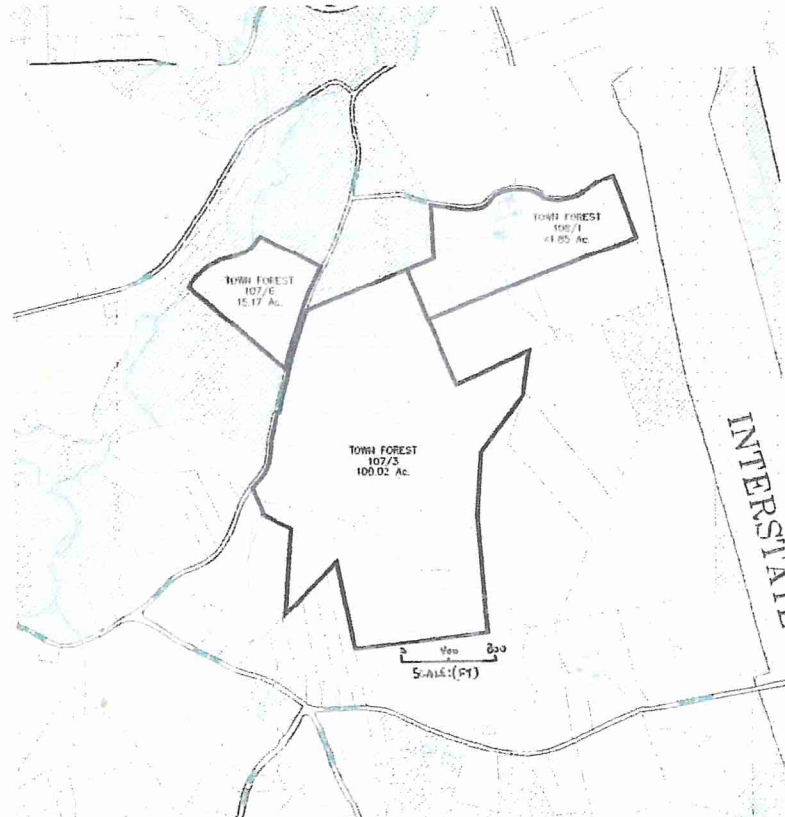


FOREST STEWARDSHIP PLAN HOLDEN TOWN FOREST Holden, MA



“Managing the Environment”

**Prepared by
Chestnut Forestry Services, Inc.
P.O. Box 78
Princeton, MA 01541
February 28, 2006**

Forest Stewardship Plan

History of the Holden Town Forest

The Holden Town Forest is located in the easterly portion of the town, on the south side of the Quinapoxet River, along Harris Street. It consists of three parcels of land acquired by the town between the years 1933 and 1971.

The first parcel acquired was in 1933, when George S. Graham of Holden donated 100.02 acres, described as "a certain tract of woodland on the road leading from Holden to West Boylston" to the Inhabitants of the Town of Holden. Earlier records show Edwin Conant deeded this same parcel of land to the Inhabitants of the Town of Sterling in 1884. It is not known how Mr. Graham gained possession of this property from the Town of Sterling.

The second parcel was acquired from the estate of Emory Bacon, of West Boylston, upon the settlement of his estate in 1943. (See Probate # 137156) This property was a 15.17 acre plot of land listed along with several other parcels owned by Mr. Bacon at the time of his death. Although reference is made in probate documents to this parcel no deed references were found describing this land.

The third parcel of land was acquired in 1971, from Harry T. Buck, Jr. for a price of \$4200.00. This land was granted to the Inhabitants of the Town of Holden, through its Conservation Commission for administration, control, and maintenance under the provisions of General Laws, Chapter 40, Section 8C. It consisted of 41.85 acres on the southerly side of the road leading from Holden Meeting House to West Boylston, now or formerly called Paul Street.

The Town of Holden has maintained these lands since acquiring them and has installed a gate at the entrance with a sign identifying it as the Holden Town Forest. There is a relatively good access road leading into the property approximately 1500 feet to the height of land, at which point a network of trails disperse through the forest. The area is frequently used by local residents for hiking and enjoying the outdoors.

A map of the original parcel is included with this plan showing hand written descriptions of the property lines.

MANAGEMENT OBJECTIVES

The primary goal for this property is to provide a natural setting for the inhabitants of the Town of Holden where they can interact with the environment. The objectives of management for this forest are to evaluate the potential for improving the overall condition and health of the Town Forest, enhance the recreational use of the property, improve wildlife habitat, and protection of our natural environment for future generations.

Same by Edwin Conant to the Inhabitants of the Town of Sterling July 17, 1884 Bk. 1178-462; - and added to me by several deeds, rec'd.

Dated 29th Mar. 1933
Recorded 27th Apr. 1933
Plan Book Page

Consideration \$ 100.00
Plan of Lot Nos. M. 75° 06' 57" W.

Area 102a. 3/4. ±

Book 2582 Page 49

Grantors
George S. Graham
of Halden

Certain tract of woodland.

S. 15° 06' 7" W.
Farm: Gleason et al.

2075

M. E. 9th W.
1557

Endell
N. 75° 06' 33" W.

taken care of.

M. 59° 04' 24" W.
341 W.

M. 70° 24' 38" W. 057
Farm: J. Hood
Crossing the brook again

S. 16° 04' 35" W. 577 W.

S. 12° 16' 04' 31" W. 571 W.

Grantees
Inhabitants of the Town of Halden



1-38-08

M. 20° 24' 47" W.

2nd lot

Rev. Stamps	Consideration
1 st Mortgage	no fees
2 nd "	than
3 rd "	\$100.00
Total	

S. 9° 12' 04' W. 577 W.
303 1/2 W.

last 4 by land farm of C. Chaffin

1165

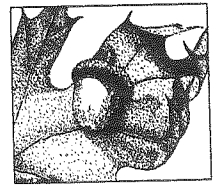
M. 20° 24' 47" W.
Farm: J. Lawrence

Town Halden



FOREST MANAGEMENT PLAN

Submitted to: Massachusetts Department of Conservation and Recreation
For enrollment in CH61/61A and/or Forest Stewardship Program



CHECK-OFFS

CH. 61 CH. 61A STWSHP C-S

cert. cert. new FLEP 1

recert. recert. revis EOEA

amend. amend. Other

Case No. _____ Orig. Case No. _____

Owner ID _____ Add. Case No. _____

Date Rec'd _____ Ecoregion _____

Plan Period _____ Topo Name Worc N

Rare Sp. Hab. _____ River Basin Nashua

OWNER, PROPERTY, and PREPARER INFORMATION

Property Owner(s) Town of Holden Conservation Commission

Mailing Address 1196 Main Street, Holden, MA 01520 Phone 508-829-0243

Property Location: Town(s) Holden Road(s) Harris Street

Plan Preparer Joseph Lee, Chestnut Forestry Services, Inc. Mass. Forester License # 143

Mailing Address P.O. Box 78, Princeton, MA 01541 Phone 508-612-6312

RECORDS

Assessor's Map No.	Lot/Parcel No.	Deed Book	Deed Page	Total Acres	Ch. 61/61A Excluded Acres	(Ch. 61/61A) Certified Acres	Stewshp Excluded Acres	Stewshp Acres
<u>107</u>	<u>3</u>	<u>2582</u>	<u>49</u>	<u>100.0</u>	<u>100.0</u>	<u>0</u>	<u>0</u>	<u>100.0</u>
<u>107</u>	<u>6</u>	<u>Probate</u>	<u>137156</u>	<u>15.17</u>	<u>15.17</u>	<u>0</u>	<u>0</u>	<u>15.17</u>
<u>108</u>	<u>1</u>	<u>5143</u>	<u>74</u>	<u>41.85</u>	<u>41.85</u>	<u>0</u>	<u>0</u>	<u>41.85</u>
TOTALS				<u>157.0</u>	<u>157.0</u>	<u>0</u>	<u>0</u>	<u>157.0</u>

Excluded Area Description(s) (if additional space needed, continue on separate paper)

None

HISTORY Year acquired 1933 Year management began 2005

Is subdivision plan on file with municipality? Yes No

Are boundaries blazed/painted? Yes No Partially

Have forest products been cut within past 2 years? Yes No

What treatments have been prescribed, but not carried out (last 10 years if plan is a recert.)?

stand no. n/a treatment n/a reason _____

(if additional space needed, continue on separate page)

Previous Management Practices (last 10 years)

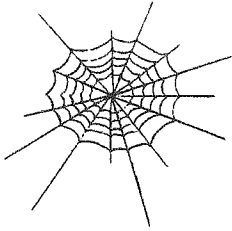
Stand #	Cutting Plan #	Treatment	Yield	Value	Acres	Date
<u>n/a</u>						

Remarks: (if additional space needed, continue on separate page)

George S. Graham willed the original property to the Inhabitants of the Town of Holden in 1933.
Subsequent parcels acquired later.

Stewardship Issues

Massachusetts is a small state, but it contains a tremendous variety of ecosystems, plant and animal species, management challenges, and opportunities. This section of your plan will provide background information about the Massachusetts forest landscape as well as issues that might affect your land. **The Stand Descriptions and Management Practices sections of your plan will give more detailed property specific information** on these subjects tailored to your management goals.



