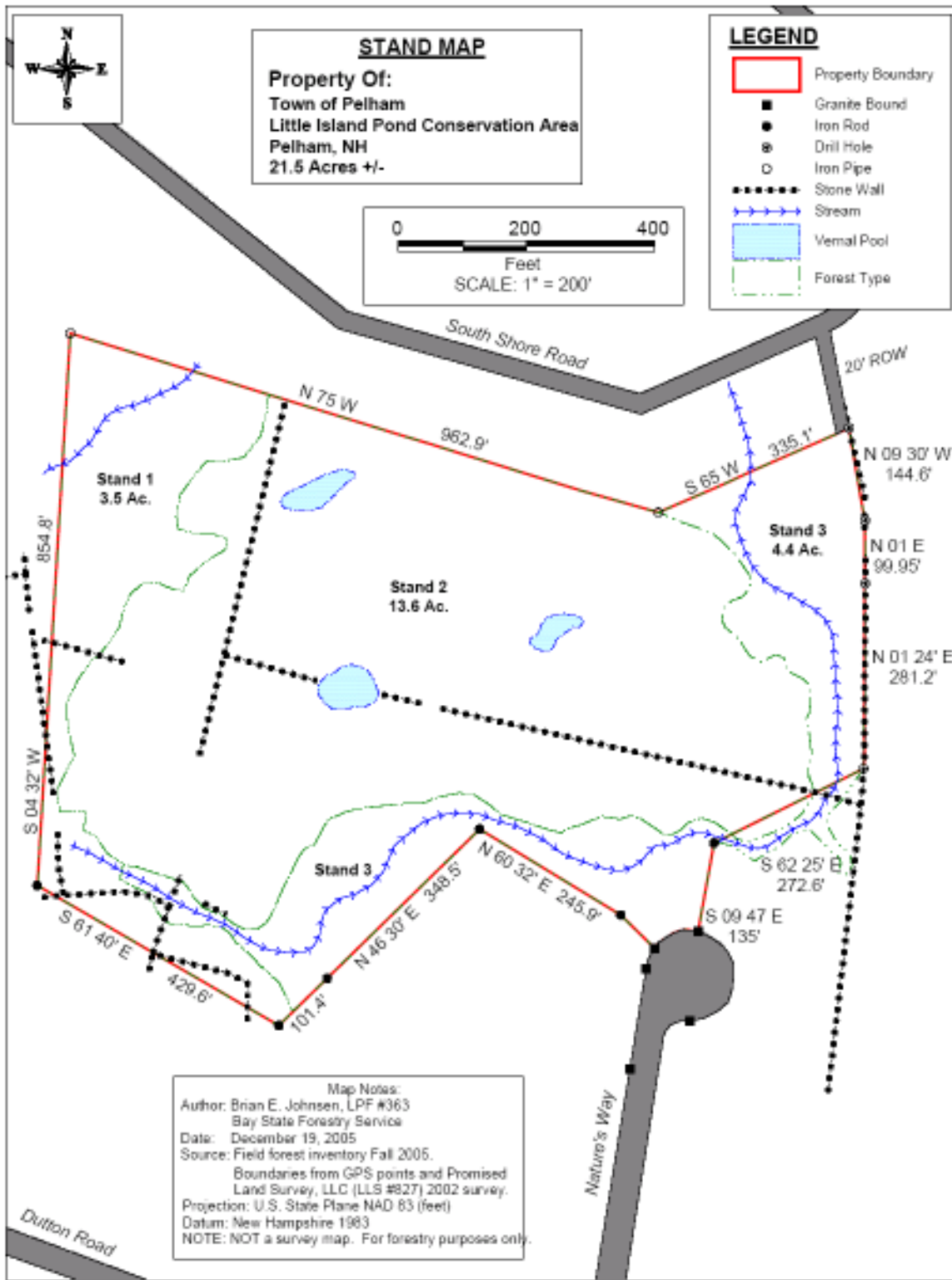
well as ballfields for playing sports. The Town hopes to keep these areas open to responsible recreation without compromising the other three goals. Finally, the Town recognizes that the native wildlife species of New Hampshire need areas for food, water, shelter, and raising young. To that end, these forests are kept as biologically diverse as possible while maintaining the other three goals as simultaneously as possible.

