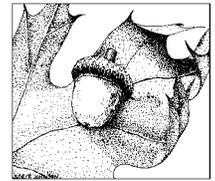




# FOREST MANAGEMENT PLAN

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



CHECK-OFFS					Administrative Box	
CH61 cert. <input type="checkbox"/>	CH61A cert. <input type="checkbox"/>	CH61B cert. <input type="checkbox"/>	STWSHP new <input checked="" type="checkbox"/>	C-S EEA <input type="checkbox"/>	Case No. _____	Orig. Case No. _____
recert. <input type="checkbox"/>	recert. <input type="checkbox"/>	recert. <input type="checkbox"/>	renew <input type="checkbox"/>	Other <input type="checkbox"/>	Owner ID _____	Add. Case No. _____
amend <input type="checkbox"/>	amend <input type="checkbox"/>	amend <input type="checkbox"/>	Green Cert <input type="checkbox"/>		Date Rec'd _____	Ecoregion _____
Plan Change: _____ to _____			Conservation Rest. <input type="checkbox"/>		Plan Period _____	Topo Name <u>Haverhill</u>
			CR Holder _____		Rare Sp. Hab. _____	River Basin <u>Merrimac</u>

## OWNER, PROPERTY, and PREPARER INFORMATION

Property Owner(s) City of Haverhill, Haverhill Conservation Dept., c/o Robert E. Moore (Meadow Brook CA)  
Mailing Address City Hall Room 310, 4 Summer Street, Haverhill, MA 01830 Phone 978-420-3678

Property Location: Town(s) Haverhill Road(s) Millvale & Middle Road/ E.Broadway

Plan Preparer Gary H. Gouldrup, New England Forestry Cons., Inc. Mass. Forester License # 81  
Mailing Address 72 Townsend Street, Pepperell, MA 01463 Phone 978-433-8780

## RECORDS

Assessor's Map No.	Lot/Parcel No.	Deed Book	Deed Page	Total Acres	Ch61/61A/61B Excluded Acres	Ch61/61A/61B Certified Acres	Stewardship Excluded Acres	Stewardship Acres
*	*	*	*	300.35	NA	NA	43.35	257.00
TOTALS				<b>300.35</b>	<b>NA</b>	<b>NA</b>	<b>43.35</b>	<b>257.00</b>

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

*There are 43.35 acres to be excluded from forest stewardship classification. This area is the Millvale Reservoir and water treatment/pumping facilities.*

**HISTORY** Year acquired Since late 1800's Year management began 2014

Is subdivision plan on file with municipality? Yes  No

Are boundaries blazed/painted/flagged/signs posted? (circle all that apply) 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. NA Treatment NA Reason NA

(if additional space needed, continue on separate page)

## Previous Management Practices (last 10 years)

Stand #	Cutting Plan #	Treatment	Yield	Value	Acres	Date
<u>All</u>	<u>NA</u>	<u>Trail Maintenance</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>2005-14</u>

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

\* Please see Page #2 for Assessors Map & Lot information.

**RECORDS** (continued)

Assessor's Map No.	Lot/Parcel No.	Deed Book	Deed Page	Total Acres	Ch61/61A/61B Excluded Acres	Ch61/61A/61B Certified Acres	Stewardship Excluded Acres	Stewardship Acres
461	1-5	4561	513	190.66	NA	NA	43.35	147.31
459	3-10	UK	UK	40.10	NA	NA	0.00	40.10
460	2-16	UK	UK	P/O 3-10	NA	NA	PO 3-10	PO 3-10
459	3-9	UK	UK	6.10	NA	NA	0.00	6.10
459	3-8	15892	205	8.99	NA	NA	0.00	8.99
459	3-7	UK	UK	5.99	NA	NA	0.00	5.99
459	3-6	11673	272	4.99	NA	NA	0.00	4.99
459	3-4	5798	633	4.99	NA	NA	0.00	4.99
459	3-3	UK	UK	1.80	NA	NA	0.00	1.80
460	2-1	5798	632	3.50	NA	NA	0.00	3.50
460	2-2	UK	UK	1.00	NA	NA	0.00	1.00
460	2-4	UK	UK	2.20	NA	NA	0.00	2.20
460	2-5	5232	560	1.00	NA	NA	0.00	1.00
460	2-6	UK	UK	6.00	NA	NA	0.00	6.00
461	2-2	1942	UK	2.30	NA	NA	0.00	2.30
460	2-7	UK	UK	4.30	NA	NA	0.00	4.30
460	2-14	UK	UK	12.00	NA	NA	0.00	12.00
460	2-10	UK	UK	4.40	NA	NA	0.00	4.40
<b>TOTALS</b>				<b>300.35</b>	<b>NA</b>	<b>NA</b>	<b>43.35</b>	<b>257.00</b>

**EXCLUDED AREA DESCRIPTION** (continued):

*There are 43.35 acres to be excluded from forest classification. This area is Millvale Reservoir and water treatment/pumping facilities.*

**HISTORY** (continued):

This is the first Forest Management Plan for the Meadow Brook Conservation Area.

Management in the past has been primarily focused on trail construction and maintenance. Sections of the boundary lines have been blazed and painted.



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## Property Overview, Regional Significance, and Management Summary

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The 300-acre Meadow Brook Conservation Area is located in a northeast section of Haverhill approximately 3,000 feet west of the Merrimack River. The property is surrounded by private landowners in a semi-rural setting. Most of the surrounding open space areas are forest lands. The nearest property with long term protection is Haverhill's Winnekenni Park (700+-acres) located just over a ½ mile west of the property. The property is listed in the Haverhill Trails Committee guide: [A Guide to Exploring Haverhill Trails](#). The Guide provides some history of the property's acquisition and past use:

*“The Jewel of the neighbors on and surrounding Millvale Road and East Broadway, Meadow Brook Conservation Area includes Millvale Reservoir, which was created in the late 19<sup>th</sup> century to support the fast-growing population of Haverhill. Around the time of the Civil War, Haverhill's population was about 10,000.”* (Haverhill Trails Committee, 2009).

The property lies in the Merrimack River Watershed. Water that passes through the property flows into East Meadow River and Millvale Reservoir. Water continues to flow south into the Merrimack River just over 3,000 feet from the property. Water from Millvale Reservoir is pumped into Kenoza Lake approximately 3,300 feet west of the property where it is eventually treated at the water treatment facility for purification.

The forest stewardship land is comprised of mature upland woodlands (69%) and wetland resource areas which include red maple swamps, open marsh and Millvale Reservoir (29%). Abandoned gravel pits with developing timber resources (2%) can also be found on the property. White pine and mixed oaks dominate the upland areas. Timber resource quality ranges from poor to high. Mortality and blowdown are developing in the overstocked white pine stands where no management has occurred since their establishment on the property. A quarantine of white ash forest products in Essex County was recently imposed by the USDA due to the presence of the Emerald Ash Borer found in North Andover. The white ash trees will be monitored during this ten year management period for its presence. Target canker is deforming most of the black birch trees on the property. It appears that the property was used for the extraction of gravel in the past. Gravel pits were abandoned at different times during the development of the forest and forest fires have occurred on the property as well in the past. Invasive and non-native vegetation on the property varies in occurrence and includes honeysuckle, Japanese barberry, buckthorn, bittersweet, and firebush.

