# Forest Stewardship Plan

(10-Year Planning Period)

Town of Pelham, NH
Spring Street Town Forest
44+/- Acres
July 23, 2010

Brian E. Johnsen
NH LPF #363
38 Chevey Hill Rd.
Weare, NH 03281
(603) 731-9325

**Property Owners:** Town of Pelham
**Location:** Spring Street Town Forest, Pelham, NH
**Total Acreage:** 44 +/- Acres[1]
**Map/Lot Numbers:** Map 31, Block 11-26 and 12-42
**Date Prepared:** July 23, 2010

## General Description of the Property

This small area of mixedwood forestland is located in southcentral Pelham, east of Little Island Pond, on both sides of the curve in Spring Street. This parcel is in close proximity to Little Island Pond Realty Trust, Doreen Drive Town Forest, and the Town Forestland known as the Quarry Lots. This woodlot is located in the middle of all of these lots, and thus serves as a forested center, a "hub" if you will, from which wildlife can travel to the outlying lots. As one of the last chunks of forestland in the midst of many new developments, this parcel has particularly high value both for recreational use by those living in the area (having "green" space available to them to balance a life full of asphalt and manicured lawns), as well as wildlife populations that have found less and less room in which to live and breed. Despite some ATV usage, much of this property is in a fairly undisturbed condition in terms of wildlife. Since very little forest management has taken place in this area in recent years, the timber is generally of good size. A nice stream can be found flowing through this property along the northeastern side of Spring Street. This property also boasts a few old quarries from which surface granite had been mined in years past.

### Boundaries

Many of the boundaries around this property were located using abutting surveys, and thus a number of points on line were discernible. The westernmost 6.9-acre parcel across Spring Street has no discernible boundary lines at all, and will need to be surveyed to establish corner bounds and identify the side lines. For the main parcel tucked in the curve on the northeast side of Spring Street, most of the lines are in good shape and have been blazed and painted with red paint in the summer of 2010.

The property begins at the southern end of Lannan Drive at a granite bound on the west side of the road, on the hillside. The line head west to a point, then runs northerly for quite some distance behind all the houselots on Lannan.

This easterly line behind the houselots is spotty with evidence; some back corner bounds have been located for some of these houselots, but not all of them. Although the boundary is a straight line, some of this line has not been blazed until all the corner bounds have been located, which may require a surveyor. This line ends a stone pile, which was located, and then turns southwest just south of the Shepard Road cul-de-sac.

All the iron rods were located along this line, and this line has been well blazed. The line ends at a drill hole in the end of a stone wall, and then turns southeast.

[1] This acreage figure was ascertained using GPS field data and the latest GIS aerial photography available from state databases, and may or may not match the Assessor's data exactly. Based on estimated boundary lines, which are not entirely clear without a detailed survey map.

Most of the iron pipes along this line (the rear corner bounds of houselots on Spring Street) were located and this line has been well-blazed. The line ends at a series of granite bounds with iron rods next to them, and then turns west toward Spring Street.

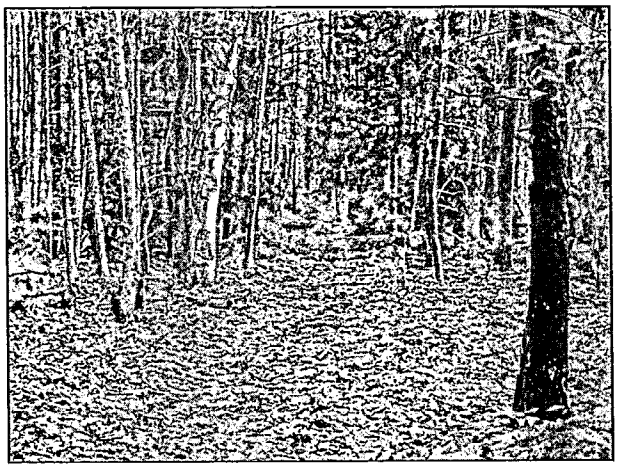
This line was difficult to put in because of missing monumentation on line and near the road. It appears to this forester's eye that the neighbor with the granite bounds making the corner of this parcel have a woodshed on Town property, and have been doing some dumping on Town land, which should be addressed.

The only other part of the boundaries that pertain to this parcel is the very small outlot at the southern tip of the property, located just east of the curve in Spring Street. Although it seems this line is a continuation of the boundary line across the street, no monumentation was found, and so this small chunk was only flagged, not blazed. A surveyor would need to located these boundaries permanently.

**Access**

This property has access to paved roads all along the southern side of the main parcel, and all along the eastern side of the small parcel. There is already an access point for the main parcel located in the southeastern corner of the property, although the hill is fairly steep and might be difficult for forest harvesting trucks. A better landing might be located further to the west along Spring Street.

The smaller western parcel, on the other hand, has good, gentle access to Spring Street and a landing could be built anywhere, although the most logical place to put it would be the southeastern corner, where the property is widest. Caution would be in order to be sure to place the access point at a place along the road that is not hidden from oncoming traffic.



Interior access to these parcels is fair: the smaller piece of woodland west of Spring Street has only the current ATV trail running near the southern boundary line, although it is currently located in a rather wet area and should probably be relocated to prevent damage to wetlands on the adjacent property to the west. The main parcel has a few trails running through the southern part of the property, with one main trail also heading northerly off the property near where Lannan and Shepard meet. This trail is a good route for the most part, although a couple sections should be relocated to keep the trail out of existing stream flows, both to protect the water quality and to prevent erosion on the trail.

The proposed landing could potentially be upgraded into temporary parking area (when not in use for logging) with a property map and a sign urging recreational users to self-police trash dumping and other such unsightly habits. The trail system could be upgraded and expanded to incorporate other areas of the forest, and given waterbars on steeper slopes; such a project could be undertaken by a local Eagle Scout, as has been done in the past on Town lands.