The goals for this specific property are to periodically thin the forest to gain some revenue over the years; maintain a trail system through the area for walking, biking, and non-motorized winter activities; maintain the integrity of the stream and wetland areas with no pollution, siltation, or alteration of the terrain; and provide a diversity of species with enough cover, food, and water so as not to lose species from living in this area of Pelham. Sound forest management will be able to meet most of these goals. Additional action may need to be taken to prevent 4-wheelers from further degradation of the wetland areas. This may be as simple as asking users of the property to help build temporary wooden crossings to keep the machines out of the mud and water, and installing rubber waterbars on the steeper sections of trails. This approach is probably better than simply posting signs that do not allow motorized vehicles on the property, since signs are generally ignored. The upland areas of this property are not adversely affected by 4-wheelers, for the most part, and so the most important issues would be to keep the machines away from the wet areas.









General Management Strategies

Timber – One of the main goals for this property is sound timber management in order to produce a periodic income. A list of management strategies on a stand-by-stand basis is discussed later in this plan.

Fish/Wildlife Habitat – Although some activities can manage for a specific plant or animal (species specialists), most forest management activity focuses on habitat generalists by managing for a diversity of species, protecting existing critical habitat, and enhancing existing habitat. Some large white pine snags will be left as den trees, raptor perches, and homes for cavity-dwelling species. Skid trails will be diverted around the vernal pools to keep the area as intact as possible. Some areas will be opened up to allow plenty of young hardwood and softwood regeneration to be established, providing a brushy habitat and offering tender browse for large herbivores.

Soil – Care will be taken to not harvest in mud season, when the ground is too soft, or on excessive slopes, to minimize rutting and erosion during harvest operations. Landings will be seeded with a conservation mix and limed at the conclusion of the job to stabilize the soil, and waterbars will be installed on skid trails where necessary.

Water Quality – Buffers will be left along streams and the wetland edge to avoid removing too many trees at once; this will provide soil stabilization along waterways and adequate shade. This shade will decrease water temperature and therefore increase the water's oxygen-holding capacity. The wetlands and streams will be left intact to keep the water clean and silt-free. Poled fords will be used when crossing smaller streams to further prevent siltation. Fueling of machines will not take place near the water's edge to prevent pollution. A bridge or other type of crossing will be constructed over the southern wetland for trucks to cross and a landing will be created in the upland, drier soils.

Wetlands – In order to preserve the integrity of more sensitive areas of this woodlot, wetlands will only be harvested under dry or frozen conditions, if at all.

Recreational Resources – The skid trails will provide a nice network of trails for recreational opportunities, both for walking and wildlife viewing. To this end, trails will be kept free of slash where possible.

Aesthetic Values – To maintain good aesthetics, logging operations will not rut up the soils and will cut up the tops so they lay close to the ground for rapid decay.

Cultural Features – Care will be taken to avoid breaching or breaking the stone walls during timber harvests unless no openings exist to allow the trees to be skidded to the landing. To accomplish this, loggers will use existing barways for skidding.

Forest Protection – The diversity of tree species does well to protect this property from a forest pest looking for a monoculture of timber. By keeping logging slash low to the ground, decay is speeded up; this prevents too much of a buildup of fuels as a fire hazard.

Threatened/Endangered Species and Unique Natural Communities – During all the walks through this forestland, no species were identified as either threatened or endangered. If at some time any flora or fauna are identified on this property as such, appropriate measures will be taken to prevent disturbing that species.

Forest Management Plan

Stand 1 – White Pine/Hardwood Sawtimber

Standing Volumes -- Stand 1		3.5 Acres	
Species	Average BA/acre (sq. ft./ac.)	Volume per acre (bd. ft./ac.)	Total Volume (bd. ft.)
White Pine	78	13,353	46,736
Red Maple	35	2,632	9,212
Poplar	7	686	2,401
Black Oak	3	358	1,253
Sawtimber Total:	123	17,029	59,602
		Cords/ac.	Total Cords
Cordwood	18	6.9	24
Softwood Pulp	9	3.9	14
Total BA/acre	150		

Description:

This stand, located along the western edge of this property, is comprised mostly of white pine sawtimber 14-20" in diameter along with some red maple and other hardwoods 8-16" in diameter. Regeneration is fairly good and consists of some red maple, white ash, and red oak 5-15' tall and up to 1" in diameter along with some very good patches of white pine saplings 4-10' tall. A stream flows through the northern corner of this stand, and along its banks the regeneration consists more of wetland hardwood shrubby growth. Soils are moderately well drained overall, somewhat rocky, and slope very gently with grades of only 2-5%. Access to this stand is good from Stand 2.