Unique cultural features on the property include the “Haunted Bridge” and “Suicide Pond”. Suicide Pond is the subject of one of John Greenleaf Whittier's poems, in which the body of a beautiful young lady is found in this small ponded area on the south side of Thompson Road.

Forest soils on the upland sections of the property include well and moderately well drained loamy sand soils (Hinckley-Windsor). The areas around Meadow Brook consist of poorly drained silt loam (Scantic) and poorly drained organic soils (Freetown Muck). Abandoned gravel pits are common on the property. The forest soils are productive and capable of producing high quality timber resources.

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Owner(s) City of Haverhill – Meadow Brook CA

Town(s) Haverhill



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## Property Overview, Regional Significance, and Management Summary

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The Haverhill City Mayor, through the Conservation Department, established the Haverhill Forest Stewardship Committee in 2009. The Forest Stewardship Committee has developed the following goals for the Meadow Brook Conservation Area:

Management will focus on promoting a healthy forest environment for the safety and enjoyment of the residents of Haverhill and others who will visit the property. The City would like to specifically accomplish the following on this property:

- Enhance both the quality and quantity of future timber products;
- Conduct a biomass operation to improve regeneration and aesthetics;
- Produce firewood that will be made available to residents;
- Enhance wildlife habitat by diversifying tree age and species
- Protect the water quality of Millvale Reservoir; and
- Maintain current trails and create a self-guided stewardship trail for public education and enjoyment.

Timber resource management will be aimed at enhancing the quality of timber resources into the future while improving wildlife habitats and aesthetics throughout the property. Commercial sales of timber will require whole-tree chipping of low quality trees and portions of trees that do not have firewood or sawtimber products primarily for aesthetic and fire protection purposes. Removing low quality hardwoods for firewood will be done in order to generate a supply of firewood for the residents of Haverhill.

The primary management objective of the Meadow Brook Conservation Area will be to preserve, maintain and improve water quality as a public water resource supply for the residents of Haverhill. The Haverhill Forest Stewardship Committee has reviewed the Quabbin Reservoir Watershed System Land Management Plan, 2007-2017. The Quabbin Forest Management Objectives can be found on page 144 of the Plan. The Forest Stewardship Committee would like to pursue management of the Meadow Brook Conservation Area as stated in the first paragraph under the “Primary Objectives” (5.2.3.1). *“The primary objective of forest management of the Quabbin (Meadow Brook Conservation Area) forest is to create and maintain a complex forest structure, which forms a protective forest cover and a biological filter on the watershed land. This watershed protection forest is designed to be vigorous, diverse in species and age, actively accumulating biomass, conserving ecological and economic values, actively regenerating, and most importantly maintaining a predictable flow of high quality water from the land”*.

The Forest Stewardship Committee will use the Quabbin Plan as a guide when managing the Meadow Brook Conservation Area watershed lands.



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## Property Overview, Regional Significance, and Management Summary

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Management on the Millvale Reservoir Watershed will be approached by using the “*Subwatershed Administration of Forest Management*”. The Quabbin Plan defines a subwatershed on page 145 (5.2.3.21). “A subwatershed is defined in most cases as the land area that drains to a perennial tributary of the reservoir.” The Quabbin Plan defines this management theory on page 146 (5.2.3.2.2). “The general theory behind the use of subwatershed-based planning is to control the proportion of a drainage area that is disturbed by management activities (e.g., logging or road work) during the management period in order to reduce the chances of water quality impacts. This approach is partly based on research on experimental watersheds throughout the eastern US that indicate that until approximately 25-30% of the watershed overstory stocking is harvested (assuming nearly 100% forest cover type), there is no detectable increase in water yield (Hornbeck and Kochenderfer, 2004: Hornbeck et al., 1993). As increases in transport of sediments and nutrients to tributaries and the reservoir are directly related to increases in water yield, it follows that the 25-30% threshold also applies to water quality changes (so long as Conservation Management Practices are in place, the greatest concern is with the movement of nutrients rather than sediments). The same research also demonstrated that water yield generally returns to pre-harvest conditions as the harvested area regenerates – usually within 3-10 years.”

Wildlife habitats will be enhanced through the timber harvesting practices. Creating multiple age classes within the forest will benefit a variety of wildlife species. Identifying large “Legacy Trees” will be done to promote “Old Growth” characteristics within the forest where these trees exist and where this practice is applicable. Wood duck nest boxes will be considered in the partially vegetated and open wetland resource areas.

All forest management activities will be sensitive to protecting water quality, soils, cultural resources, wildlife habitats, rare and endangered species and their habitats, aesthetics and recreational values. When harvesting timber resources on the property a Chapter 132 Cutting Plan will be filed with the Department of Conservation and Recreation. The Division of Fisheries and Wildlife’s Natural Heritage & Endangered Species Program (NHESP) will make recommendations to protect any special vegetation or wildlife and their habitats should they exist on the property. The Division of Fisheries and Wildlife’s Natural Heritage & Endangered Species Program (NHESP) has identified areas on the property that provide habitat for the *Wood Turtle*.

Trail maintenance and interpretive signage will be a priority on this forest for the safety and forest stewardship education of those using the property.

Timber resource management will be aimed at enhancing the quality of timber resources into the future while improving wildlife habitats and aesthetics throughout the property. Commercial sales of timber will require whole-tree chipping of low quality trees and portions of trees that do not have firewood or sawtimber products primarily for aesthetic and fire protection purposes. Removing low quality hardwoods for firewood will be done in order to generate a supply of firewood for the residents of Haverhill.

## Landowner Goals

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

Goal	Importance to Me			
	High	Medium	Low	Don't Know
Enhance the Quality/Quantity of Timber Products*	X			
Generate Immediate Income		X		
Generate Long Term Income	X			
Produce Firewood	X			
Promote Biological Diversity	X			
Enhance Habitat for Birds	X			
Enhance Habitat for Small Animals	X			
Enhance Habitat for Large Animals	X			
Improve Access for Walking/Skiing/Recreation	X			
Maintain or Enhance Privacy			X	
Improve Hunting		X		
Improve Fishing		X		
Preserve or Improve Scenic Beauty	X			
Protect Water Quality	X			
Protect Unique/Special/Cultural Areas (Dam-Pond)	X			
Other: Attain Green Certification				X
Other: Public Education & Outreach	X			

\* **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:

*The City of Haverhill would like to improve and protect the forest resources on the Meadow Brook Conservation Area for the benefit of the residents of Haverhill. Protecting the Millvale Reservoir Watershed is a high priority. These goals will be accomplished by periodically harvesting timber resources, discouraging the use of unauthorized motor vehicle use (ATV's), enhancing wildlife habitat, and educating the public on forest stewardship matters.*

### 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:

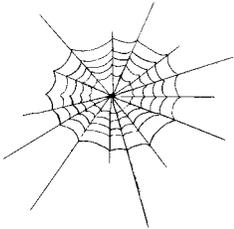
1. Managing for long-term forest health, productivity, diversity, and quality.
2. Conserving or enhancing water quality, wetlands, soil productivity, biodiversity, cultural, historical and aesthetic resources.
3. Following a strategy guided by well-founded silvicultural principles to improve timber quality 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:** \_\_\_\_\_

## 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.)

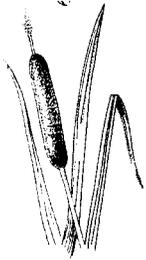


**Rare Species:** Rare species include those that are **threatened** (abundant in parts of its range but declining in total numbers, those of **special concern** (any species that has suffered a decline that could threaten the species if left unchecked), and **endangered** (at immediate risk of extinction 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.