Biodiversity: Biological diversity is, in part, a measure of the variety of plants and animals, the communities they form, and the ecological processes (such as water and nutrient cycling) that sustain them. With the recognition that each species has value, individually and as part of its natural community, maintaining biodiversity has become an important resource management goal.

While the biggest threat to biodiversity in Massachusetts is the loss of habitat to development, another threat is the introduction and spread of invasive non-native plants. Non-native invasives like European Buckthorn, Asiatic Bittersweet, and Japanese Honeysuckle spread quickly, crowding out or smothering native species and upsetting and dramatically altering ecosystem structure and function. Once established, invasives are difficult to control and even harder to eradicate. Therefore, vigilance and early intervention are paramount.

Another factor influencing biodiversity in Massachusetts concerns the amount and distribution of forest growth stages. Wildlife biologists have recommended that, for optimal wildlife habitat on a landscape scale, 5-15% of the forest should be in the seedling stage (less than 1" in diameter). Yet we currently have no more than 2-3% early successional stage seedling forest across the state. There is also a shortage of forest with large diameter trees (greater than 20"). See more about how you can manage your land with biodiversity in mind in the "Wildlife" section below. (Also refer to *Managing Forests to Enhance Wildlife Diversity in Massachusetts* and *A Guide to Invasive Plants in Massachusetts* in the binder pockets.)

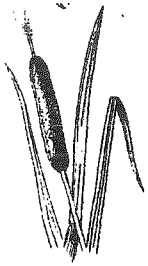


Rare Species: Rare species include those that are **threatened** (abundant in parts of its range but declining in total numbers, those of **special concern** (any species that has suffered a decline that could threaten the species if left unchecked), and **endangered** (at immediate risk of extinction and probably cannot survive without direct human intervention). Some species are threatened or endangered globally, while others are common globally but rare in Massachusetts.

Of the 2,040 plant and animal species (not including insects) in Massachusetts, 424 are considered rare. About 100 of these rare species are known to occur in woodlands. Most of these are found in wooded wetlands, especially vernal pools. These temporary shallow pools dry up by late summer, but provide crucial breeding habitat for rare salamanders and a host of other unusual forest dwelling invertebrates. Although many species in Massachusetts are adapted to and thrive in recently disturbed forests, rare species are often very sensitive to any changes in their habitat

Indispensable to rare species protection is a set of maps maintained by the Division of Fisheries and Wildlife's Natural Heritage & Endangered Species Program (NHESP) that show current and historic locations of rare species and their habitats. The maps of your property will be compared to these rare species maps and the result indicated on the upper right corner of the front page of the plan. Prior to any

regulated timber harvest, if an occurrence does show on the map, the NHESP will recommend protective measures. Possible measures include restricting logging operations to frozen periods of the year, or keeping logging equipment out of sensitive areas. You might also use information from NHESP to consider implementing management activities to improve the habitat for these special species.



Riparian and Wetlands Areas: Riparian and wetland areas are transition areas between open water features (lakes, ponds, streams, and rivers) and the drier terrestrial ecosystems. More specifically, a **wetland** is an area that has hydric (wet) soils and a unique community of plants that are adapted to live in these wet soils. Wetlands may be adjacent to streams or ponds, or a wetland may be found isolated in an otherwise drier landscape. A **riparian area** is the transition zone between an open water feature and the uplands (see Figure 1). A riparian zone may contain wetlands, but also includes areas with somewhat better drained soils. It is easiest to think of

riparian areas as the places where land and water meet.

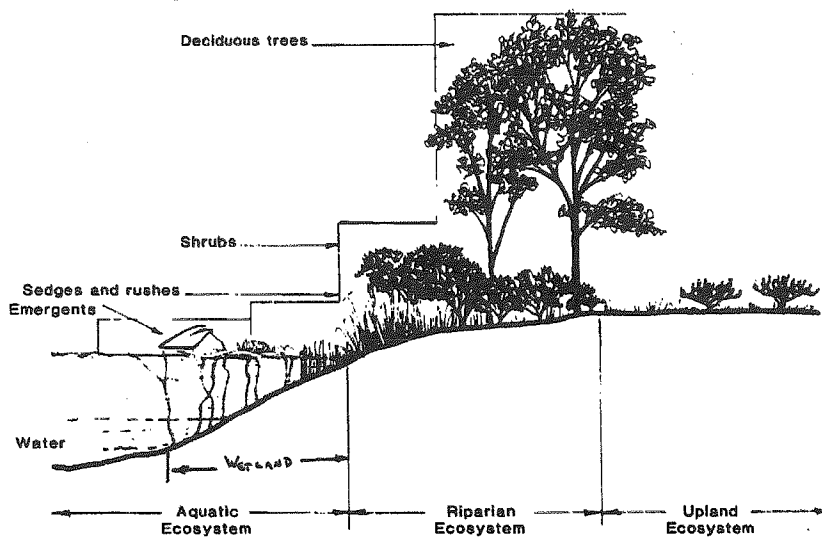


Figure 1: Example of a riparian zone.

The presence of water in riparian and wetland areas make these special places very important. Some of the functions and values that these areas provide are described below:

Filtration: Riparian zones capture and filter out sediment, chemicals and debris before they reach streams, rivers, lakes and drinking water supplies. This helps to keep our drinking water cleaner, and saves communities money by making the need for costly filtration much less likely.

Flood control: By storing water after rainstorms, these areas reduce downstream flooding. Like a sponge, wetland and riparian areas absorb stormwater, then release it slowly over time instead of in one flush.

Critical wildlife habitat: Many birds and mammals need riparian and wetland areas for all or part of their life cycles. These areas provide food and water, cover, and travel corridors. They are often the most important habitat feature in Massachusetts' forests.

Recreational opportunities: Our lakes, rivers, streams, and ponds are often focal points for recreation. We enjoy them when we boat, fish, swim, or just sit and enjoy the view.

In order to protect wetlands and riparian areas and to prevent soil erosion during timber harvesting activities, Massachusetts promotes the use of “Best Management Practices” or BMPs. Maintaining or reestablishing the protective vegetative layer and protecting critical areas are the two rules that underlie these common sense measures. DEM’s Massachusetts Forestry Best Practices Manual (included with this plan) details both the legally required and voluntary specifications for log landings, skid trails, water bars, buffer strips, filter strips, harvest timing, and much more.

The two Massachusetts laws that regulate timber harvesting in and around wetlands and riparian areas are the Massachusetts Wetlands Protection Act (CH 131), and the Forest Cutting Practices Act (CH132). Among other things, CH132 requires the filing of a cutting plan and on-site inspection of a harvest operation by a DEM Service Forester to ensure that required BMPs are being followed when a commercial harvest exceeds 25,000 board feet or 50 cords (or combination thereof).



Soil and Water Quality: Forests provide a very effective natural buffer that holds soil in place and protects the purity of our water. The trees, understory vegetation, and the organic material on the forest floor reduce the impact of falling rain, and help to insure that soil will not be carried into our streams and waterways.

To maintain a supply of clean water, forests must be kept as healthy as possible. Forests with a diverse mixture of vigorous trees of different ages and species can better cope with periodic and unpredictable stress such as insect attacks or windstorms.

Timber harvesting must be conducted with the utmost care to ensure that erosion is minimized and that sediment does not enter streams or wetlands. Sediment causes turbidity which degrades water quality and can harm fish and other aquatic life. As long as Best Management Practices (BMPs) are implemented correctly, it is possible to undertake active forest management without harming water quality.



Forest Health: Like individual organisms, forests vary in their overall health. The health of a forest is affected by many factors including weather, soil, insects, diseases, air quality, and human activity. Forest owners do not usually focus on the health of a single tree, but are concerned about catastrophic events such as insect or disease outbreaks that affect so many individual trees that the whole forest community is impacted.

Like our own health, it is easier to prevent forest health problems than to cure them. This preventative approach usually involves two steps. First, it is desirable to maintain or encourage a wide diversity of tree species and age classes within the forest. This diversity makes a forest less susceptible to a single devastating health threat. Second, by thinning out weaker and less desirable trees, well-spaced healthy individual trees are assured enough water and light to thrive. These two steps will result in a forest of vigorously growing trees that is more resistant to environmental stress.



Fire: Most forests in Massachusetts are relatively resistant to catastrophic fire. Historically, Native Americans commonly burned certain forests to improve hunting grounds. In modern times, fires most often result from careless human actions.

The risk of an unintentional and damaging fire in your woods could increase as a result of logging activity if the slash (tree tops, branches, and debris) is not treated correctly. Adherence to the Massachusetts slash law minimizes this risk. Under the law, slash is to be removed from buffer areas near roads, boundaries, and critical areas and lopped close to the ground to speed decay. Well-maintained woods roads are always desirable to provide access should a fire occur.

Depending on the type of fire and the goals of the landowner, fire can also be considered as a management tool to favor certain species of plants and animals. Today the use of prescribed burning is largely restricted to the coast and islands, where it is used to maintain unique natural communities such as sandplain grasslands and pitch pine/scrub oak barrens. However, state land managers are also attempting to bring fire back to many of the fire-adapted communities found elsewhere around the state.