## 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 particular property has very little specific harvest history, lacking stone walls and old fencing. However, the presence of old quarries does suggest human intervention at some time in the past, which would have necessitated clearing trees and building cart roads to pull out the granite chunks. This land may have also been pastured during the days when wool was king in this area. When the pastures were abandoned, white pine grew in and the area was forested again. Subsequent cutting removed the white pine from some areas, and the open environment allowed red oak to seed in and become established in direct sunlight. The oldest trees on this property are likely 80-100 years old, although most are younger. Most of this land has not been harvested in the past 40 years. Overall, the forest is healthy and growing well, although it is overcrowded and growth is beginning to stagnate due to lack of nutrients and sunlight.

In qualitative terms, this property can be broken up into five distinct stands, with dry upland stand of oak mixed with pine in the northeast, a slightly smaller stand of pint and oak timber in the center, and a narrow band of wetter red maple area along the southwestern edge of the main parcel, along Spring Street. The area across Spring Street is a mixture of oak and white pine sawtimber, with the pine grouped in small clumps and a few isolated stems dotted throughout the rest of the forest. All of these stands have a much higher percentage of black oak, mostly due to soil composition and moisture, although some amount of ratio-adjustment could take place through selective management. The property is completed by a very small clearing in the eastern corner of the main parcel.

The approximated property area is growing about 450 MBF (thousand board feet) of timber and about 300 cords of hardwood and softwood pulp. White pine clearly is the dominant species in terms of volume, accounting for more than 60% of the standing timber volume (nearly 300 MBF of timber). Black is the second-most plentiful species (in terms of volume) making up 20% of the total standing volume or 90 MBF. Red oak makes up 10% of the standing volume, about 45 MBF, white oak makes less than 5% of the volume with 16 MBF, and there is a small amount of red maple. More details on the timber cruise are available below, and a complete summary is available on Page 6.

## Soils, Terrain, & Hydrology

Forests are essential for preventing erosion of existing soil and maintaining clean water. 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 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 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.

This property accepts the runoff from the higher-elevation lands to the north, which is mostly houselots at this point, and a long-standing stream channel flows along the eastern side of Spring Street through this property as well. The drainage collects into a stream channels that collect into a main body and flow south under Spring Street toward Peters Pond.

Soils on this property vary somewhat, from very well-drained upland soils with to rather poorly-drained soils with standing water in the stream channel. Most of the mixed wood areas have very well-drained soils which are rocky and seem to be drought-prone. Appendix A handles the soil types found on this property in depth. Drainage on this property tends to be towards the west.

This property has gently rolling terrain in most areas, and generally the land slopes to the south, with few areas that will present any challenge for timber harvesting.

**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. This property has specific value for wildlife because of the presence of trees producing hard mast (acorns). While this fact does not single out this parcel as particularly unique, neither in Pelham nor in the surrounding parcels, it can be noted that this parcel maintaining a forested cover is essential to maintaining a corner of "green space" in this developed part of Pelham.

Two of the biggest threats to biological diversity today are loss of habitat to non-forest uses and invasive species. Neither of these threats is of any particular concern for this parcel, although it will provide valuable open space for forest-dwellers that may be displaced from the properties to the north and east. Overall, this property provides a very important role in offering forested habitat between housing developments.

**Timber Cruise**

A detailed timber cruise was completed on the property yielding 15 plots of tree data across the breadth of the parcel. This data was used to tabulate the current tree growth on the property and the field notes made during this cruise helped to create many of the maps 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, it was determined that the property could be broken down into five distinct stands. Stands are areas of trees with similar species composition, size, and frequency of occurrence.

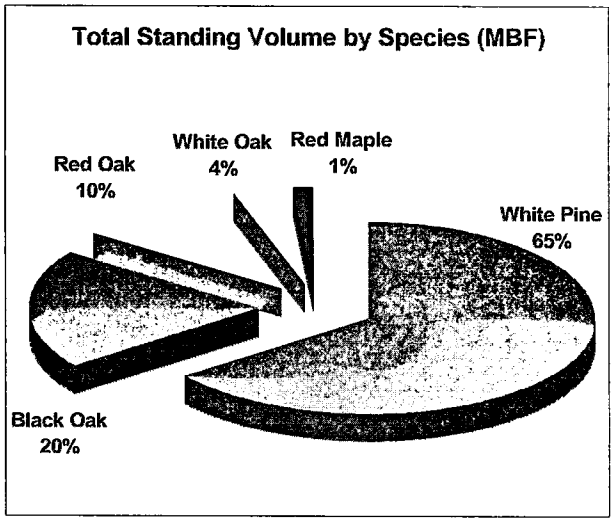
## Landowner Goals & Objectives

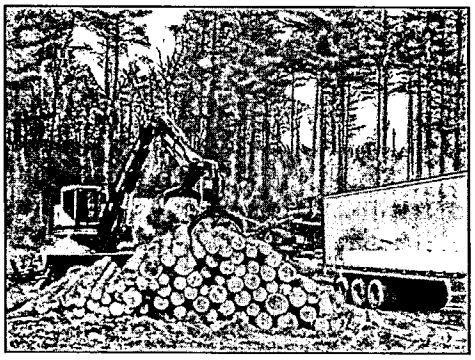
The Town of Pelham has been very proactive in protecting various areas around the town from development by keeping areas open for recreational use and maintaining areas of forestland for wildlife habitat and timber production. Many of these parcels are associated with wetland areas that benefit greatly 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. 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 other activities; maintain this block of land as a forested buffer between housing developments surrounding Little Island Pond; 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. This forest should be managed under the sound, proven management of field forestry professionals to help thin out the forest, increasing the growth rate on quality trees currently found here as well as encouraging more mast production and understory browse for wildlife food.