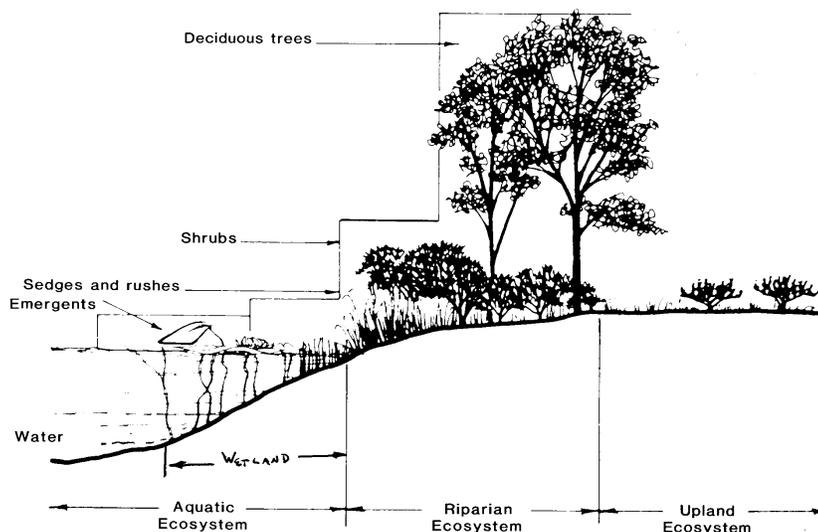


Figure 1: Example of a riparian zone.

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

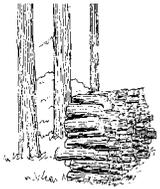
one of three broad strategies. These are **managing for diversity, protecting existing habitat, and enhancing existing habitat.**

**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 17<sup>th</sup> and 18<sup>th</sup> 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.

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**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.



**STAND DESCRIPTIONS**

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	1	WO	12.27	13.7" DBH Sawtimber-Pole	100 sqft	5,300 BF. & 12.3 Cds.	63 (WP)

White pine and mixed oaks dominate the overstory of this adequately stocked sawtimber sized stand. Species composition, stand density, and size class varies throughout the area. The white pine stems are generally poor to good in form and timber quality. The mixed oaks include red oak, black oak, and white oak sawtimber and pole sized stems of poor to good form and timber quality. Scattered red maple and other mixed hardwood stems are present as well. Forest regeneration is scattered with white pine and mixed hardwood saplings that are suppressed as a result of a dense overstory canopy. The area is gently to moderately sloped with well drained loamy coarse sand soils (Hinckley) capable of producing high quality timber resources. Sections of this area were once part of a gravel pit. Forest fires have been a part of the forests history. Management will focus on timber resource management and recreation. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing wildlife habitat and recreational opportunities for the public and protecting water quality on the Millvale Reservoir Watershed.

STEW	2	MS	35.26	Open Marsh Sapling-Pole	NA	NA	50 (RM)
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This area is mostly an open marsh and wetland resource area around East Meadow River. There are scattered saplings and pole sized red maple trees on the dry fringes of the area. Cattails, alder, winterberry, dogwood, highbush blueberry, sweet pepperbush, swamp azalea, ferns and grasses can all be found growing in and along the edges of the stand. Dead snags are scattered throughout the area due to flooding from beaver activities. The area is flat, hummocky, and tends to be wet most of the year. The soils are very poorly drained silt loam (Scantic) and organic muck (Freetown Muck). The area will be left to develop naturally. The desired future condition is a wetland resource area that provides habitat for wildlife.

STEW	3	OH	6.44	9.7" DBH Sawtimber-Pole	70 sqft	1,159 BF & 15.7 Cds.	60 (RO)
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Red oak and mixed hardwoods dominate the overstory of this variably stocked sawtimber and pole sized stand. The red oak stems are generally fair to good in form and timber quality. The mixed hardwoods include red maple, white ash and birch poles and sawtimber of poor to good form and timber quality. Forest regeneration is scattered and is competing with an understory of wetland shrubs and plants. Dead snags are present in the wetter areas of the stand. The area is flat with poorly drained soils (Scantic) and moderately well to well drained soils (Hinckley) capable of producing fair to high quality timber resources. Some of the areas have disturbed soils from gravel excavation. Management will focus on timber resource management and recreation. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing wildlife habitat and recreational opportunities for the public and protecting water quality on the Millvale Reservoir Watershed.

OBJECTIVE CODE: CH61 = stands classified under CH61/61A      STEW= stands not classified under CH61/61A  
 STD= stand    AC= acre    MSD= mean stand diameter    MBF= thousand board feet    BA= basal area    VOL= volume

Owner(s) Haverhill – Meadow Brook CA      Town(s) Haverhill

**STAND DESCRIPTIONS**

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	4	WH	16.98	14.8" DBH Sawtimber	180 sqft	23,638 BF & 23.2	63 (WP)

White pine and mixed hardwoods dominate the overstory of this overstocked sawtimber and pole sized stand. The white pine stems are poor to good in form and timber quality with a high percentage of the stems being over 25" DBH. The mixed hardwoods include red oak, black oak, white oak, red maple, and birch sawtimber and pole sized stems of poor to good form and timber quality. Forest regeneration is scattered with white pine and mixed hardwood saplings that are suppressed as a result of a dense overstory canopy. The area is flat to gently sloped with well drained soils (Hinckley-Windsor) and very poorly drained soils capable of producing high quality timber resources. There is an open wetland resource area in the southern section of this stand. Management will focus on timber resource management and recreation provided access to the parcel is obtained. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing wildlife habitat and recreational opportunities for the public and protecting water quality on the Millvale Reservoir Watershed.

STEW	5	WO	34.32	9.1" DBH Sawtimber-Pole	103 sqft	5,750 BF. & 18.4 Cds.	63 (WP)
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White pine and mixed oaks dominate the overstory of this adequately stocked sawtimber and pole sized stand. Species composition, stand density, and size class varies throughout this area. The white pine stems are generally fair to good in form and timber quality. The mixed oaks include red oak, black oak, and white oak sawtimber and pole sized stems of poor to good form and timber quality. Scattered red maple, hickory, white ash, aspen, and birch stems are present as well. Forest regeneration is scattered with white pine and mixed hardwood saplings that are suppressed as a result of a dense overstory canopy. The area is flat to moderately sloped, with well drained loamy sand soils (Hinckley) capable of producing high quality timber resources. Management will focus on timber resource management and recreation. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing wildlife habitat and recreational opportunities for the public and protecting water quality on the Millvale Reservoir watershed.