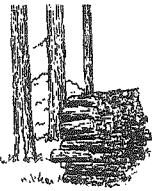
Wildlife Management: Enhancing the wildlife potential of a forested property is a common and important goal for many woodland owners. Sometimes actions can be taken to benefit a particular species of interest (e.g., put up Wood Duck nest boxes). In most cases, recommended management practices can benefit many species, and fall into one of three broad strategies. These are **managing for diversity, protecting existing habitat, and enhancing existing habitat.**

Managing for Diversity – Many species of wildlife need a variety of plant communities to meet their lifecycle requirements. In general, a property that contains a diversity of habitats will support a more varied wildlife population. A thick area of brush and young trees might provide food and cover for grouse and cedar waxwing; a mature stand of oaks provides acorns for foraging deer and turkey; while an open field provides the right food and cover for cottontail rabbits and red fox. It is often possible to create these different habitats on your property through active management. The appropriate mix of habitat types will primarily depend on the composition of the surrounding landscape and your objectives. It may be a good idea to create a brushy area where early successional habitats are rare, but the same practice may be inappropriate in the area's last block of mature forest.

Protecting Existing Habitat – This strategy is commonly associated with managing for rare species or those species that require unique habitat features. These habitat features include vernal pools, springs and seeps, forested wetlands, rock outcrops, snags, den trees, and large blocks of unbroken forest. Some of these features are rare, and they provide the right mix of food, water, and shelter for a particular species or specialized community of wildlife. It is important to recognize their value and protect their function. This usually means not altering the feature and buffering the resource area from potential impacts.

Enhancing Existing Habitat – This strategy falls somewhere between the previous two. One way the wildlife value of a forest can be enhanced is by modifying its structure (number of canopy layers, average tree size, density). Thinning out undesirable trees from around large crowned mast (nut and fruit) trees will allow these trees to grow faster and produce more food. The faster growth will also accelerate the development of a more mature forest structure, which is important for some species. Creating small gaps or forest openings generates groups of seedlings and saplings that provide an additional layer of cover, food, and perch sites.

Each of these three strategies can be applied on a single property. For example, a landowner might want to increase the habitat diversity by reclaiming an old abandoned field. Elsewhere on the property, a stand of young hardwoods might be thinned to reduce competition, while a “no cut” buffer is set up around a vernal pool or other habitat feature. The overview, stand description and management practice sections of this plan will help you understand your woodland within the context of the surrounding landscape and the potential to diversify, protect or enhance wildlife habitat.



Wood Products: If managed wisely, forests can produce a periodic flow of wood products on a sustained basis. Stewardship encompasses finding ways to meet your current needs while protecting the forest’s ecological integrity. In this way, you can harvest timber and generate income without compromising the opportunities of future generations.

Massachusetts forests grow many highly valued species (white pine, red oak, sugar maple, white ash, and black cherry) whose lumber is sold throughout the world. Other lower valued species (hemlock, birch, beech, red maple) are marketed locally or regionally, and become products like pallets, pulpwood, firewood, and lumber. These products and their associated value-added industries contribute between 200 and 300 million dollars annually to the Massachusetts economy.

By growing and selling wood products in a responsible way you are helping to our society’s demand for these goods. Harvesting from sustainably managed woodlands – rather than from unmanaged or poorly managed forest – benefits the public in a multitude of ways. The sale of timber, pulpwood, and firewood also provides periodic income that you can reinvest in the property, increasing its value and helping you meet your long-term goals. Producing wood products helps defray the costs of owning woodland, and helps private landowners keep their forestland undeveloped.



Cultural Resources: Cultural resources are the places containing evidence of people who once lived in the area. Whether a Native American village from 1,700 years ago, or the remains of a farmstead from the 1800’s, these features all tell important and interesting stories about the landscape, and should be protected from damage or loss.

Massachusetts has a long and diverse history of human habitation and use. Native American tribes first took advantage of the natural bounty of this area over 10,000 years ago. Many of these villages were located along the coasts and rivers of the state. The interior woodlands were also used for hunting, traveling, and temporary camps. Signs of these activities are difficult to find in today’s forests. They were obscured by the dramatic landscape impacts brought by European settlers as they swept over the area in the 17th and 18th centuries.

By the middle 1800’s, more than 70% of the forests of Massachusetts had been cleared for crops and pastureland. Houses, barns, wells, fences, mills, and roads were all constructed as woodlands were converted for agricultural production. But when the Erie Canal connected the Midwest with the eastern cities, New England farms were abandoned for the more productive land in the Ohio River valley, and the landscape began to revert to forest. Many of the abandoned buildings were disassembled and moved, but the supporting stonework and other changes to the landscape can be easily seen today.

One particularly ubiquitous legacy of this period is stone walls. Most were constructed between 1810 and 1840 as stone fences (wooden fence rails had become scarce) to enclose sheep within pastures, or to

exclude them from croplands and hayfields. Clues to their purpose are found in their construction. Walls that surrounded pasture areas were comprised mostly of large stones, while walls abutting former cropland accumulated many small stones as farmers cleared rocks turned up by their plows. Other cultural features to look for include cellar holes, wells, old roads and even old trash dumps.



Recreation and Aesthetic Considerations: Recreational opportunities and aesthetic quality are the most important values for many forest landowners, and represent valid goals in and of themselves. Removing interfering vegetation can open a vista or highlight a beautiful tree, for example. When a landowner's goals include timber, thoughtful forest management can be used to accomplish silvicultural objectives while also reaching recreational and/or aesthetic objectives.

For example, logging trails might be designed to provide a network of cross-country ski trails that lead through a variety of habitats and reveal points of interest.

If aesthetics is a concern and you are planning a timber harvest, obtain a copy of this excellent booklet: *A Guide to Logging Aesthetics: Practical Tips for Loggers, Foresters & Landowners*, by Geoffrey T. Jones, 1993. (Available from the Northeast Regional Agricultural Engineering Service, (607) 255-7654, for \$7). Work closely with your consultant to make sure the aesthetic standards you want are included in the contract and that the logger selected to do the job executes it properly. The time you take to plan ahead of the job will reward you and your family many times over with a fuller enjoyment of your forest, now and well into the future.

This is your Stewardship Plan. It is based on the goals that you have identified. The final success of your Stewardship Plan will be determined first, by how well you are able to identify and define your goals, and second, by the support you find and the resources you commit to implement each step.

It can be helpful and enjoyable to visit other properties to sample the range of management activities and see the accomplishments of others. This may help you visualize the outcome of alternative management decisions and can either stimulate new ideas or confirm your own personal philosophies. Don't hesitate to express your thoughts, concerns, and ideas. Keep asking questions! Please be involved and enjoy the fact that you are the steward of a very special place.





Property Overview, Regional Significance, and Management Summary

The Holden Town Forest is located in the easterly portion of Holden off Harris Street just south of the Quinapoxet River. This property is located in the Nashua River Basin, more specifically in the Quinapoxet River watershed. This watershed provides drinking water to the Wachusett Reservoir, a public water supply of the Metropolitan District Commission, which serves Boston and several Massachusetts communities. The land abuts watershed lands of the Metropolitan District Commission to the north and east and privately owned lands to the south. The privately held lands are former gravel removal areas used during the construction of I-190. The M.D.C. owned lands are in long term protection for water supply purposes and are open to public access. Property to the south is owned by the Antinarella family and currently used for agricultural production, composting and gravel removal. Properties to the west are privately held as residential lots along Bullard Road. Most of these parcels are several acres in size and provide a good buffer from the residential areas. There is a narrow strip of land between two residential lots that provides trail access to the Town Forest from Bullard Road.

Substantial lands to the east and north of this property are in long term protection as public watershed property and these properties connect to the Trout Brook Reservation, conservation lands also owned by the Town of Holden. The Central Mass. Rail trail connects thousands of acres of protected lands owned by Mass. D.C.R., Mass. Wildlife, City of Worcester watershed, as well as large land tracts owned by Norco Sportsmen's club and the Fox and Coon Club off Mason Road in Holden.

The goal of management on this property is to provide a natural environment for the pleasure and use by the inhabitants of the Town of Holden. As such, management activities are intended to protect the values of the forest, which provide habitat for native wildlife, improve soil conditions for water absorption, wetland protection for water quality, and recreational uses such as hiking, skiing, hunting and observing wildlife.

Management activities would be directed towards the harvesting of timber and firewood in an effort to promote a healthy growing forest. Forestry activities would create conditions favorable for preferred species that would grow better on the site and create small openings in the tree canopy to provide habitat for native wildlife species and opportunities for viewing of wildlife. Skid trails used for logging activities would improve access for fire protection and hiking trails. The establishment of a Forest Stewardship Plan is intended to serve as a valuable tool for educating the residents of Holden to the benefits of good forestry practices and land stewardship.