## Forest Products Summary Table for All Stands
### Town of Pelham
### Spring Street Town Forest
### Total Acreage: 44 +/- acres

| Species | Board Feet |
|---|---|
| White Pine | 294,488 |
| Black Oak | 90,848 |
| Red Oak | 47,782 |
| White Oak | 16,307 |
| Red Maple | 5,850 |
| **Total Sawtimber** | **455,276**[2] |
| Hardwood Cordwood | 262 Cords |
| Softwood Pulpwood | 52 Cords |
| **Total Cordwood** | **314 Cords**[3] |

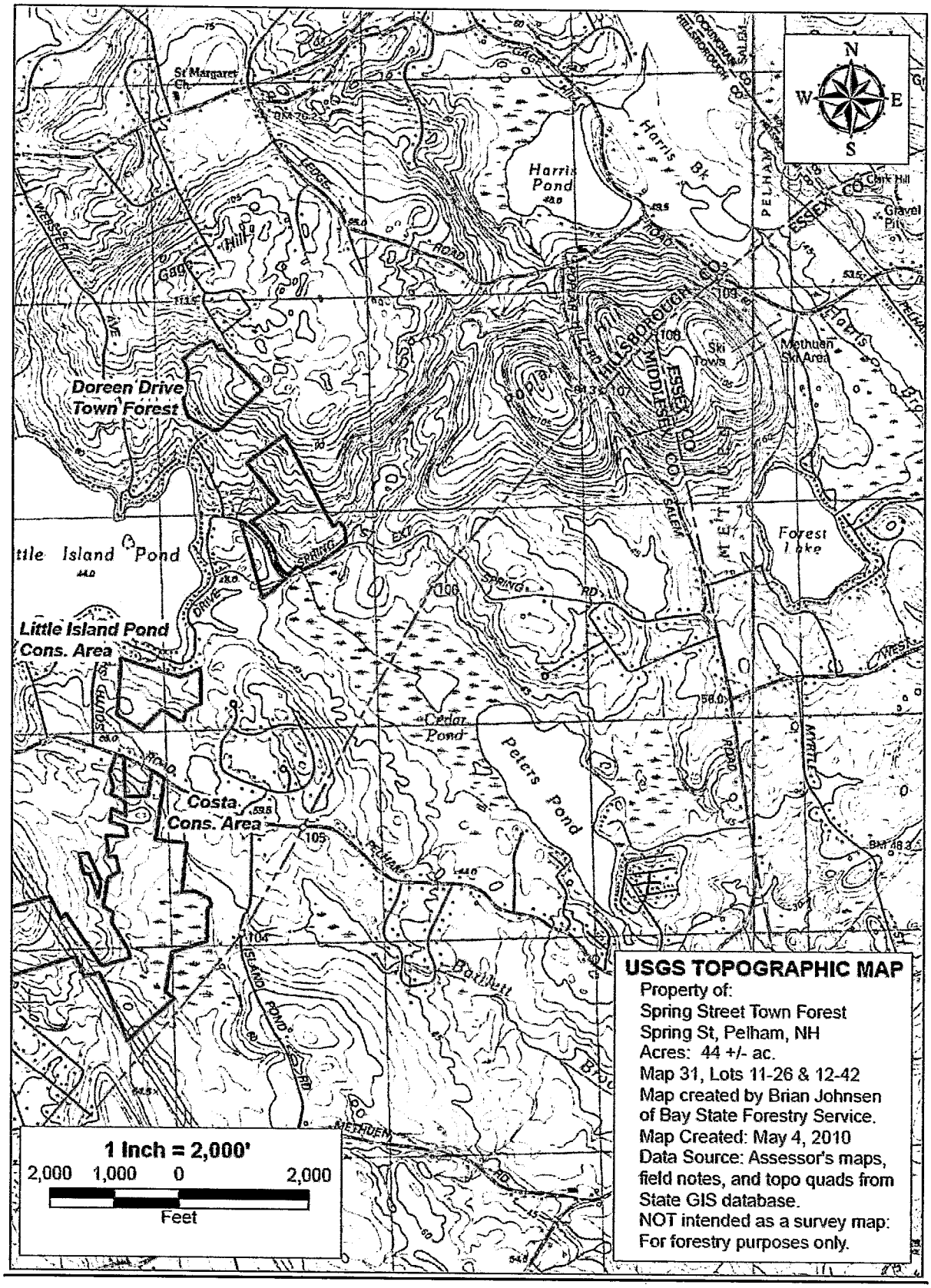


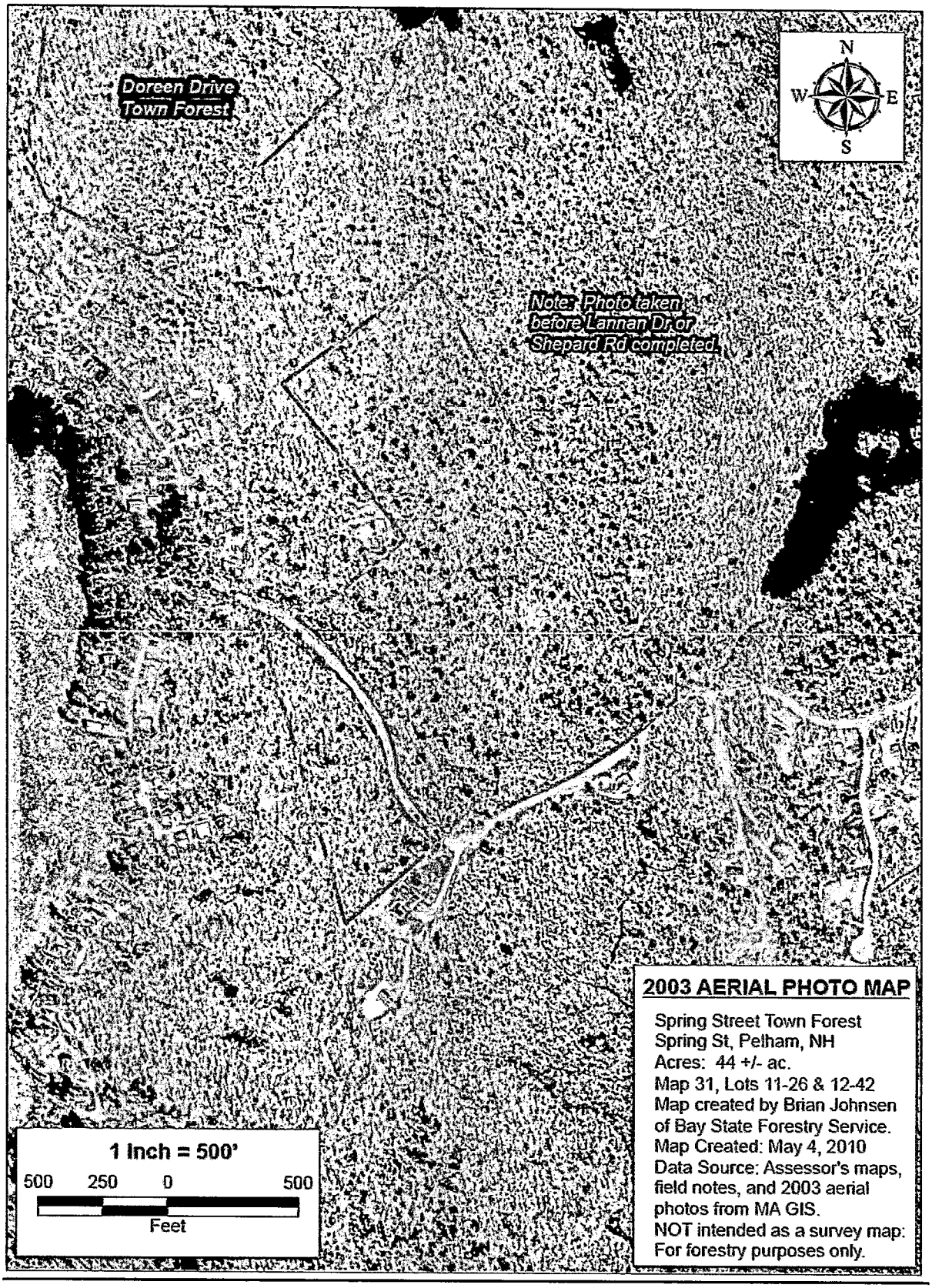



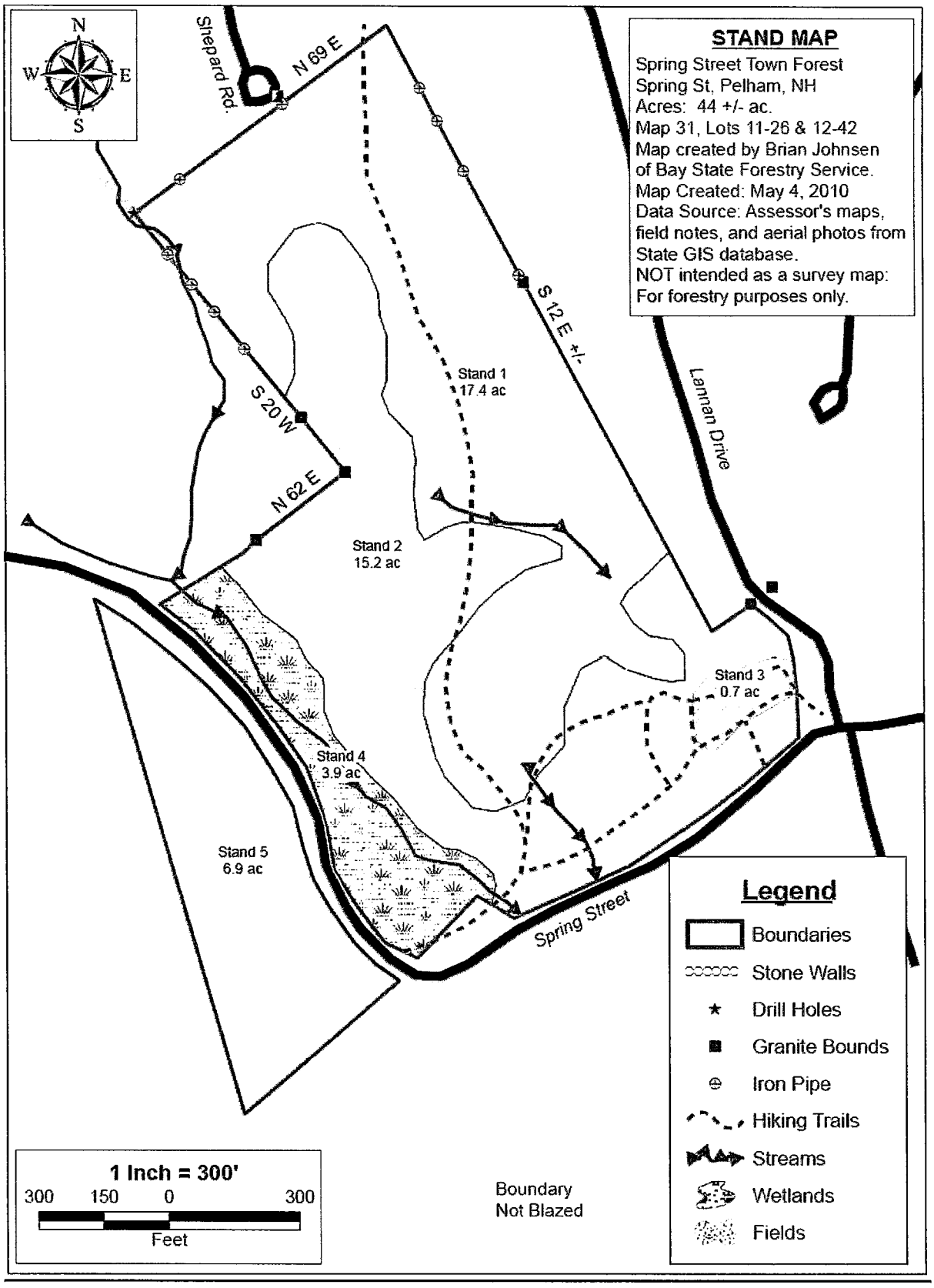
A basal area factor 10 prism was used to conduct the inventory sample. A total of 15 plots, distributed across the entire property, were taken to arrive at this cruise summary.