STEW	6	WH	4.42	8.5" DBH Pole	100 sqft	811 BF & 20.0 Cds.	63 (WP)
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White pine and mixed hardwoods dominate the overstory of this well stocked pole sized stand that is developing in old gravel pit. The white pine stems are poor to good in form and timber quality. The mixed hardwoods include aspen, mixed oaks, hickory, black cherry, birch, and white ash poles and scattered sawtimber of poor to good form and timber quality. Forest regeneration is scattered and includes white pine and mixed hardwood saplings competing with honeysuckle, barberry, and buckthorn in the understory. The area is flat to moderately sloped with disturbed soils in an old abandoned gravel pit area. The soils are mostly well drained and capable of producing high quality timber resources. Management will focus on improvement thinning and recreation. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing wildlife habitat and recreational opportunities for the public and protects water quality on the Millvale Reservoir watershed.

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Owner(s) Haverhill – Meadow Brook CA      Town(s) Haverhill

**STAND DESCRIPTIONS**

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	7	WH	58.06	13.7" DBH Sawtimber-Pole	147 sqft	15,015 BF & 23.0 Cds.	63 (WP)

White pine and mixed hardwoods dominate the overstory of this well stocked sawtimber and pole sized stand. Species composition, stand density, and size class varies throughout the area. The white pine stems are generally poor to good in form and timber quality. The mixed hardwoods include red oak, black oak, white oak, hickory, black birch, white ash, black locust, Norway maple, and aspen poles and sawtimber stems of poor to good form and timber quality. Scattered red pine, Scotch pine, and hemlock sawtimber stems are also present. Forest regeneration is scattered with white pine and mixed hardwood saplings that are being suppressed by a dense overstory canopy and competing with layers of invasive species in the understory in sections of the forest. Dead snags and wind-blown timber are common in the very dense and unmanaged white pine stands. The area is gently to moderately sloped, with mostly well drained loamy sand soils (Hinckley) capable of producing high quality timber resources. There are some seasonally wet drainage ways that are poorly drained (Ridgebury). Some soils have been disturbed through gravel excavation and removal. Management will focus on timber resource management and recreation. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing wildlife habitat and recreational opportunities for the public and protecting water quality on the Millvale Reservoir Watershed.

STEW	8	WH	85.02	12.1" DBH Sawtimber-Pole	139 sqft	11,000 BF & 23.9 Cds	63 (WP)
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White pine and mixed hardwoods dominate the overstory of this well stocked sawtimber and pole sized stand. Species composition, stand density, and size class varies throughout the area. The white pine stems are generally poor to good in form and timber quality. The mixed hardwoods include red oak, black oak, white oak, hickory, black birch, beech, black locust, white ash, sugar maple, Norway maple, and aspen poles and sawtimber stems of poor to good form and timber quality. Scattered red pine, Scotch pine, and hemlock sawtimber stems are also present. Forest regeneration is scattered with white pine and mixed hardwood saplings that are being suppressed by a dense overstory canopy and competing with layers of invasive species in the understory in some sections of the forest. Dead snags and wind-blown timber are common in the very dense and unmanaged white pine stands. Forest fires have occurred on the forest in the past. The area is gently to moderately sloped, with mostly well drained loamy sand soils (Windsor-Hinckley) capable of producing high quality timber resources. Some soils have been disturbed through gravel excavation and removal. Management will focus on timber resource management and recreation. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing wildlife habitat and recreational opportunities for the public and protecting water quality on the Millvale Reservoir Watershed.

OBJECTIVE CODE: CH61 = stands classified under CH61/61A      STEW= stands not classified under CH61/61A  
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Owner(s) Haverhill – Meadow Brook CA      Town(s) Haverhill

**STAND DESCRIPTIONS**

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	9	MH	1.75	9.3" DBH Pole	40 sqft	9.4 Cords	63 (WP)

Black locust, red maple, white ash, mixed oaks, black cherry, aspen, and Norway maple poles and small sawtimber sized stems can all be found in this understocked area that was once a gravel pit. The overall timber quality is poor to fair. The understory vegetation is dominated by invasive species such as honeysuckle, bittersweet, buckthorn, and Japanese barberry. Management will focus on timber improvement practices and recreation. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing wildlife habitat and recreational opportunities for the public and protecting water quality on the Millvale Reservoir Watershed.

STEW	10	RM	2.48	10.9" DBH Pole-Sawtimber	70 sqft	803 BF & 17.1Cds.	55 (RM)
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Red maple is the dominant overstory species in this wetland resource area that borders Millvale Reservoir and Meadow Brook. The red maple stems are poorly formed and of poor quality. Stand density and size class varies in areas along Meadow Brook. The understory is dominated by wetland shrubs and plants with very little forest regeneration. The area is flat, seasonally wet and very poorly drained with organic soils (Freetown Muck). No management is recommended in this wetland resource area. The desired future condition is a stand that provides protection to the watershed and provides wildlife habitat.

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Owner(s) Haverhill – Meadow Brook CA      Town(s) Haverhill

**MANAGEMENT PRACTICES**  
*to be done within next 10 years*

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

***Timber Management***

STEW	5	WO	Selection Harvest Improvement Thin	30+/-	30 sqft	80 MBF & 1,200 Tons	2014-2023
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Management will focus on individual and group selection harvesting techniques. The target is to harvest approximately 1/4 - 1/3 of the overstory volume. The emphasis will be to harvest mature white pine and mixed hardwood sawtimber (18" DBH+) in order to improve the growing conditions of the developing high quality white pine and mixed oak sawtimber sized stems. An emphasis will be to remove as much of the poor quality and black-knotted white pine sawtimber as possible. Poorly formed and low mixed hardwood stems of all sizes will also be harvested to improve the growing conditions within the stand. High value sawtimber will be sold as sawlogs, while the low quality softwood trees and portions of trees will be chipped and utilized at wood burning facilities that generate electricity. The low quality hardwoods that are harvested will be cut, skidded, and landed for the purpose of providing firewood to the citizens of Haverhill. Please see page 18 for details about the Haverhill Home Fuelwood Program. Whole-tree chipping the tops of trees will be important for protecting and improving aesthetics and reducing the threat of forest fires. Some of the largest trees within the stand (25" DBH+) will be selected as "Legacy Trees" and retained for biological diversity. This selection harvest will prepare the understory for establishing new regeneration. *Stand 6 may also be thinned during harvests conducted in Stand 5 although it is not a high priority. Stand 6 is a young and developing stand and any work conducted in the stand will be for improving the development of the best formed white pine and mixed oak pole and small sawtimber sized stems.*

STEW	7	WH	Selection Harvest Improvement Thin	50+/-	40 sqft	150 MBF & 1,200 Tons	2014-2023
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Management will focus on individual and group selection harvesting techniques. The target is to harvest approximately 1/4 - 1/3 of the overstory volume. The emphasis will be to harvest mature white pine and mixed hardwood sawtimber (18" DBH+) in order to improve the growing conditions of the developing high quality white pine and mixed oak sawtimber sized stems. An emphasis will be to remove as much of the poor quality and black-knotted white pine sawtimber as possible. Poorly formed and low quality mixed hardwood stems of all sizes will also be harvested to improve the growing conditions within the stand. High value sawtimber will be sold as sawlogs, while the low quality softwood trees and portions of trees will be chipped and utilized at wood burning facilities that generate electricity. The low quality hardwoods that are harvested will be cut, skidded, and landed for the purpose of providing firewood to the citizens of Haverhill. Please see page 18 for details about the Haverhill Home Fuelwood Program. Whole-tree chipping the tops of trees will be important for protecting and improving aesthetics and reducing the threat of forest fires. Some of the largest trees within the stand (25" DBH+) will be selected as "Legacy Trees" and retained for biological diversity. This selection harvest will prepare the understory for establishing new regeneration.