Landowner Goals

Please **check** the column that best reflects the importance of the following goals:

<i>Goal</i>	Importance to Me			
	High	Medium	Low	Don't Know
Enhance the Quality/Quantity of Timber Products*	X			
Generate Immediate Income				
Generate Long Term Income				
Produce Firewood				
Defer or Defray Taxes				
Promote Biological Diversity				
Enhance Habitat for Birds				
Enhance Habitat for Small Animals				
Enhance Habitat for Large Animals				
Improve Access for Walking/Skiing/Recreation				
Maintain or Enhance Privacy				
Improve Hunting or Fishing				
Preserve or Improve Scenic Beauty				
Protect Water Quality				
Protect Unique/Special/ Cultural Areas				
Other:				

* This goal must be checked "HIGH" if you are interested in classifying your land under Chapter 61/61A.

1. In your own words please describe your goals for the property:

Our goals for this property are to maintain the long term health of the forest and the protection of undeveloped land in the Town of Barre. It is our goal to improve forest health, create productive wildlife habitat and provide open space for recreation, hiking and viewing of wildlife and nature.

Stewardship Purpose

By enrolling in the Forest Stewardship Program and following a Stewardship Plan, I understand that I will be joining with many other landowners across the state in a program that promotes ecologically responsible resource management through the following actions and values:

1. Managing for long-term forest health, productivity, diversity, and quality.
2. Conserving or enhancing water quality, wetlands, soil productivity, biodiversity, cultural, historical and aesthetic resources.
3. Following a strategy guided by well-founded silvicultural principles to improve timber quality and quantity when wood products are a goal.
4. Setting high standards for foresters, loggers and other operators as practices are implemented; and minimizing negative impacts.
5. Learning how woodlands benefit and affect surrounding communities, and cooperation with neighboring owners to accomplish mutual goals when practical.

Signature(s): _____

Date: _____

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	1	WH	39.25	14.0	118	9.7 mbf 3.9 cds	70 RO

This timber stand is located in the western portion of the town forest along the perennial stream that flows through the property and eventually into the Quinapoxet River. This stream supplies drinking water for the Wachusett Reservoir and care should be taken during all management activities to protect the stream and its abutting wetlands and riparian zones from erosion and siltation. To prevent increases in stream temperatures, no more than 50% of the overstory should be removed during any one harvest. Equipment should be restricted from riparian zones and associated buffer strips except at brook or wetland crossings and such crossings should be carefully designed to create minimal disturbance to the surrounding areas. The use of bridges and poles fords as well as restricting harvest activities to times when the ground is dry or frozen would help mitigate erosion and siltation problems.

The trees that compose this stand are predominantly Northern Red Oak (39%) and Eastern White Pine (26%). Associated species such as white and black oak, red maple, and black cherry, black and yellow birch and poplar are found throughout the stand. The timber quality is very good with 71% of the trees considered acceptable growing stock, 12% considered as unacceptable growing stock and 16% classified as firewood grade trees. There is a high incidence of older, oversize white pine and red oak of fair to poor quality, which should be harvested so as to release better quality oaks and pines and create conditions favorable for the establishment of desirable future regeneration.

The understory beneath these trees is made up of heavy patches of mountain laurel, along with high bush and low bush Blueberry, witchhazel, alders, white pine, red maple black birch, yellow birch and red maple saplings. In the riparian zones associated with the brook, sedge, marsh grasses, winterberry, arrowwood, blueberry, sheep laurel, green ash and willows are commonly found. These areas are very productive habitat areas as they provide food and cover for many birds, amphibians and mammal species. Bobcat, fisher, fox raccoon, porcupine, skunk, and squirrels are common in these areas as are salamanders, tree frogs, toads, turtles and snakes. Evidence of whitetail deer and coyote were observed through out the town forest.

The soils in this stand are a somewhat variable throughout this stand. The majority of the area is composed of a Chatfield-Hollis rock outcrop complex. These soils have a site index of 70 for red oak and this species would grow best on these sites. Along the east side of the stream the soils are a Hinckley sandy loam which has a site index of 60 for white pine and 49 for red oak. Due to the droughtiness of these soils they are best suited for growing white pine. Along the riparian zones of the stream, the soils are a Scarboro mucky fine sandy loam which has a very high water capacity and is poorly suited to growing trees. It has a site index of 55 for white pine and red maple.

Management practices in this stand should involve selective harvesting of poor quality trees to release better quality pines and hardwoods. Several den trees should be preserved or created by girdling large poor quality trees and allowing them to die standing as they create beneficial cavities for nesting birds and mammals. Hemlock trees along wetland edges and seeps should be preserved as they provide valuable food and cover for a variety of wildlife. White pine and red oak should be favored in this stand as the soils are best suited for growing these species.

OBJECTIVE CODE: HAB = Habitat REC = Recreation & Aesthetics S&W = Soil & Water
 FP = Forest Products (for Stewardship Program only)
 FP61 = Forest Products (for Ch. 61/61A only)

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	2	OM	59.91	8.7	102	14.6 cds	64 WP 51 RO

This timber stand encompasses the largest area of the town forest. It is located to the east of Harris Street, on steep sloped glacial eskers and ridge tops. There is a well-developed fire road, which provides access through this stand. The soils are very dry during the summer months and forest fire hazard is very high during these times. No streams or wetlands are found in this stand. There are several hiking trails, which traverse through this stand at a moderate grade and are very pleasant to hike and enjoy the wildlife and natural settings.

The trees that compose this stand are predominantly Northern Red Oak (39%), black oak (21%) and white oak (16%). Eastern White Pine, poplar and red maple are found scattered throughout the stand. The timber quality is fair to poor, due primarily to the drought tendency of the soils present. Approximately 45% of the trees in this stand are considered unacceptable growing stock due to poor form, defects and poor branching characteristics.

The understory in this stand varies from heavy mountain laurel on the steep slopes with red maple, black birch, yellow birch and poplar and the ridge tops, where low bush blueberry, sheep laurel, alders and witchhazel are found along with red maple, black and yellow birch saplings. The primary wildlife value in this stand is the production of mast crop (acorns) and sapling browse. Deer and coyote are prevalent as are eastern gray squirrel, red squirrel, and chipmunks. Forest birds are spotted throughout this stand and pilliated woodpecker can be heard rapping on old hollow trees in search of insects.

The predominant soil type occurring in this stand are a Merrimac fine sandy loam. This soil type has a site index of 64 for white pine and 51 for red oak. Also occurring in this stand are areas with a Hinckley sandy loam which has a site index of 60 for white pine and 57 for red oak.

Management practices, which would benefit this stand, should be aimed at opening up the overstory to promote browse production and create conditions favorable for desirable regeneration. Eastern white pine should be encouraged as this species would grow well on this site and would also provide shade during the summer months, preventing loss of soil moisture and promoting decomposition of dead hardwoods and leaf litter. As the timber quality in this stand is so poor, it would be most beneficial to conduct harvesting of trees in patches, ranging from 1-2 acres in size. These patch cuts would allow for the establishment of white pine seedlings and reduce competition from less desirable birches and maples. Irregular shaped clearings would create wildlife "edge" effect promoting species diversity, seed and browse for feeding, and openings for viewing of wildlife. Areas around large mature poplar trees should be cleared of all hardwoods during harvesting and the poplars cut and left in the openings the following year. This method will encourage small patches of poplar sprouts, which are valuable food for rabbits, mice, and deer. Several large trees with broken limbs or hollow trunks should be preserved throughout the stand to act as den trees for owls, woodpeckers and mammals. There are spectacular views of the surrounding hills to the west from the ridge tops and an opportunity to create vistas and additional trails in this stand.

STEW	3	WH	14.04	7.2	102	2.0 mbf 12.0 cds	60 WP 49 RO
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This timber stand is located east of Harris Street, in the northern portion of the property, on steep sloped glacial eskers and ridge tops. There are hiking trails, which traverse this stand and lead into stand 4 and the abandoned road formerly know as Paul Street. This is a very dry soil similar to that in stand 2.

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 FP = Forest Products (for Stewardship Program only)
 FP61 = Forest Products (for Ch. 61/61A only)

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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3 continued.

The trees that compose this stand are found in two age classes. There is an overstory of Eastern white pine, representing approximately 16% of the stand and a younger age class predominantly composed of Northern red oak (27%), black oak (24%) and white oak (18%). Birches and red maple are found scattered throughout the stand. The timber quality is fair to poor, due primarily to the drought tendency of the soils present. Approximately 45% of the trees in this stand are considered unacceptable growing stock due to poor form, defects and poor branching characteristics.

The understory in this stand varies between thick patches of mountain laurel on steeper slopes and blueberry, sheep laurel, hophornbeam, on the ridges. White pine, hemlock, red maple and birch saplings are found scattered throughout the stand.

The soils present in this stand are Hinckley sandy loam which has a site index of 60 for white pine and 57 for red oak.

Management practices for this stand should be aimed at opening up the overstory to promote browse production and create conditions favorable for desirable regeneration. Eastern white pine should be encouraged, as this species would grow well on this site. Poor quality hardwoods should be removed in small patches, 1/4-1/2 acre in size in close proximity to the large overstory pines in an effort to create a shelterwood condition, which favors the establishment of white pine seedlings. With the exception of the white pine seed trees present in the overstory, this stand is very similar in characteristics to stand 2. The soils in both these stands would be far more productive growing a mixture of white pine and oaks and stand treatments such as shelterwood cuts, which leave large healthy seed trees in the overstory to provide shade and a seed source would yield the desired results. Skid trails should be carefully located so as to provide future access for fire protection and hiking trails.