Recommendations:

This stand is overstocked and should be thinned in order to attain maximum growth on crop trees. This thinning should remove the weeviled white pines with multiple leaders, as well as the tall spindly pines that have been suppressed by healthier neighbors. This thinning will leave as many of the best hardwoods as possible, and will remove most of the crooked, deformed, and diseased hardwoods. Some of the largest-diameter white pines and red oaks will be removed in order to make room for the mid-sized sawtimber trees. The goal of this harvest is to allow sunlight and nutrients to reach more of the residual canopy, and thus increase the rate of diameter growth on the remaining crop trees. This harvest operation will also allow more sunlight to reach the forest floor, allowing the sun-starved advance regeneration a chance to flourish. This harvest will only take place under dry or frozen conditions, and should yield about 20 MBF of white pine sawtimber along with 20 cords of cordwood, leaving a residual basal area of 75-95 square feet per acre.

Stand 2 – White Pine & Mixed Oak Sawtimber

Standing Volumes -- Stand 2		13.6 Acres	
Species	Average BA/acre (sq. ft./ac.)	Volume per acre (bd. ft./ac.)	Total Volume (bd. ft.)
White Pine	60	10,331	140,502
Black Oak	20	2,210	30,056
Red Oak	16	1,844	25,078
Red Maple	14	765	10,404
White Ash	2	237	3,223
White Oak	2	159	2,162
Sawtimber Total:	114	15,546	211,426
		Cords/ac.	Total Cords
Cordwood	25	7.4	101
Softwood Pulp	5	1.8	24
Total BA/acre	144		

Description:

This stand, the largest on the property, is located in the center of the tract and is comprised of white pine 14-22” in diameter along with red and black oak sawtimber 12-18” in diameter. Red maple, white oak, and white ash 8-16” in diameter also contribute to the overstory canopy. Regeneration varies considerably across the stand, but consists mainly of red maple, white ash, black birch, and red oak saplings 6-15’ tall along with some areas of very good white pine regeneration ranging from 3-10’ tall. Overall, soils are moderately well drained to well-drained, with small pockets of poorly drained soils in vernal pools and small seepages. The ground is somewhat rocky in general, and slopes to the north with grades of 2-5%. Access to this stand will come from the cul-de-sac at the end of Nature’s Way. This access remains to be built, and will need to cross the wetland of Stand 3 at the narrowest point off of Nature’s Way.

Recommendations:

This stand is overstocked and should be thinned in order to attain maximum growth on crop trees. This thinning should remove the weeviled white pines with multiple leaders, as well as the tall spindly pines that have been suppressed by healthier neighbors. This thinning will leave as many of the best hardwoods as possible, and will remove most of the crooked, deformed, and diseased hardwoods. Some of the largest-diameter white pines and red oaks will be removed in order to make room for the mid-sized sawtimber trees. The goal of this harvest is to allow sunlight and nutrients to reach more of the residual canopy, and thus increase the rate of diameter growth on the remaining crop trees. This harvest operation will also allow more sunlight to reach the forest floor, allowing the sun-starved advance regeneration a chance to flourish. This harvest will only take place under dry or frozen conditions, and should yield about 50 MBF of white pine sawtimber, about 30 MBF of mixed oak sawtimber, and at least 60 cords of firewood, leaving a residual basal area of 80-100 square feet per acre.

Stand 3 – Red Maple Swamp

Standing Volumes -- Stand 3		4.4 Acres	
Species	Average BA/acre (sq. ft./ac.)	Volume per acre (bd. ft./ac.)	Total Volume (bd. ft.)
Red Maple	25	2,733	12,025
Yellow Birch	5	537	2,363
Misc. HW	5	514	2,262
Sawtimber Total:	35	3,784	16,650
		Cords/ac.	Total Cords
Cordwood	60	13.3	59
Softwood Pulp	5	1.5	7
Total BA/acre	100		

Description:

This stand is actually broken geographically by the boundary line, but is one continuous wetland flowage from the southwest to the northeast of the property. The wetland has small stream channels connecting the flatter poorly-drained areas. Soils are very poorly drained and are generally covered with surface water. The overstory consists of some poor-quality red maple, along with yellow birch and white ash, 4-16” in diameter. Regeneration consists of wetland hardwood shrubs as well as some white ash and red maple saplings up to 10’ tall. This stand should not be considered accessible by common harvesting practices.