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Owner(s) Haverhill – Meadow Brook CA      Town(s) Haverhill

**MANAGEMENT PRACTICES**  
*to be done within next 10 years*

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	
STEW	8	WH	Selection Harvest Improvement Thin	78+/-	40 sqft	235 MBF & 3,100 Tons	2014-2023

Management will focus on individual and group selection harvesting techniques. The target is to harvest approximately 1/4 - 1/3 of the overstory volume. The emphasis will be to harvest mature white pine and mixed hardwood sawtimber (18" DBH+) in order to improve the growing conditions of the developing high quality white pine and mixed oak sawtimber sized stems. An emphasis will be to remove as much of the poor quality and black-knotted white pine sawtimber as possible. Poorly formed and low quality mixed hardwood stems of all sizes will also be harvested to improve the growing conditions within the stand. High value sawtimber will be sold as sawlogs, while the low quality softwood trees and portions of trees will be chipped and utilized at wood burning facilities that generate electricity. The low quality hardwoods that are harvested will be cut, skidded, and landed for the purpose of providing firewood to the citizens of Haverhill. Please see page 18 for details about the Haverhill Home Fuelwood Program. Whole-tree chipping the tops of trees will be important for protecting and improving aesthetics and reducing the threat of forest fires. Some of the largest trees within the stand (25" DBH+) will be selected as "Legacy Trees" and retained for biological diversity. This selection harvest will prepare the understory for establishing new regeneration.

STEW	4	WH	Selection Harvest	12+/-	50 sqft	54 MBF & 480 Tons	2014-2023
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Management will focus on individual and group selection harvesting techniques. The target is to harvest approximately 1/4 - 1/3 of the overstory volume. The emphasis will be to harvest mature white pine and mixed hardwood sawtimber (18" DBH+) in order to improve the growing conditions of the developing high quality white pine and mixed oak sawtimber sized stems. An emphasis will be to remove as much of the poor quality and black-knotted white pine sawtimber as possible. Poorly formed and low quality mixed hardwood stems of all sizes will also be harvested to improve the growing conditions within the stand. High value sawtimber will be sold as sawlogs, while the low quality softwood trees and portions of trees will be chipped and utilized at wood burning facilities that generate electricity. The low quality hardwoods that are harvested will be cut, skidded, and landed for the purpose of providing firewood to the citizens of Haverhill. Please see page 18 for details about the Haverhill Home Fuelwood Program. Whole-tree chipping the tops of trees will be important for protecting and improving aesthetics and reducing the threat of forest fires. Some of the largest trees within the stand (25" DBH+) will be selected as "Legacy Trees" and retained for biological diversity. This selection harvest will prepare the understory for establishing new regeneration and release advanced white pine regeneration. Management will only be conducted if access can be obtained through abutting parcels.

*Wood landing areas will be seeded to ensure stability and provide alternative wildlife habitat.*

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Owner(s) Haverhill – Meadow Brook CA      Town(s) Haverhill

**MANAGEMENT PRACTICES**  
*to be done within next 10 years*

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	
STEW	1	WO	Selection Harvest Improvement Thin	12+/-	30 sqft	30 MBF & 480 Tons	2014-2023

Management will focus on individual and group selection harvesting techniques. The target is to harvest approximately 1/4 - 1/3 of the overstory volume. The emphasis will be to harvest mature white pine and mixed oak sawtimber (18" DBH+) in order to improve the growing conditions of the developing high quality white pine and mixed oak sawtimber sized stems. An emphasis will be to remove as much of the poor quality and black-knotted white pine sawtimber as possible. Poorly formed and low quality mixed hardwood stems of all sizes will also be harvested to improve the growing conditions within the stand. High value sawtimber will be sold as sawlogs, while the low quality softwood trees and portions of trees will be chipped and utilized at wood burning facilities that generate electricity. The low quality hardwoods that are harvested will be cut, skidded, and landed for the purpose of providing firewood to the citizens of Haverhill. Please see page 18 for details about the Haverhill Home Fuelwood Program. Whole-tree chipping the tops of trees will be important for protecting and improving aesthetics and reducing the threat of forest fires. Some of the largest trees within the stand (25" DBH+) will be selected as "Legacy Trees" and retained for biological diversity. This selection harvest will release advanced regeneration and prepare the understory for establishing new regeneration.

*Wood landing areas will be seeded to ensure stability and provide alternative wildlife habitat.*

### ***Home Fuelwood Program***

The Forest Management Committee has developed the *Haverhill Home Fuelwood Program* as a means of making firewood available to the residents of Haverhill. The low quality hardwood stems that are harvested in the recommended timber sales within the Meadow Brook Conservation Area property will be one of the sources of wood for this program. Hardwood stems that are cut on the property will be skidded to landings on the property used for the commercial timber harvesting project. The trees will be cut to a length of approximately 24 feet and then trucked to the Haverhill Highway Facility at 500 Primrose Street where the firewood will be stacked in one-cord piles. Haverhill residents will be allowed to bid on the one-cord piles at the completion of the commercial harvest. Successful bidders will be required to cut the trees into stove lengths and remove the firewood on their own. The successful bidders will be required to sign a liability waiver that does not hold the City of Haverhill liable for any accidents, injury or death as a result of cutting and removing the stacked firewood. The intent is to make the project revenue neutral and as safe as possible. There will be a cost of having the firewood trees cut, skidded, landed and trucked to the Haverhill highway facility at 500 Primrose Street of approximately \$75-\$80 per cord. Bids for the stacked firewood must at least cover this cost.

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Owner(s) Haverhill – Meadow Brook CA      Town(s) Haverhill

**MANAGEMENT PRACTICES**  
*to be done within next 10 years*

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

***Biological Diversity***

STEW 1-10 All Invasive Species Control 257+/- NA NA 2014-2023

The Forest Stewardship Committee is interested in promoting biological diversity on the property. Eliminating invasive and non-native trees, plants and shrubs will be done where these species exist and when economically feasible and practical. Invasive species are scattered throughout the property and are well established in the understory of many areas of the forest. Buckthorn, bittersweet, honeysuckle, firebush, multiflora rose, and Japanese barberry are all present on the property. Cutting the stems of invasive species with saws, or with other mechanical means, will help reduce and control the spread of the invasive species. Controlling the invasive species through well timed timber management activities is another management tool. Encouraging vigorous growth of native tree species in the forest understory will be accomplished by scarifying the soil prior to seed dissemination. Another biodiversity issue is the distribution of forest growth stages. Trying to maintain multiple forest age and size classes on the property will also be pursued by the landowner on this property through periodic timber harvests and wildlife habitat management. Please see the Biological Diversity issues on page #7 for more details.