STEW	4	OM	28.5	7.2	93.3	13.3 cds	64 WP 51 RO
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This stand is located in the northeast portion of the property and is bordered by an abandoned road formerly known as Paul Street. There is a small pond/deep marsh bordering the road in the middle of this stand that is a very attractive and peaceful spot for observing wildlife. There are trails that connect this stand to stand 3 as well as to the abutting MCD property. The stand is bordered on the north by Interstate 190 and on the east by the gravel pits on the Antinarella property. There is a chain of vernal pools that seem to break out from the water table in a south to northerly direction ending at the pond by Paul Street. These pools are extremely valuable habitat for yellow spotted salamanders and eastern painted turtles. Activities in close proximity to these pools should be limited to trail creation and wildlife observation points. Buffer strips should be maintained around these pools and harvesting should be limited in these areas. There is a very attractive hemlock grove at the southern end of these pools and several steep sloped hills that surround the pools that would make great spots for creating vistas of the surrounding area.

The stand is primarily composed of black oak (47%), northern red oak (17%), and white oak (25%) with associated species such as red maple, white pine and yellow birch. Due to the poor quality of the soils in this area, the trees are of very poor quality with 58% of the trees being classified as unacceptable growing stock.

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STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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4 continued

The understory in this stand varies between thick patches of mountain laurel on steeper slopes and blueberry, sheep laurel, winterberry, club moss and hophornbeam on the ridges. White pine, hemlock, red maple and birch saplings are found scattered throughout the stand.

The predominant soil type occurring in this stand are a Merrimac fine sandy loam. This soil type has a site index of 64 for white pine and 51 for red oak.

Management practices, which would benefit this stand, should be aimed at opening up the overstory to promote browse production and create conditions favorable for desirable regeneration. Eastern White Pine should be encouraged as this species would grow well on this site and would also provide shade during the summer months, preventing loss of soil moisture and promoting decomposition of dead hardwoods and leaf litter. As the timber quality in this stand is so poor, it would be most beneficial to conduct harvesting of trees in patches, ranging from 1/2-2 acres in size. These patch cuts would allow for the establishment of white pine seedlings and reduce competition from less desirable birches and maples. Irregular shaped clearings would create wildlife "edge" effect promoting species diversity, seed and browse for feeding, and openings for viewing of wildlife. Skid trails should be carefully located so as to provide future access for fire protection and hiking trails.

STEW	5	WP	5.1	14.4	195	20.0 mbf 6.5 cds	64 WP 51 RO
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This stand is located on the west side of Harris Street on rich bottom lands bordering the Quinapoxet river. This stand, as well as stand 6 is bordered by the river's flood plain. As such, it represents a valuable transition area for wildlife species that feed in the riparian areas and reside in the cover of the dense pines and hemlocks. It is primarily made up of eastern white pine (83%), with occasional hardwoods of poor quality scattered throughout. The timber quality is good. The stocking levels in this stand are currently at the fully stocked level and the stand is in need of a release cutting. This treatment should remove overstory white pines and poor quality hardwoods in an effort to create more growing space for high quality pines, as this species is best suited for this site.

The understory in this stand is made up of winterberry and club mosses with occasional mountain laurel and hardwood saplings scattered throughout. Due to the dense overstory canopy, there is little regeneration found in the understory of this stand. Thinning of the overstory trees would create small pockets of sunshine on the forest floor and aid in the growth of plants valuable to wildlife. The primary wildlife value of this stand is providing protective cover for deer and small mammals. Hemlock trees, when present should be maintained in the stand as they provide excellent cover and the bark and seeds are an excellent wildlife food source.

The predominant soil type occurring in this stand are a Merrimac fine sandy loam. This soil type has a site index of 64 for white pine and 51 for red oak.

Management practices in this stand should attempt to release high quality sawlog trees to improve the health and growth of these trees. Care should be given to maintain adequate stocking levels, thus preventing possible wind throw, as the soils in this stand tend to be very saturated during the winter months. Carefully planned skid trails used for harvesting would provide a hiking trail through stands 5 and 6 for observing the river and adjacent flood plain.

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STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	6	WH	6.38	18.72	125	12.5 mbf 4.8 cds	60 WP 45 RO

This stand is located north of stand 5, just west of Harris Street. The site conditions are very similar to that in stand 5. There is a high water table in this area and care should be taken when operating heavy equipment to prevent excessive rutting and erosion. Removing trees by group selection rather than individual trees evenly throughout the stand would help prevent wind throw and uprooting. This method of shelterwood harvesting would also create small openings in the stand conducive to the regeneration of White Pine and Red Oak, which are very suited to this soil type.

The understory in this stand is made up of alder, witchhazel, chokecherry, and mountain laurel and white pine, hemlock, red maple and yellow birch saplings are scattered throughout. Hemlock trees should be preserved when possible due to their high wildlife value.

The soils occurring in this stand are a Sudbury fine sandy loam. This soil has a site index of 60 for white pine and 45 for red oak.

As this stand is currently overstocked and composed of mature sawlog size trees, management activities should attempt to create conditions favorable for establishing desirable regeneration. Use of a three-phase shelterwood harvesting system that would remove the mature overstory trees in three operations over a 15-25 year cycle should result in the establishment of a healthy young stand of red oak and white pine. Large crowned mature red oak seed trees should be maintained until the final harvest to produce the seed source necessary for adequate regeneration.

STEW	7	RM	3.82	7.0	80	7.0 cds	65 WP
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This stand is located in the flood plain along the banks of the Quinapoxet River. It is very remote and difficult to access due to a constant high water table. There is standing water present throughout this stand most months of the year and several meandering streams are present.

There is very little opportunity for management activities or growing timber in this stand due to this high water table and the soil conditions. The stand provides valuable resources for wildlife and is a critical zone for water quality protection. Harvesting along the edges of the wetlands could create conditions favorable for the establishment of White Pine and Hemlock in drier areas within the stand and would also serve to create browse for wildlife. Care should be taken to keep openings small, thus preventing increases in soil and water temperatures that could affect water quality and fisheries habitat. Equipment should be restricted from this stand entirely. Any trees removed should be winched to high ground.

As shallow marshlands cover a good portion of the stand, there is a bounty of edible plants and grasses present in the understory. The constant flooding and receding of the river create regular disturbances in the structure and composition of this stand. It represents a rich habitat area for wildlife and an opportunity to observe our natural environment.

The soils occurring in this stand are a Limerick silt loam. Flooding and a seasonal high water table make this soil type poorly suited to growing trees. These soils have a site index of 65 for white pine.

A trail through stands 5 and 6 would provide an opportunity to observe this productive habitat area and the effects of the rivers constant flooding on the ecosystem.

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MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	
HAB/ REC FP/ S&W	1	WH	Preparation cut-Shelterwood Creation of den trees and hiking trails, nesting boxes	39.25	30	2.0mbf 3.0cbs	2007

As this stand is currently above the full stocking level, it is ready for a commercial harvest that would create adequate growing space for crop trees. A preparation cut under the shelterwood system would remove approximately one third of the overstory trees in one harvesting operation and give the trees room to continue growing at acceptable rates. This harvesting operation would also serve to remove poor quality and slower growing trees in favor of healthy full crown specimen trees of desirable species that would grow best on this soil type and to prepare the understory conditions for establishing desirable regeneration of white pine and red oak.

The stream that flows through this stand and its associated seeps, marshes and riparian zones are excellent habitat areas for wood ducks. Nesting boxes could be installed in these open marsh areas along the stream for encouraging wood duck nesting. At a minimum, two den trees per acre should be preserved or created to provide nesting habitat for birds, owls and small mammals such as flying squirrels, porcupine, raccoon and possum. Large old trees with cracks and hollows should be preserved and girdling of selected trees would allow them to slowly deteriorate and create cavities as the trees rot and die. A trail would be established during the harvesting operation, that would circle through this stand for hiking, skiing and viewing of wildlife.

Care should be taken during harvesting operations to protect the stream and associated wetlands from erosion and siltation. A buffer zone of fifty feet along all stream banks and wetland edges should be maintained. Heavy equipment should be restricted from these buffer zones and no more than 50% of the overstory trees should be removed in any one harvesting operation, so as to prevent changes in water temperature. Streams should be crossed at right angles and bridges or poles fords should be used to stabilize these crossings. Upon completion of the harvest crossings should be restored and stabilized with hay mulch or seeded with conservation mix.