[2] This sawtimber total represents all the trees of sawtimber quality 12 inches and greater in diameter found in this block. In order to capture this total volume, all trees of this specification would have to be harvested.

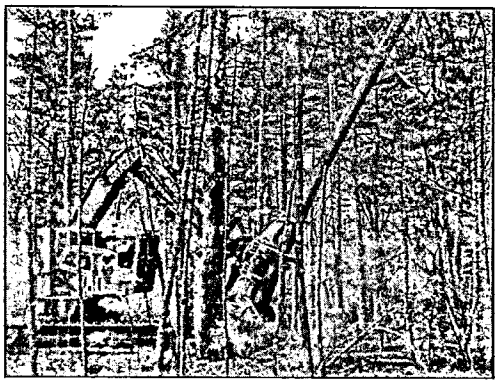
[3] These cordwood totals, both softwood and hardwood, represent all the standing trees with diameters of 6-11.9 inches found in this block, as well as trees of larger diameters that do not meet sawtimber quality specifications. In order to capture this total volume, all trees of this specification would have to be harvested.


N
W
E
S
Doreen Drive
Town Forest
Little Island Pond
Cons. Area
Costa
Cons. Area
Harris Pond
Cedar Pond
Peters Pond
Forest Lake
Methuen Ski Area
Ski Town
Gravel Pit
Clark Hill
St Margaret Ch
1 Inch = 2,000'
2,000 1,000 0 2,000
Feet
USGS TOPOGRAPHIC MAP
Property of:
Spring Street Town Forest
Spring St, Pelham, NH
Acres: 44 +/- ac.
Map 31, Lots 11-26 & 12-42
Map created by Brian Johnsen
of Bay State Forestry Service.
Map Created: May 4, 2010
Data Source: Assessor's maps,
field notes, and topo quads from
State GIS database.
NOT intended as a survey map:
For forestry purposes only.


Doreen Drive
Town Forest
N
W
E
S
Note: Photo taken
before Lannan Dr or
Shepard Rd completed
1 Inch = 500'
500 250 0 500
Feet
2003 AERIAL PHOTO MAP
Spring Street Town Forest
Spring St, Pelham, NH
Acres: 44 +/- ac.
Map 31, Lots 11-26 & 12-42
Map created by Brian Johnsen
of Bay State Forestry Service.
Map Created: May 4, 2010
Data Source: Assessor's maps,
field notes, and 2003 aerial
photos from MA GIS.
NOT intended as a survey map:
For forestry purposes only.


STAND MAP
Spring Street Town Forest
Spring St, Pelham, NH
Acres: 44 +/- ac.
Map 31, Lots 11-26 & 12-42
Map created by Brian Johnsen
of Bay State Forestry Service.
Map Created: May 4, 2010
Data Source: Assessor's maps,
field notes, and aerial photos from
State GIS database.
NOT intended as a survey map:
For forestry purposes only.
N
W
E
S
Shepard Rd.
N 69 E
S 12 E +/-
Lannan Drive
S 20 W
N 62 E
Stand 1
17.4 ac
Stand 2
15.2 ac
Stand 3
0.7 ac
Stand 4
3.9 ac
Stand 5
6.9 ac
Spring Street
Legend
Boundaries
Stone Walls
Drill Holes
Granite Bounds
Iron Pipe
Hiking Trails
Streams
Wetlands
Fields
1 Inch = 300'
300 150 0 300
Feet
Boundary
Not Blazed

## 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. Keeping large browsers in mind, there will be some areas that are opened up to sunlight to encourage young growth on the forest floor. Harvesting methods will minimize damage to young saplings to provide food low to the ground. Some large mast trees (oaks) will be maintained despite poor quality as lumber as a food source for small mammals; their presence will, in turn, help to feed the raptor population that frequents this area for food.

**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 located in appropriate areas on the parcel and 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. All these erosion controls will not prevent erosion, however, if OHRV's are not controlled. The Town will need to decide the best way the handle this situation.

**Water Quality** – Buffers will be left along streams and the wetland edges 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 steams will be left intact to keep the water clean and silt-free. Poled fords will be used when crossing smaller steams to further prevent siltation. Fueling of machines will not take place near the water's edge to prevent pollution.

**Wetlands** – During harvest operations, care will be taken to protect the riparian zone around the stream running down the eastern side of Spring Street. Harvesting may remove some trees from the edge of this wetland, but no harvesting should take place in standing water. Trail building should take into account the potential for erosion and wildlife disturbances and avoid wet areas.

**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. A walking trail system could be designed and completed during this 10-year period, along with a temporary parking area and kiosk describing the natural features of the Town Forest as well as the beneficial outcomes of timber harvesting. Access issues include building an access road and landing area for harvesting and emergency purposes.

**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. Logging crews may specifically leave high brush, rocks, and log barricades along trails that should be closed to OHRV's, but this should only be done intentionally if the Town decides which types of recreation are allowed.

**Cultural Features** – Care will be taken to avoid driving over old quarry-stone during harvests. Trail layout will avoid these areas if possible, based on BMPs.

**Forest Protection** – This forest would benefit from some more diversity, to prevent a forest pest looking for a monoculture. This diversity should be encouraged to the extent that appropriate trees are growing in appropriate soils and conditions. 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.

**Invasive Species Considerations** – During all the walks through this forestland, no species were identified as either exotic, invasive, or toxic. If at some time any species are identified on this property as such, appropriate measures will be taken to prevent the spread of that species.