*The Forest Stewardship Committee will seek council from the UMass Amherst Extension Center for Agriculture and the United States Forest Service with regard to controlling invasive species as part of a forest stewardship program to ensure active management activities do not result in proliferation of these species in any of the City's forest lands.*

***Wildlife Management***

STEW 2 All Artificial Nest Boxes 35+/- NA NA 2014-2023  
Wood Duck

These wetland resource areas provide habitat for **wood ducks**. The open water and emergent vegetation within these areas are important for the development of young wood ducks. The boxes should be set up approximately four feet above open water on cedar, or metal poles to protect the young and eggs from predators. The boxes should also be set up over water that is 1-4 feet deep. The boxes should be cleaned every year and new bedding placed on the bottom of the box. The Division of Fisheries and Wildlife can provide further information about the box dimensions, installation, and maintenance. The recommendation is to install no more than one (3) boxes in this area on an experimental basis.

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Owner(s) Haverhill – Meadow Brook CA Town(s) Haverhill

**MANAGEMENT PRACTICES**  
*to be done within next 10 years*

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

***Recreation Management***  
***Forest Stewardship Education***

STEW All All Trail Maintenance 257+/- NA NA 2014-2023  
Forest Stewardship Education

The existing trails on the Meadow Brook Conservation Area will be periodically maintained for the safety, enjoyment and education of the residents of Haverhill. New trail construction may also be considered for this forest area. Trail maps, tags, interpretive signs, and potential picnic tables will all be variables associated with the management of the trails and the education of those who will be using the trails. Interpretive signs along the trails will help educate the property users about Forest Stewardship matters within the forest interior.

***Boundary Maintenance***

STEW All All Blaze & Paint 257+/- NA NA 2014-2023

Most of the property lines have not been identified, blazed and painted. There has been some work done along Thompson Road. Physical boundary evidence was found during the forest inventory and includes stone walls, iron pipes, stone bounds and wire fence. Abutting surveys will be used to identify and confirm the property lines prior to conducting timber management on the property.

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Owner(s) Haverhill – Meadow Brook CA      Town(s) Haverhill

# Signature Page

Please check each box that applies.

**CH. 61/61A Management Plan** 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 Conservation and Recreation. I further understand that in the event that 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 Conservation and Recreation of said change of ownership.

**Forest Stewardship Plan.** I pledge to abide by the management provisions of this Stewardship Management Plan for a period of at least ten years, following approval. I understand that in the event that I convey all or a portion of the land described in this plan during the period of the plan, I will notify the Department of Conservation and Recreation of this change in ownership.

Signed under the pains of perjury:

Owner(s) \_\_\_\_\_ Date \_\_\_\_\_

\_\_\_\_\_ Date \_\_\_\_\_

I attest that I have prepared this plan in good faith to reflect the landowner's interest.

Plan Preparer \_\_\_\_\_ Date \_\_\_\_\_

I attest that the plan satisfactorily meets the requirements of CH61/61A and/or the Forest Stewardship Program.

Approved, Service Forester \_\_\_\_\_ Date \_\_\_\_\_

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.

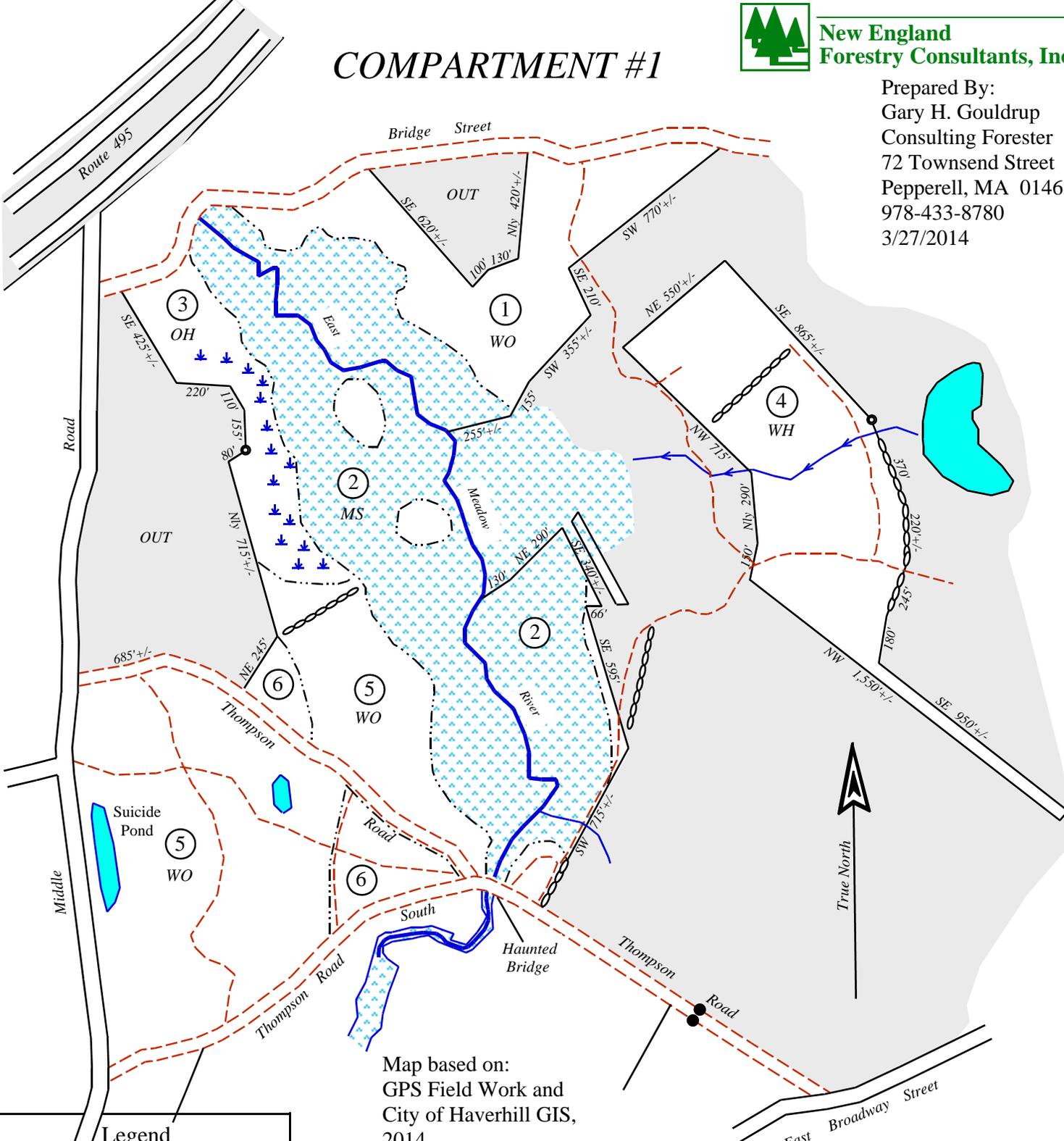
Owner(s) Haverhill – Meadow Brook CA Town(s) Haverhill

# COMPARTMENT #1



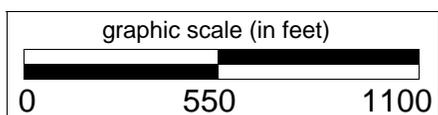
**New England  
Forestry Consultants, Inc.**

Prepared By:  
Gary H. Gouldrup  
Consulting Forester  
72 Townsend Street  
Pepperell, MA 01463  
978-433-8780  
3/27/2014