Recommendations:

This wet area should remain in its natural state. Some trees may be removed along the edges of this stand as long as machinery does not impact the wet soils. Wooden crossings should be built along 4-wheeler trails to keep recreational motorized vehicles out of the mud.

Management Schedule

2005

- Prepare the forest management plan.
- Blaze and paint identifiable boundary lines.

2006-07

- Conduct a conventional timber harvest in harvestable areas.
- Seed and lime the landing at the conclusion of the timber harvest.
- Address recreational issues (hunting, hiking, etc.) to protect wetland areas.

2006-15

- Consider pruning 6-10” healthy white pines following the harvest.
- Monitor the woodlot for wind damage, ice damage, fire, or disease and take appropriate corrective actions as needed to ensure the continued health of this forest block.
- Re-assess the woodlot in 10 years and write a new 10-year management plan, specifically looking at another harvest midway through the next management period.
- (Recommended Item) Make this property available for Project Learning Tree excursions for the local schools.

Concluding Remarks

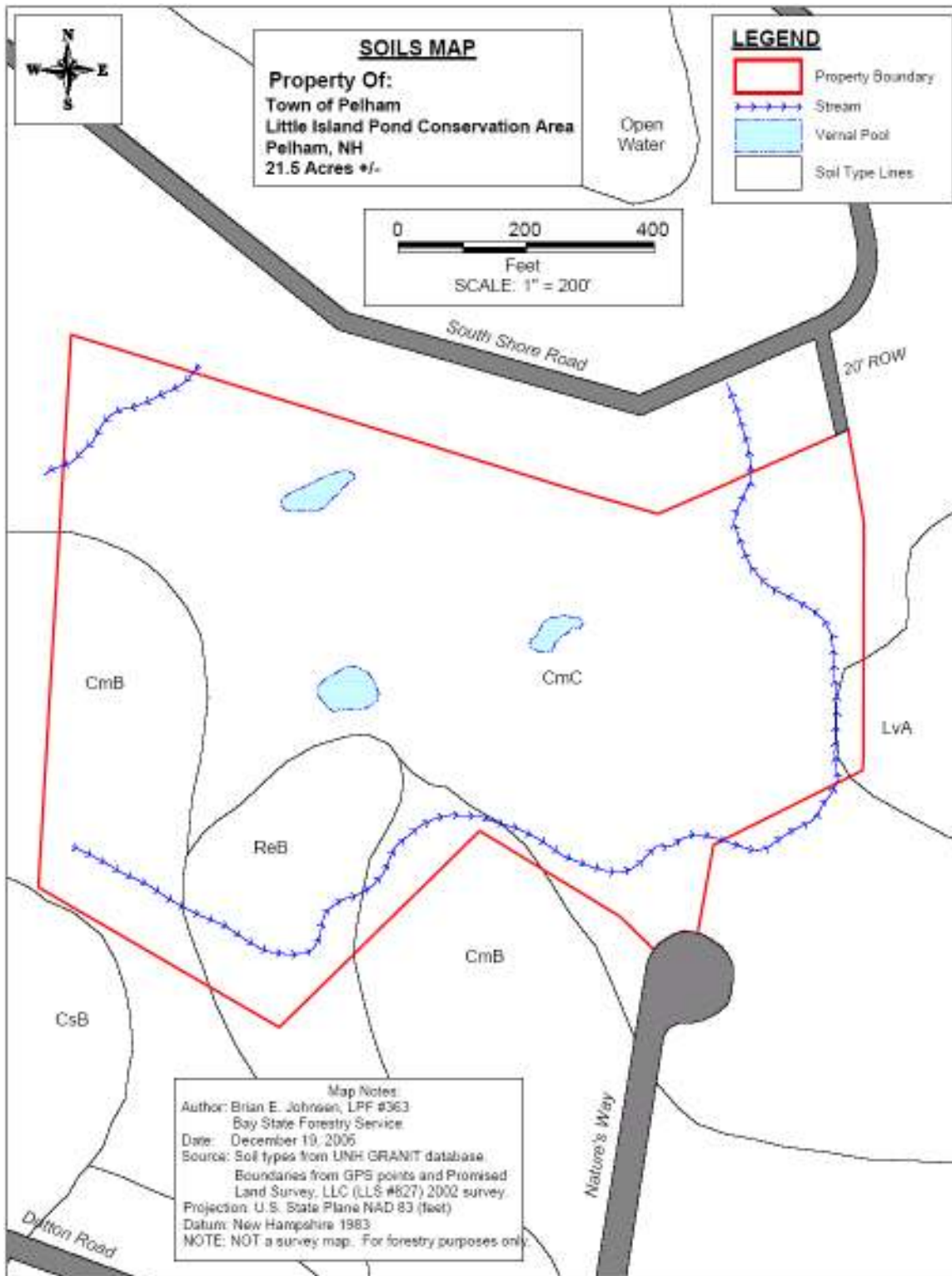
The recommendations proposed in this 10-year management plan should be implemented within the next 10 years, although timing will depend on landowner priorities, market conditions, and environmental conditions such as pest outbreaks and weather. Through sound silvicultural practices and using best management practices (BMP's), mature, diseased, and defective trees will be harvested to allow residual trees to grow in their place. This forest should be monitored for pest outbreaks and destructive weather events; corrective action should be taken as needed over the next 10 years in response to any such events. These recommendations are silviculturally and operationally sound and should result in meeting the landowners' objectives for their woodlot. Implementing these recommendations will help ensure that this forestland is being managed with long-term sustainability in mind.