HAB/ REC FP/ S&W	2	OM	Commercial thinning/ patch clearcut Creation of den trees, wildlife openings and hiking trails	59.91	22	3.0cbs	2007-2016
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As the quality of the trees in this stand are very poor, and the soils are very drought prone, a treatment aimed at establishing white pine throughout the stand is in order. White pine would grow much better as evidenced by the abutting timber stands owned by the M.D.C. which have, over the years, through proper management, been almost completely converted to white pine. Removing trees in areas of 1/2-2 acres in size would create conditions favorable for establishing white pine in the stand. Areas around the clearcut patches could be thinned, so as to improve the growth and health of the existing trees and would result in a mixed pine and oak stand. An additional advantage of these patch cuts would be the creation of wildlife habitat for ground feeding birds, rabbits, deer and

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MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	

STAND 2 CONTINUED:

moose. Logging debris would create cover and tree sprouts would provide browse for feeding. At a minimum, two den trees per acre should be preserved or created to provide nesting habitat for birds, owls and small mammals and girdling of selected trees would allow them to slowly deteriorate and create cavities as the trees rot and die. Trails would be established during the harvesting operation, that would connect with existing fire roads and trails for hiking, skiing and viewing of wildlife.

Caution should be exercised when harvesting on steep slopes present in this stand and skid trails should be carefully planned so as to prevent soil erosion on these slopes. Any trails located on steep slopes should have water bars installed at the completion of the harvest and if needed, should be stabilized with hay mulch or a conservation mix grass seed. Log landing areas should be graded and seeded with a conservation mix grass seed to stabilize the soils and improve wildlife habitat. Access roads should be improved during the harvesting operations in this stand to provide adequate fire protection within the forest areas.

HAB/ REC	3	WH	Commercial thinning/ patch clearcut Creation of den trees, wildlife openings and hiking trails	14.04	22	3.0cfs	2007-2016
FP/ S&W							

The characteristics of this stand are very similar to that found in stand 2. The exception is the presence of a mature overstory of white pine that is dispersed throughout the stand. These pines represent a valuable seed source for future regeneration and their removal should be delayed until adequate regeneration is established. Some white pine saplings are beginning to become established in the understory in some areas, however heavy growth of mountain laurel is detrimental to establishing adequate regeneration. Selective thinning to allow growing space for young good quality oaks and pines and small patch cuts of 1/4-1/2 acre in size, around white pine seed trees would create desirable conditions for regeneration and would result in wildlife openings for feeding and nesting.

As in stand 2, caution should be exercised when harvesting on steep slopes present in this stand and skid trails should be carefully planned so as to prevent soil erosion on these slopes. Any trails located on steep slopes should have water bars installed at the completion of the harvest and if needed, should be stabilized with hay mulch or a conservation mix grass seed and access roads should be improved during the harvesting operations to provide adequate fire protection within the forest areas.

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MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	
HAB/ REC FP/ S&W	4	OM	Patch clearcut Creation of den trees, wildlife openings and hiking trails, nesting boxes	28.5	20	3.0cfs	2007-2016

Although this stand is presently adequately stocked, the condition of the trees and the desired species mix is inadequate. Harvesting activities aimed at creating wildlife habitat and recreational use would also promote species diversity and create openings necessary for the establishment of white pine in the stand. Small 1/4-1/2 acre patch cuts situated in close proximity to hiking trails would achieve good results and provide opportunities for viewing wildlife. Where present large overstory trees of poor quality should be girdled and den trees created. In areas where heavy mountain laurel growth prevent regeneration, patch cutting systems should be employed. White pine and red oak seed trees should be maintained around the perimeter of these patch cuts to provide adequate seed for regeneration. The principal wildlife value of this stand at present is its mast crop production. This is important to deer and small animals as a food source and should be preserved in future management of this stand. Keeping wildlife openings small (1/4-1/2 acre) would provide added cover and promote browse production for additional wildlife species as well as feeding areas for hawks, owls, coyote, fox, fisher and bobcats.

Due to the presence of vernal pools and deep marshes scattered through this stand, special care should be taken so as not to disturb these valuable and productive habitat areas. Buffer strips should be maintained and trees should not be cut in or around these areas. There are some great hilltop vistas that could be created to provide spectacular views of these vernal pools, glacial eskers and habitat areas. Skid trails should be carefully planned to provide access for hiking and skiing through this stand and could connect to other trails and roads located in this forest. Due to the steep slopes associated with these glacial eskers, care should be exercised in the location and treatment of skid trails and hiking paths. Soils should be stabilized and water bars installed where necessary.

HAB/ REC FP/ S&W	5	WP	Commercial thinning Hiking trails	5.1	75	7.6 mbf	2007
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This stand is a near pure stand of white pine and is currently overstocked and in need of harvesting to release good quality crop trees and promote healthy tree growth. A commercial thinning would remove approximately 75 square feet of basal area and provide increased growing space for the remaining trees. Poor quality hardwood trees should be removed during this harvest or girdled and left standing to provide den trees for wildlife. There is a high water table in this stand and special care should be employed during logging operations to prevent excessive rutting and soil erosion. Log landing areas should be located on high ground and harvesting should be

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MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	

STAND 5 CONTINUED:

restricted to the winter months when the ground is more stable. As this stand is in close proximity to the Quinapoxet River, a source of public drinking water, any disturbed areas should be quickly stabilized upon completion of the harvest using hay mulch and/or conservation seeding. Skid trails should be carefully planned to provide access for hiking, skiing, snow shoeing and viewing habitat areas along the river.

HAB/ REC FP/ S&W	6	WH	Preparation cut-Shelterwood	6.38	50	5 mbf	2007
			Creation of den trees and hiking trails,			4.0cfs	

This stand is located adjacent to stand 5 and grows on the same soil type. It is mature and overstocked and in need of treatment. Both this stand and stand 5 would most likely become similar in characteristics over periods of multiple harvests and eventually evolve into a mixed white pine/red oak forest. These species grow well together on rich bottomland soils and would provide a healthy and diverse forest. A preparation cut under the shelterwood system would best achieve the goals of management in this stand. Removal of approximately one third of the overstory trees would create small openings in the forest canopy and allow sunlight to reach the forest floor, thus aiding in the decomposition of woody debris and the establishment of the desired regeneration, while increasing the growing space for crop trees and improving the overall health of the stand. As with stand 5, there is a high water table in this stand and special care should be employed during logging operations to prevent excessive rutting and soil erosion and any disturbed areas should be quickly stabilized upon completion of the harvest using hay mulch and/or conservation seeding.

Den trees should be created to provide habitat for birds and small animals. Skid trails should be carefully planned to provide access for hiking, skiing, snowshoeing and viewing habitat areas along the river.

HAB/ REC S&W	7	RM	Nesting boxes	3.82	0	0	2007
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This stand is located in the flood plain of the Quinapoxet River in very deep mucky soils. It is highly subject to wind throw and flooding and there is very little opportunity for management activities. The most important asset of this area is it's ability to filter and clean the water. It is a critical protection area for the public drinking water supply and would best be left in its natural condition.

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MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	

STAND 7 CONTINUED:

After the planned harvesting of stands 5 and 6, when a hiking trail has been established along this bordering vegetative wetland, nesting boxes would provide opportunities for viewing wood duck and wildlife habitat.

PROPERTY BOUNDARIES:

Much of the property boundaries for this forest were located during the research for this plan. However, some areas require deed research and the boundaries will need to be located during the first year of classification under the Stewardship program. All property boundaries must be blazed and painted to provide permanent identification in the future and to insure that all management activities are conducted within the area of the town forest.

HIKING TRAILS:

Skid trails will be carefully planned and laid out by the Forester in each stand as called for in the management plan. Skid trails and access roads will be located so as to facilitate the construction of such trails in the future. When available, cost share money will be applied for to help offset the cost of developing these trails.

HABITAT MANAGEMENT ACTIVITIES:

When available, cost share monies will be applied for to help with the creation of habitat areas and activities, such as creation of wildlife openings and installation of nesting boxes.

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Town(s) Holden

Owner(s) Town of Holden

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CH. 61/61A SIGNATURES I attest that I am familiar with and will be bound by all applicable Federal, State, and Local environmental laws and/or rules and regulations of the Department of Environmental Management. I further understand that in the event I convey all or any portion of this land during the period of classification, I am under obligation to notify the grantee(s) of all obligations of this plan which become his/hers to perform and will notify the Department of Environmental Management of said change of ownership (see below).

Findings pursuant to General Laws, Chapter 30, Section 61:

1. All feasible measures have been taken to avoid or minimize adverse impact to the environment in the issuance of the Forest Management Certificate.
2. The Forest Management Certificate is exempt under the rules and regulations governing the preparation of Environmental Impact Reports.

Signed under the pains of perjury:

Owner(s)

Town of Holden Conservation Commission
1196 Main Street
Holden, MA 01520

Date

Plan Preparer: Joseph Lee

Date 2/28/07

Mailing Address: Chestnut Forestry Services, Inc.