Map based on:  
GPS Field Work and  
City of Haverhill GIS,  
2014

Legend	
Forest Type Line	
Wetland Area	
Woods Road/ Trail	
Stone Wall	
Stand Type #	
Stream	
Oak-Hardwood	OH
White Pine-Hardwoods	WH
White Pine-Oak	WO
Marsh	MS
Iron Pipe	IP
Abandoned Gravel Pit	



**BOUNDARY & STAND TYPE MAP**

Land in Haverhill, MA  
Meadow Brook Conservation Area  
Millvale Reservoir Lot

Owned By:  
City of Haverhill  
Haverhill Conservation Department

**BOUNDARY & STAND TYPE MAP**

Land in Haverhill, MA  
 Meadow Brook Conservation Area  
 Millvale Reservoir Lot

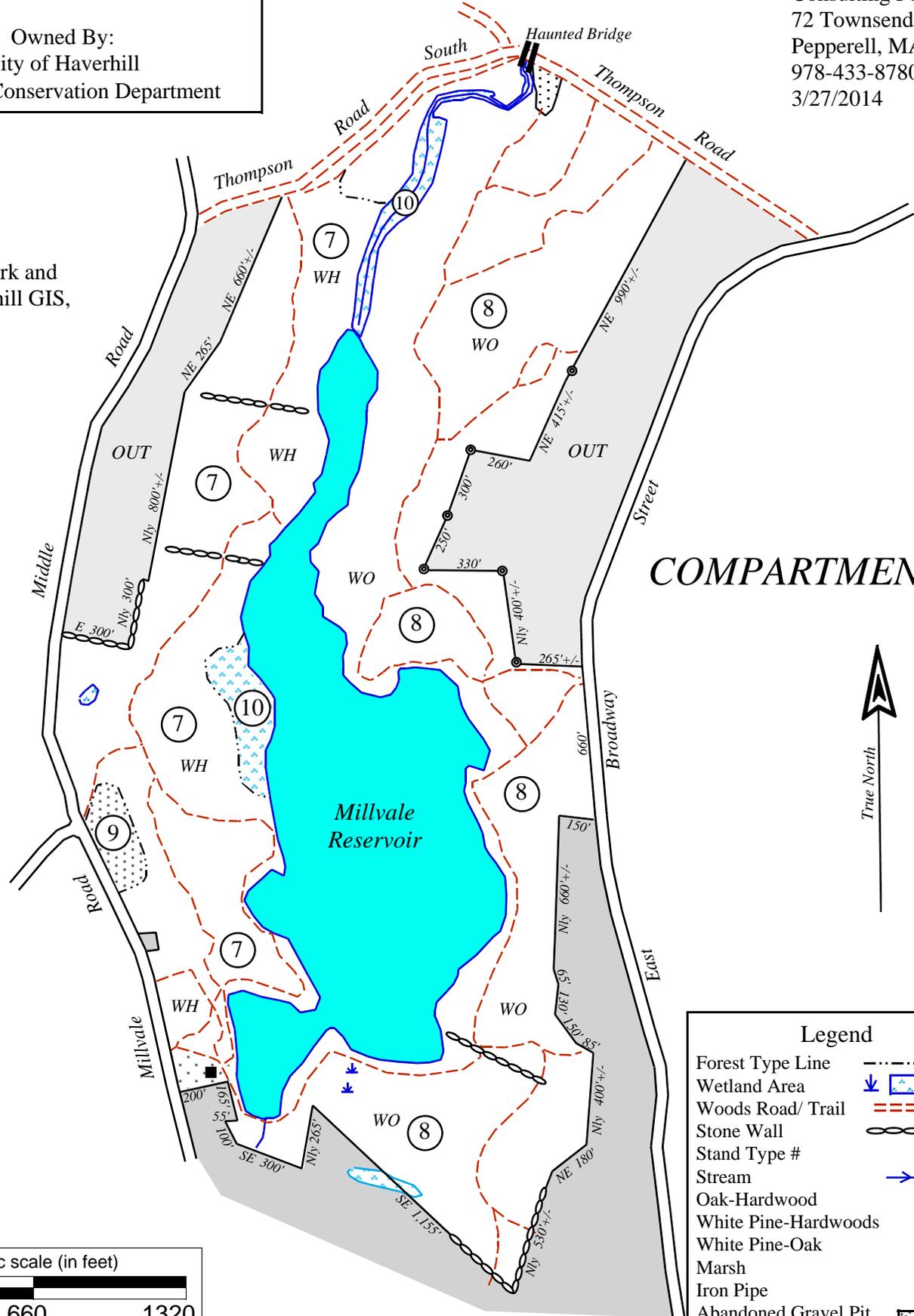
Owned By:  
 City of Haverhill  
 Haverhill Conservation Department



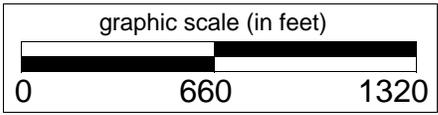
**New England  
 Forestry Consultants, Inc.**

Prepared By:  
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 72 Townsend Street  
 Pepperell, MA 01463  
 978-433-8780  
 3/27/2014