Respectfully Submitted,

Brian E. Johnsen, Consulting Forester
N.H. License #363

Appendix A.

SOILS INFORMATION



Hillsborough County Soils Profiles

- CmB – Canton stony fine sandy loam, 3-8% slopes
Suitability for growing wetland plants for wildlife habitat – Very poor.
Suitability for growing coniferous and hardwood trees – Good.
Suitability for area as habitat for wetland wildlife – Very poor.
Suitability for area as habitat for woodland wildlife – Good.
Suitability for area as habitat for openland wildlife – Poor.
Has a good site index (greater than 60) for red pine.
Has only slight erosion hazard and slight windthrow hazard.
Well-drained, moderate permeability, low productivity as forestland.
- CmC – Canton stony fine sandy loam, 8-15% slopes
Suitability for growing wetland plants for wildlife habitat – Very poor.
Suitability for growing coniferous and hardwood trees – Good.
Suitability for area as habitat for wetland wildlife – Very poor.
Suitability for area as habitat for woodland wildlife – Good.
Suitability for area as habitat for openland wildlife – Poor.
Has a good site index (greater than 60) for red pine.
Has only slight erosion hazard and slight windthrow hazard.
Well-drained, moderate permeability, low productivity as forestland, steep slopes can limit logging.
- CsB – Chatfield-Hollis complex, 3-8% slopes
Suitability for growing wetland plants for wildlife habitat – Poor.
Suitability for growing coniferous and hardwood trees – Fair.
Suitability for area as habitat for wetland wildlife – Very poor.
Suitability for area as habitat for woodland wildlife – Fair.
Suitability for area as habitat for openland wildlife – Good.
Has a good site index (greater than 60) for sugar maple, white ash, red oak, white pine.
Has only slight erosion hazard and slight windthrow hazard.
Well-drained, granite bedrock within 2', high permeability, high drought susceptibility, moderately productive as forestland.
- LvA – Leicester-Walpole complex stony, 0-3% slopes
Suitability for growing wetland plants for wildlife habitat – Good.
Suitability for growing coniferous plants – Fair.
Suitability for area as habitat for wetland wildlife – Good.
Suitability for area as habitat for woodland wildlife – Fair.
Has a good site index (greater than 60) for eastern white pine and red maple.
Has only slight erosion hazard and severe windthrow hazard.
Often poorly drained, seasonal high water table limits tree species and operability.
- ReB – Ridgebury stone loam, 3-8% slopes
Suitability for growing wetland plants for wildlife habitat – Poor.
Suitability for growing coniferous and hardwood trees – Fair.
Suitability for area as habitat for wetland wildlife – Very poor.
Suitability for area as habitat for woodland wildlife – Fair.
Suitability for area as habitat for openland wildlife – Fair.
Has a good site index (greater than 60) for eastern white pine.
Has only slight erosion hazard and severe windthrow hazard.
Poorly-drained, hardpan 1-2' below surface slows permeability and limits root depth, seasonal high water table limits tree species and operability, moderate productivity for water-tolerant species such as red maple.