P.O. Box 78
Princeton, MA 01541

Phone 508-612-6312

Approved, Service Forester _____

Date _____

Phone _____

Approved, Service Forester _____

Date _____

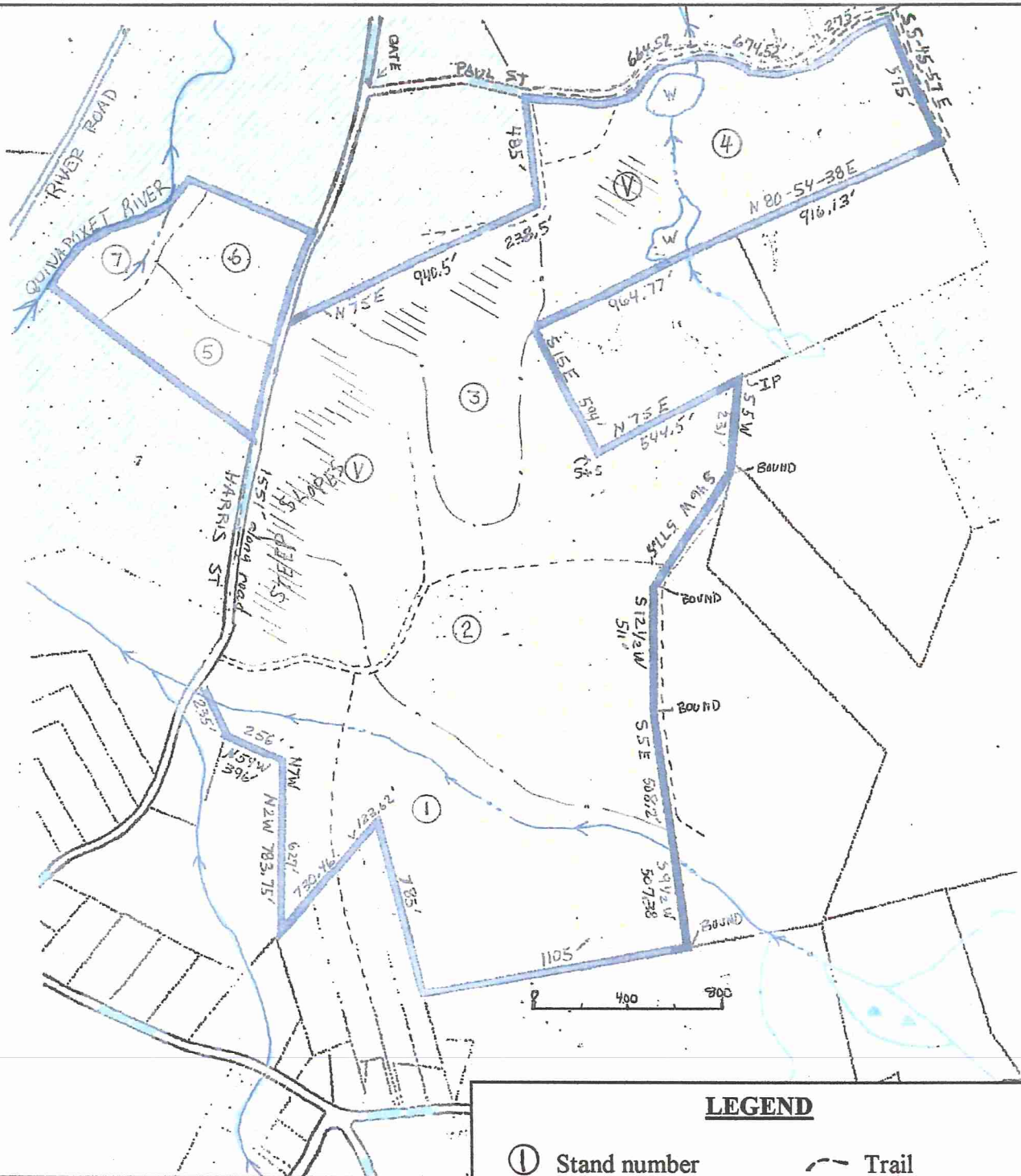
Phone _____

Approved, Regional Supervisor _____

Date _____

In the event of a change of ownership of all or part of the property, the new owner must file an amended Ch. 61/61A plan within 90 days from the transfer of title to insure continuation of Ch. 61/61A classification. Please review the existing Forest Management Plan to determine if past goals and management practices coincide with your goals for the property. If you have any questions please contact the DEM Service Forester.

PLAN OF LAND HOLDEN TOWN FOREST HOLDEN, MASSACHUSETTS



Map prepared by
Joseph Lee, Certified Forester
Chestnut Forestry Services, Inc.
Princeton, MA
 February 15, 2006

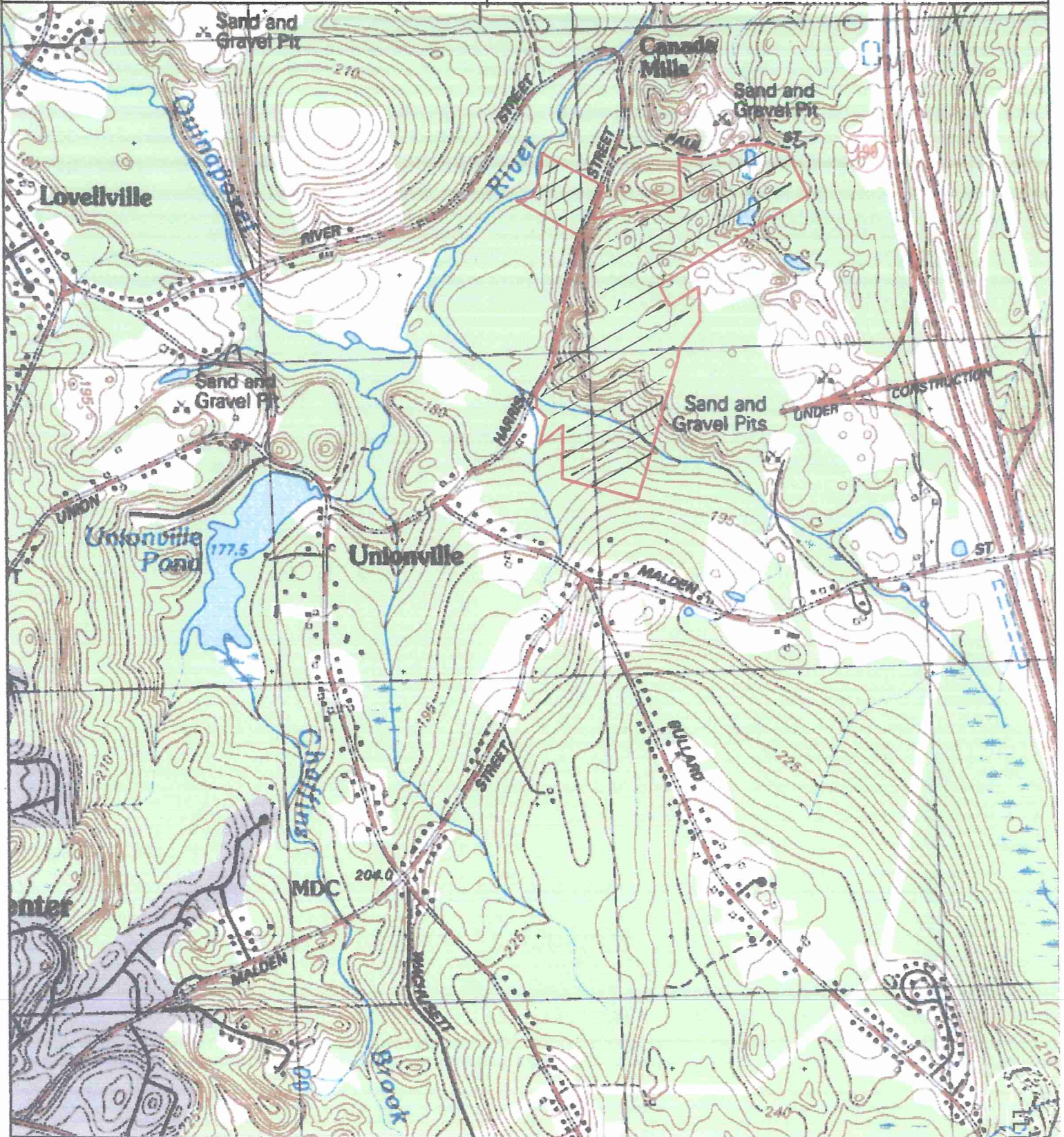
LEGEND			
①	Stand number	---	Trail
---	Stand boundary	ooo	Stone wall
---	Property boundary	--->	Stream
---	Access road	*-*	Fence
///	Steep slopes	W	Pond

266

50'

267

15 KM TO MASS. 2
3.4 KM TO MASS. 1



Name: WORCESTER NORTH
 Date: 3/1/106
 Scale: 1 inch equals 1333 feet

Location: 042° 21' 39.0" N 071° 49' 54.0" W
 Caption: LOCUS MAP
 HOLDEN TOWN FOREST
 HOLDEN, MA

Appendix 1
HOLDEN TOWN FOREST
Soil Survey Data

The following list of soil types are representative of that which is found on the Holden Town Forest. A map is provided for reference. Soil maps and descriptions are provided by the United States Department of Agriculture to assist farmers, foresters and land managers in planning activities associated with the efficient use of the occurring soils. They describe the characteristics of the soil and its limitations to various uses as well as make recommendations as to the most suitable use and which crops would grow best on any given soil type.