Map based on:  
 GPS Field Work and  
 City of Haverhill GIS,  
 2014



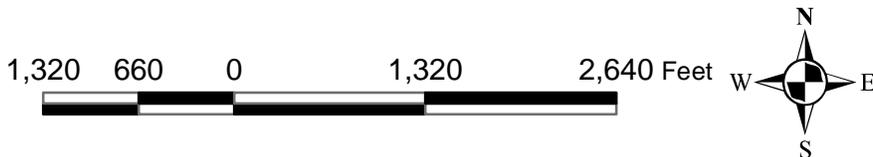
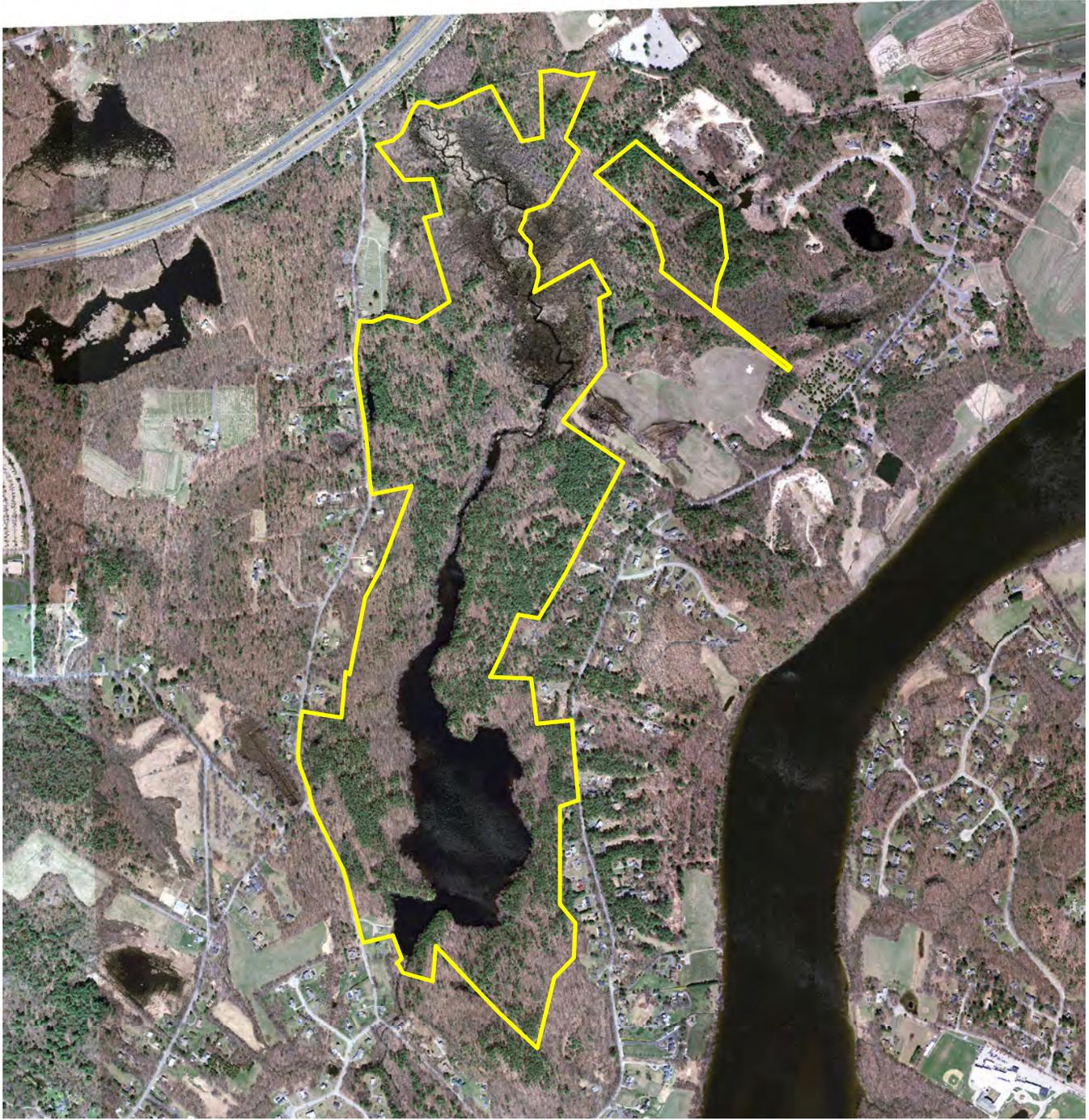
**COMPARTMENT #2**



**Legend**

Forest Type Line	
Wetland Area	
Woods Road/ Trail	
Stone Wall	
Stand Type #	
Stream	
Oak-Hardwood	OH
White Pine-Hardwoods	WH
White Pine-Oak	WO
Marsh	MS
Iron Pipe	IP
Abandoned Gravel Pit	

City of Haverhill  
Meadow Brook Conservation Area  
Haverhill, MA  
2013 Aerial Photo

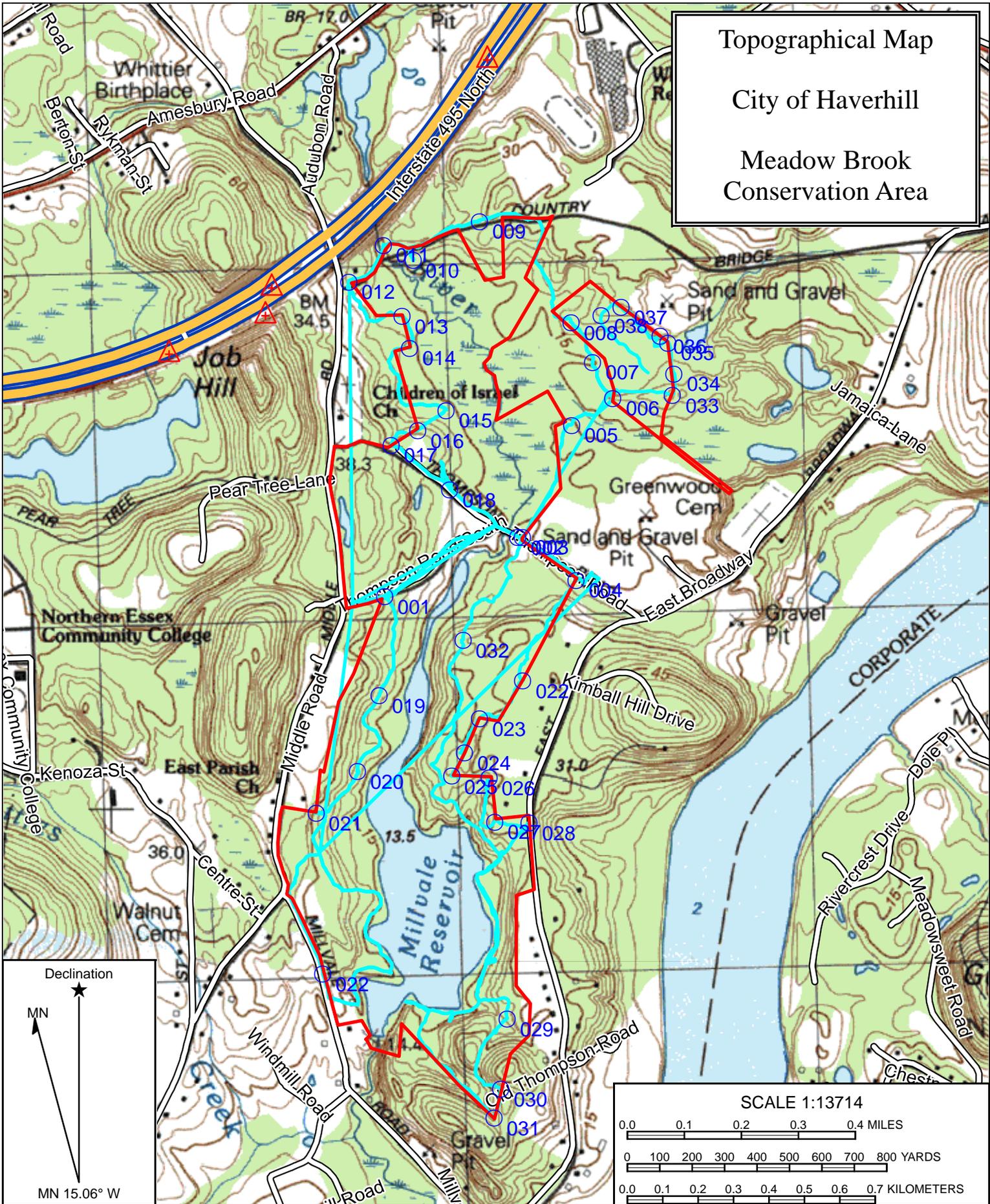


Prepared by:  
New England Forestry Consultants, Inc  
Sherman R. Small, Consulting Forester  
Maine License # LF655  
New Hampshire License # 409  
April 16, 2014

Sketch map for management and planning purposes only, NOT A LEGAL SURVEY  
Data obtained from MASS GIS, & New England Forestry Consultants, Inc.



Topographical Map  
 City of Haverhill  
 Meadow Brook  
 Conservation Area



Name: HAVERHILL  
 Date: 04/28/14  
 Scale: 1 inch = 1,142 ft.

Location: 042° 47' 48.51" N 071° 01' 41.71" W  
 Caption: Meadow Brook CA