# Forest Management Plan

**Stand 1 – Upland Oak Sawtimber with Pine**

| Standing Volumes -- Stand 1 | | | 17.4 Acres | |
|---|---|---|---|---|
| **Species** | **Average BA/acre (sq. ft./ac.)** | **Average Height (16' sticks)** | **Volume per acre (bd. ft./ac.)** | **Total Volume (bd. ft.)** |
| Black Oak | 25 | 1.0 | 1,875 | 32,625 |
| White Pine | 15 | 2.8 | 2,500 | 43,500 |
| White Oak | 10 | 1.0 | 750 | 13,050 |
| Red Oak | 8 | 1.2 | 625 | 10,875 |
| **Sawtimber Total:** | **58** | **1.5** | **5,750** | **100,050** |
| | | **8' sticks** | **Cords/ac.** | **Total Cords** |
| Cordwood | 35 | 3.1 | 7 | 122 |
| Softwood Pulp | 13 | 2.6 | 2 | 38 |
| **Total BA/acre** | **105** | | | |

Description:

This large stand, making up the northeastern half of the main parcel, consists of a mixed oak 8-18" in diameter along with scattered white pine 18-24" in diameter. The understory consists of mostly mixed oak poles along with a few suppressed 8-10" white pines. Regeneration varies through the stand, but generally is comprised of white oak, red oak, and red maple 2-10' tall along with patches of decent white pine saplings ranging from 3-8' tall to 10-20' tall and 1-2" in diameter, with low-bush blueberry on the forest floor. Soils are well-drained, rocky, and tend to be thinner and droughtier, resulting in a higher percentage of black oak in the overstory. The terrain slopes to the south with grades ranging from 5-10% up to 8-15%, with one area in the middle with slopes in excess of 25%, facing southwest. Overall, the slopes should not impede harvesting, except for on the very steepest of areas. Old stone quarries can be found in this stand, as well as a number of well-used deer trails, and the main ATV/hiking trail that runs generally north-south through this property. Some white pine blowdown was observed in this stand, a result of the storm this spring. Access to this stand will be fair coming out of a landing in Stand 2 or 3.

Recommendations:

This stand would benefit greatly from a sawtimber harvest that would remove some of the over-mature and crowded sawtimber, allowing more room for the codominant and intermediate trees of better vigor and form to grow and develop. This harvest would specifically target black oaks, since they appear to be dying out, as well as poorly-formed trees of all species. Some snaggy white pines may be left for seed, since the ground seems to grow white pine better than red oak. Such a harvest would remove some of the most mature timber, creating growing space for residual timber stock as well as providing sunlight on the forest floor to encourage growth from the advance regeneration found here. Such a harvest would remove about 20 MBF of timber (14 MBF of white pine & 6 MBF of black oak) and 50 cords, bringing the residual basal area down closer to 80 square feet per acre.

**Stand 2 –Mixed Oak/White Pine Sawtimber**

| Standing Volumes -- Stand 2 | | | 15.2 Acres | |
|---|---|---|---|---|
| Species | Average BA/acre (sq. ft./ac.) | Average Height (16' sticks) | Volume per acre (bd. ft./ac.) | Total Volume (bd. ft.) |
| White Pine | 76 | 3.5 | 14,964 | 227,457 |
| Black Oak | 26 | 1.1 | 2,071 | 31,486 |
| Red Oak | 16 | 1.0 | 1,214 | 18,457 |
| White Oak | 3 | 1.0 | 214 | 3,257 |
| **Sawtimber Total:** | **120** | **1.7** | **18,464** | **280,657** |
| | | **8' sticks** | **Cords/ac.** | **Total Cords** |
| Cordwood | 27 | 3.0 | 5.3 | 81 |
| Softwood Pulp | 3 | 5.5 | 0.9 | 14 |
| **Total BA/acre** | **150** | | | |

Description:

This stand, located south and west of Stand 1, consists mostly of white pine sawtimber 14-28" in diameter, mixed with some black oak 12-18" in diameter and some red oak 12-16" in diameter. The understory consists of some pole-sized mixed oak and yellow birch and white pines 8-10" in diameter, generally growing under the oak overstory. Regeneration is similar to that of Stand 1, with the addition of occasional hickory 10-30' tall scattered throughout the stand. Soils are generally moderately well-drained and slope to the south with grades of 4-10%. The black oak in this stand, as well as in Stand 1, is questionable, with many broken and rotted stems. Purple ladyslippers (not endangered) can be found throughout this stand under the white pine shade. Access to this stand is fair, given the easy terrain, although no formal access to this timber has been created as yet. However, parts of this stand that have gentler slopes are nearest the poor soils of Stand 4, which are not conducive to travelways or harvesting.

Recommendations:

This stand would benefit greatly from a sawtimber harvest that would remove some of the over-mature and crowded sawtimber, allowing more room for the codominant and intermediate trees of better vigor and form to grow and develop. This harvest would specifically target black oaks, since they appear to be dying out, as well as poorly-formed trees of all species. Such a harvest would remove some of the most mature timber, creating growing space for residual timber stock as well as providing sunlight on the forest floor to encourage growth from the advance regeneration found here. Such a harvest would remove about 100 MBF of timber, 90% of which would be white pine, as well as 20 cords of firewood, bringing the residual basal area down closer to 100 square feet per acre.

**Stand 3 – Open Field/Drainage Ditching (0.7 Acres)**

Description:

This tiny stand, located on the eastern side of the main parcel, appears to have been cleared as part of the development of Lannan Drive. This area grows grasses and is used almost exclusively by 4-wheelers driving in a loop on well-drained soils that do not appear to be suffering any damage from this motorized use. An access road has been built up from the corner of Lannan and Spring up to this site, which sits high on the hill.