Chatfield-Hollis rock outcrop

This soil type consists of gently sloped to very steep, moderately deep, well-drained and somewhat excessively drained soils on bedrock-controlled uplands. They form in glacial till underlain by crystalline bedrock. Chatfield soils have friable loam to sandy loam surface soil, subsoil and substrata with moderate to rapid permeability. Rock outcrops are common and many areas have stones and boulders on the surface. Surface stones limit cultivation or use of equipment. Depth to bedrock is between 20-40 inches. The water table is normally more than 6 feet below the surface. Chatfield soils have a site index of 75 for White Ash, 70 for Northern Red Oak and 65 for Sugar Maple.

Hinckley Sandy Loam

This soil type consists of deep excessively drained soils on glacial outwash plains, terraces, and eskers. They form in gravelly and coarse textured glacial outwash. Hinckley soils have friable or loose, gravelly and very gravelly sandy loam to loamy coarse sand surface soil and subsoil with rapid permeability, over loose stratified sand and gravel substratum at 12-330 inches. Major limitations of this soil type are related to slope and droughtiness. This soil type has a site index of 60 for White Pine and 49 for Red Oak.

Scarboro mucky fine sandy loam

These soils are very deep, nearly level and very poorly drained. It is found in low-lying areas and outwash plains. Typically, the surface layer is covered with about 8 inches of organic material. The substratum is grayish brown and extends to a depth of 60 inches or more. The upper part is loamy sand, the middle part is sand and the lower part is gravelly sand. The permeability of this soil is rapid. Available water capacity is high. The high water table makes this soil poorly suited to farming and woodland. The water table restricts the root zone of trees, limits the use of equipment and causes a high rate of seedling mortality. This soil type has a site index of 55 for white pine and red maple and is best suited for these species.

Merrimac fine sandy loam

Merrimac soils series consists of nearly level to steep, deep, somewhat excessively drained soils on glacial outwash plains. These soils have friable fine sandy loam and sandy loam surface soil and subsoil with moderate permeability over a loose stratified sand and gravel substrata at 18 to 30 inches with rapid permeability. These are considered very stable soils with few limitations. They have a site index of 64 for Eastern White Pine and 51 for Northern Red Oak and are very suitable for growing these species.

Sudbury fine sandy loam

This soil type is very deep, gently sloping and moderately well drained. It is in slight depressions on outwash plains. Typically, the surface layer is very dark grayish brown fine sandy loam about 9 inches thick. The subsoil is yellowish brown and is about 16 inches thick. The substratum is light olive brown gravelly sand to a depth of 60 inches or more. The permeability of these soils is moderately rapid and available water capacity is high. This soil is well suited to woodlands, cultivated crops, hay and improved pastures. The seasonal high water table is the limitation of this soil. It has a site index of 60 for white pine and 45 for red oak. White pine should be encouraged on this site.

Limerick silt loam

This soil is very deep, nearly level and poorly drained. It is found on flood plains. Typically, the surface layer is dark grayish brown silt loam about 9 inches thick. The substratum is olive gray and extends to a depth of 60 inches or more. The permeability of this soil is moderate throughout. Available water capacity is high. The seasonal high water table is at the depth of 6-18 inches. Flooding and a seasonal high water table make this soil poorly suited to trees. This soil is suited to cultivated crops, hay and improved pasture. The site index for this soil is 65 for white pine.

***SITE INDEX**

Site index is a measure of the productivity of a given soil type for various tree species. It is determined by calculating the average height of a tree at the age of 100 years for a given tree species growing on the soil type. The higher the site index, the better that species is suited to grow on any given site. Forest management activities should encourage the growth of trees that have the highest site index for that site.

SOIL LEGEND

Publication symbols consist of letters. The first letter, always a capital, is the initial letter of the soil name. The second letter is lower case and separates map units, except those that are slope phases, having names that begin with the same letter. The third letter, always a capital A, B, C, D, or E, indicates the class of slope. Symbols without a slope letter are for nearly level soils, soils named for higher categories, or for miscellaneous areas.

SYMBOL	NAME	SYMBOL	NAME
AgA	Agawam fine sandy loam, 0 to 3 percent slopes	QnA	Quonset loamy sand, 0 to 3 percent slopes
AgB	Agawam fine sandy loam, 3 to 8 percent slopes	QnB	Quonset loamy sand, 3 to 8 percent slopes
AgC	Agawam fine sandy loam, 8 to 15 percent slopes	QnC	Quonset loamy sand, 8 to 15 percent slopes
AmB	Amostown and Belgrade soils, 3 to 8 percent slopes	QnD	Quonset loamy sand, 15 to 25 percent slopes
CaB	Canton fine sandy loam, 3 to 8 percent slopes	Ra	Raynham silt loam
CaC	Canton fine sandy loam, 8 to 15 percent slopes	RdB	Ridgebury fine sandy loam, 0 to 3 percent slopes
CbB	Canton fine sandy loam, 3 to 8 percent slopes, very stony	RdB	Ridgebury fine sandy loam, 3 to 8 percent slopes
CbC	Canton fine sandy loam, 8 to 15 percent slopes, very stony	RsA	Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony
CcB	Canton fine sandy loam, 3 to 8 percent slopes, extremely stony	RsB	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony
CcC	Canton fine sandy loam, 8 to 15 percent slopes, extremely stony	Sa	Saco silt loam
CcD	Canton fine sandy loam, 15 to 25 percent slopes, extremely stony	Sc	Scarboro mucky fine sandy loam
CcE	Canton fine sandy loam, 25 to 35 percent slopes, extremely stony	SdA	Sudbury fine sandy loam, 0 to 3 percent slopes
ChC	Chatfield-Hollis-Rock outcrop complex, 3 to 15 percent slopes	SdB	Sudbury fine sandy loam, 3 to 8 percent slopes
ChD	Chatfield-Hollis-Rock outcrop complex, 15 to 25 percent slopes	Su	Suncook loamy fine sand
De	Deerfield sandy loam	Sw	Swansea muck
Fm	Freetown muck	Ud	Udorthents, smoothed
Fp	Freetown muck, ponded	Ur	Urban land
HaA	Hadley very fine sandy loam	Wa	Walpole fine sandy loam
HgA	Hinckley sandy loam, 0 to 3 percent slopes	Wg	Whitman loam
HgB	Hinckley sandy loam, 3 to 8 percent slopes	Wh	Whitman loam, extremely stony
HgC	Hinckley sandy loam, 8 to 15 percent slopes	WnA	Windsor loamy fine sand, 0 to 3 percent slopes
HgD	Hinckley sandy loam, 15 to 25 percent slopes	WnB	Windsor loamy fine sand, 3 to 8 percent slopes
HgE	Hinckley sandy loam, 25 to 35 percent slopes	WnC	Windsor loamy fine sand, 8 to 15 percent slopes
HkB	Hinckley sandy loam, 3 to 8 percent slopes, very stony	WnD	Windsor loamy fine sand, 15 to 25 percent slopes
HkC	Hinckley sandy loam, 8 to 15 percent slopes, very stony	Wo	Winooski very fine sandy loam
HuC	Hinckley-Urban land complex, 0 to 15 percent slopes	WrA	Woodbridge fine sandy loam, 0 to 3 percent slopes
HwB	Hinesburg loamy sand, 3 to 8 percent slopes	WrB	Woodbridge fine sandy loam, 3 to 8 percent slopes
Lm	Limerick silt loam	WrC	Woodbridge fine sandy loam, 8 to 15 percent slopes
MeA	Merrimac fine sandy loam, 0 to 3 percent slopes	WsB	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony
MeB	Merrimac fine sandy loam, 3 to 8 percent slopes	WsC	Woodbridge fine sandy loam, 8 to 15 percent slopes, very stony
MeC	Merrimac fine sandy loam, 8 to 15 percent slopes	WtB	Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony
MeD	Merrimac fine sandy loam, 15 to 25 percent slopes	WtC	Woodbridge fine sandy loam, 8 to 15 percent slopes, extremely stony
NgA	Ninigret fine sandy loam, 0 to 3 percent slopes	W	Water
PaB	Paxton fine sandy loam, 3 to 8 percent slopes		
PaC	Paxton fine sandy loam, 8 to 15 percent slopes		
PaD	Paxton fine sandy loam, 15 to 25 percent slopes		
PbB	Paxton fine sandy loam, 3 to 8 percent slopes, very stony		
PbC	Paxton fine sandy loam, 8 to 15 percent slopes, very stony		
PbD	Paxton fine sandy loam, 15 to 25 percent slopes, very stony		
PcB	Paxton fine sandy loam, 3 to 8 percent slopes, extremely stony		
PcC	Paxton fine sandy loam, 8 to 15 percent slopes, extremely stony		
PcD	Paxton fine sandy loam, 15 to 25 percent slopes, extremely stony		
PcE	Paxton fine sandy loam, 25 to 35 percent slopes, extremely stony		
PdC	Paxton-Urban land complex, 8 to 15 percent slopes		
Pg	Pits, gravel		
Pm	Pits, quarry		
PoB	Poquonock loamy sand, 3 to 8 percent slopes		
PoC	Poquonock loamy sand, 8 to 15 percent slopes		
PsB	Poquonock loamy sand, 3 to 8 percent slopes, very stony		