Recommendations:

This stand is not growing any trees, but the grassy open nature of this area does not seem all that conducive to wildlife given the widespread use of motor vehicles here. Perhaps the area is used well at night by browsers, and it may be used during school hours during the day by turkeys, small mammals, and raptors. This area could be flattened off into a landing that would service this parcel, given that there is already a truck road leading up to it from a paved Town road. However, the slope of the access road may not be as accessible to harvesting trucks as other areas on the parcel. Conversely, this area is high and dry, and any other spot along Spring Street will be fairly wet, or need a culvert to cross the stream and place a landing in the interior of the woodlot. A closer look would be helpful during the painting phase of this job, but this spot could be a fairly good location for a landing.

If this area is to be changed from its current use by ATVs, it would probably make sense to let the users know of the Town's decision to change the use of this area. This way, open communication is expressed to those residents who are already using the land, instead of them being surprised by a sudden change of use. Furthermore, if a landing is built here, it will be difficult to maintain grass growing on the landing for erosion control, since the ATVs will likely come right back to doing doughnuts in the area.

**Stand 4 – Red Maple Wet Area**

| Standing Volumes -- Stand 4 | | | | 3.9 Acres |
|---|---|---|---|---|
| **Species** | **Average BA/acre (sq. ft./ac.)** | **Average Height (16' sticks)** | **Volume per acre (bd. ft./ac.)** | **Total Volume (bd. ft.)** |
| Red Maple | 20 | 1.0 | 1,500 | 5,850 |
| White Pine | 10 | 2.5 | 1,500 | 5,850 |
| Red Oak | 10 | 1.0 | 750 | 2,925 |
| **Sawtimber Total:** | **40** | **1.5** | **3,750** | **14,625** |
| | | **8' sticks** | **Cords/ac.** | **Total Cords** |
| Cordwood | 40 | 2.0 | 5.7 | 22 |
| **Total BA/acre** | **80** | | | |

Description:

This stand, lying in a strip along the eastern side of Spring Street (western edge of the main parcel), is a wet stand of scattered elm and red maple 6-14" in diameter growing on hummocks in standing water. The stand is fairly open, with skunk cabbage, alders, and yellow and black birch saplings 1-2" in diameter. Some larger white pine and red oak 18-28" in diameter grows on the edges of this stand, and may be accessible from Stand 2. Soils are quite poor and the land slopes slightly to the south. A stream channel meanders through the interior of this stand, carrying water from the north down into a defined channel that flows south under Spring Street. While this stand is not productive from a timber production point of view, it is an excellent source of food and water for numerous wildlife species, and raises the biodiversity of the rest of this property tenfold. This stand should not be considered accessible for conventional forestry operations.

Recommendations:

As indicated, this should not be considered harvestable. Large trees on the sides of the stand may be cut and pulled back from the wetland areas, although a few large snag pine trees should be left to provide raptors such as great horned owls with perches on the edge of the wetland area, as they watch for prey from below. The strip of land between the edge of the pavement on Spring Street and the wetland should be made as much of a filter strip and buffer as possible, to keep heavy metals, petroleum products, and salt out of the water.

## Stand 5 – Oak/White Pine Upland Small Sawtimber

| Standing Volumes -- Stand 5 | | | 6.9 Acres | |
|---|---|---|---|---|
| Species | Average BA/acre (sq. ft./ac.) | Average Height (16' sticks) | Volume per acre (bd. ft./ac.) | Total Volume (bd. ft.) |
| Black Oak | 43 | 1.3 | 3,875 | 26,738 |
| Red Oak | 28 | 1.1 | 2,250 | 15,525 |
| White Pine | 13 | 3.6 | 2,563 | 17,681 |
| **Sawtimber Total:** | **83** | **2.0** | **8,688** | **59,944** |
| | | **8' sticks** | **Cords/ac.** | **Total Cords** |
| Cordwood | 23 | 3.8 | 5.3 | 37 |
| **Total BA/acre** | **105** | | | |

Description:

This stand, located on the western side of Spring Street, is very similar to Stand 1 and consists of a mixed oak 8-18" in diameter along with scattered white pine 18-24" in diameter. The understory consists of mostly mixed oak and red maple poles along with a few suppressed 8-10" white pines. Regeneration varies through the stand, but generally is comprised of white oak, red oak, black birch, and red maple from 5-15' tall to 10-30' tall along with patches of decent white pine saplings 2-6' tall, with low-bush blueberry on the forest floor. Soils are well-drained, rocky, and tend to be thinner and droughtier, resulting in a higher percentage of black oak in the overstory. The terrain is gently rolling and slopes mainly to the east with grades ranging from 3-8% up to 10-15%. A well-used ATV trail runs through the southern area of this stand, from Spring Street to the abutters to the west. Access to this stand is very good coming off the western side of Spring Street, as long as visibility is maintained for cars using this road.

Recommendations:

This stand would benefit greatly from a sawtimber harvest that would remove some of the over-mature and crowded sawtimber, allowing more room for the codominant and intermediate trees of better vigor and form to grow and develop. This harvest would target black oaks, since they appear to be dying out, as well as poorly-formed trees of all species, in order to make more room for red oaks, since the ground seems capable of growing more red oak here. Some snaggy white pines may be left for seed, since the ground seems to grow white pine better than red oak. Such a harvest would remove some of the most mature timber, creating growing space for residual timber stock as well as providing sunlight on the forest floor to encourage growth from the advance regeneration found here. Such a harvest would remove about 10-15 MBF of pine and black oak timber and 10-15 cords of firewood, bringing the residual basal area down closer to 100 square feet per acre.

## Management Schedule

**2010**

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

**2010**

- Conduct a timber harvest in harvestable areas, using either biomass or conventional equipment. Seed and lime the landing at the conclusion of the timber harvest.
- Construct a parking area and kiosk in conjunction with the timber harvest.

**2010-20**

- 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.
- Address parking issues for trailheads, and trail creation and maintenance.
- Re-assess the woodlot in 10 years and write a new 10-year management plan, specifically looking at TSI potential and 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**

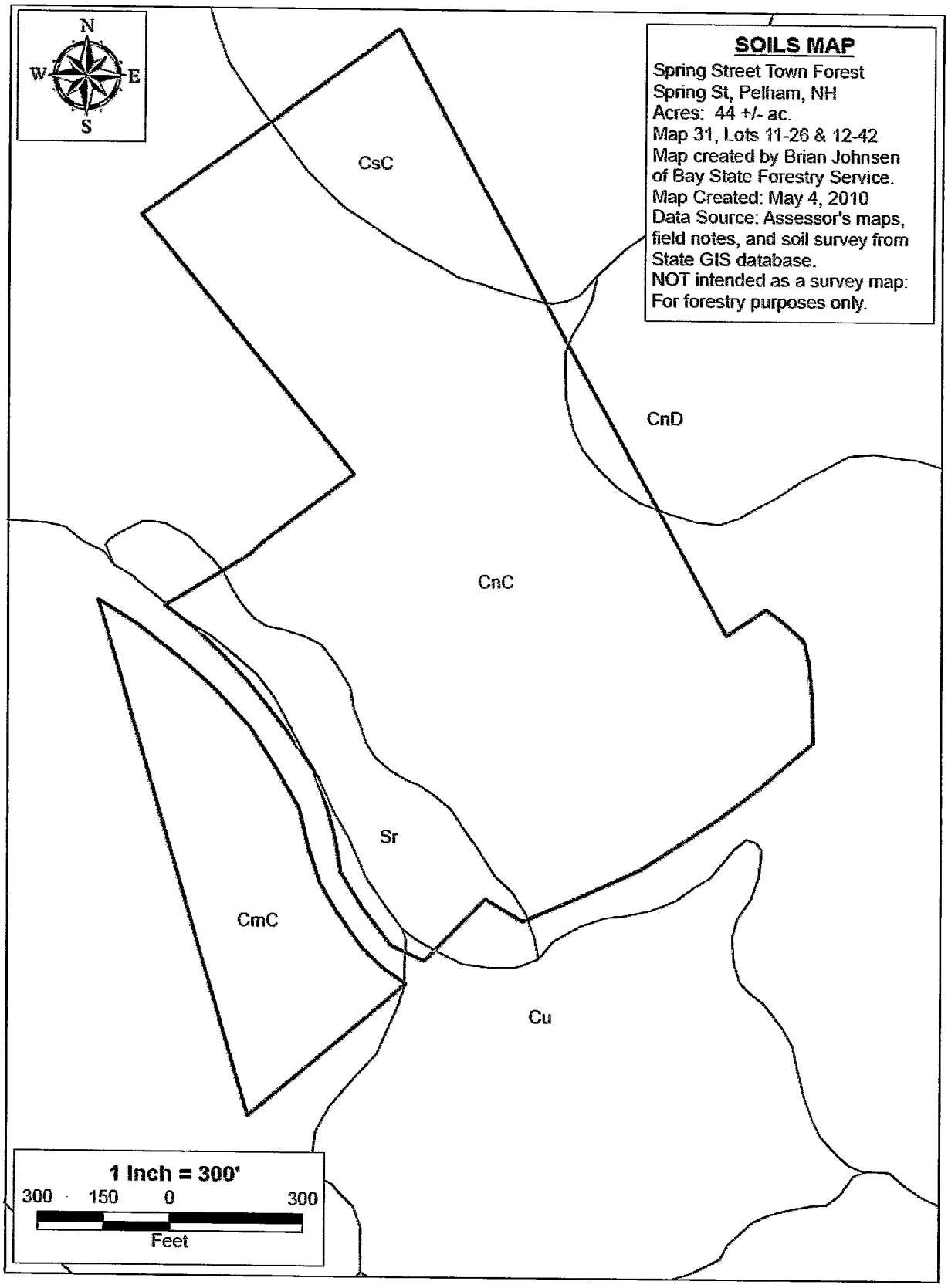
The recommendations proposed in this 10-year management plan should be implemented within the next 10 years, although timing will depend on landowner priorities, market conditions, and environmental conditions such as pest outbreaks and weather. Through sound silvicultural practices and using best management 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


N
W
E
S
SOILS MAP
Spring Street Town Forest
Spring St, Pelham, NH
Acres: 44 +/- ac.
Map 31, Lots 11-26 & 12-42
Map created by Brian Johnsen
of Bay State Forestry Service.
Map Created: May 4, 2010
Data Source: Assessor's maps,
field notes, and soil survey from
State GIS database.
NOT intended as a survey map:
For forestry purposes only.
CsC
CnD
CnC
Sr
CmC
Cu
1 Inch = 300'
300 150 0 300
Feet

# Hillsborough County Soils Profiles

CmC – Canton stony fine sandy loam, 8-15% slopes
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.

CnC – Canton very stony fine sandy loam, 8-15% slopes
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.

CnD – Canton very stony fine sandy loam, 15-25% slopes
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.

CsC – Chatfield-Hollis complex, 8-15% slopes
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.

Cu – Chocorua mucky peat
Suitability for growing wetland plants for wildlife habitat – Good.
Suitability for growing coniferous and hardwood trees –Very poor.
Suitability for area as habitat for wetland wildlife – Good.
Suitability for area as habitat for woodland wildlife – Very poor.
Poor suitability for trails, high windthrow hazard.
Very poorly-drained, thick organic layer, high water table, generally grows shrubs or red maple.

Sr – Scarboro stony mucky loamy sand
Suitability for growing wetland plants for wildlife habitat – Good.
Suitability for growing coniferous and hardwood trees –Poor.
Suitability for area as habitat for wetland wildlife – Fair.
Suitability for area as habitat for woodland wildlife – Poor.
Poor suitability for trails, high windthrow hazard.
Very poorly drained, rapid permeability, high water table, low productivity as forestland, high water table limits most logging, can grow eastern white cedar and red maple.