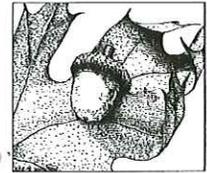




FOREST MANAGEMENT PLAN

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

APR 29 2013



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. <u>910-9003</u>	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 <u>503361</u>	Add. Case No.		
amend <input type="checkbox"/>	amend <input type="checkbox"/>	amend <input type="checkbox"/>	Green Cert <input type="checkbox"/>		Date Rec'd <u>5-29-13</u>	Ecoregion <u>221</u>		
Plan Change: _____ to _____			Conservation Rest. <input type="checkbox"/>	CR Holder _____	Plan Period <u>2014-2023</u>	Topo Name <u>Lawrence</u>		
					Rare Sp. Hab. <u>YES</u>	River Basin <u>Merrimack</u>		

OWNER, PROPERTY, and PREPARER INFORMATION

Property Owner(s) Town of North Andover, c/o Conservation Department
 Mailing Address 120 Main Street, North Andover, MA 01845 Phone 978-688-9530

Property Location: Town(s) North Andover Road(s) Osgood Street

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
35	23	4197	63	153.15	NA	NA	6.21	146.94
35	24	2400	310	10.58	NA	NA	0.00	10.58
35	25	2400	310	3.19	NA	NA	0.00	3.19
35	33	2400	310	2.88	NA	NA	0.00	2.88
35	34	2400	330	11.70	NA	NA	0.00	11.70
35	110	10503	145	10.32	NA	NA	0.00	10.32
36	1	UK	UK	35.32	NA	NA	0.00	35.32
TOTALS				227.14	NA	NA	6.21	220.93

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

There are 6.21 acres to be excluded from Forest Stewardship Classification. There are 5.30 acres around the Steven's Estate which includes buildings, yard, parking lots, swimming pool, and open support land. Also excluded is a 0.91 acre telephone right-of-way.

HISTORY Year acquired 1986, 1995 & 2006 Year management began 1997

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. * _____ Treatment * _____ Reason * _____
 (if additional space needed, continue on separate page)

Previous Management Practices (last 10 years)

Stand #	Cutting Plan #	Treatment	Yield	Value	Acres	Date
*	*	*	*	*	*	*

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

* Please see Page 2 for a history of previous forest management practices.

RECORDS (continued)

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HISTORY (continued):

The Osgood Hill Conservation Area parcels have been acquired periodically since 1995. The Steven's Estate and 153 acres of land were purchased in 1995 from Boston University. In 1986, 28.53 acres were purchased from George M. Naylor, Jr. The final 45.64 acres were acquired after 2006 from the Trust For Public Lands.

A Forest Stewardship Plan was prepared in 1997 for the Steven's Estate parcel. Trails have been installed and maintained since that time.

Owner(s) Town of North Andover, Conservation Commission

Town(s) North Andover



Property Overview, Regional Significance, and Management Summary

The Osgood Hill Conservation Area is located along the northwest shore line of Lake Cochichewick and on the west side of Route 125 and Route 133 in a heavily populated and busy commercial district of North Andover. The Lawrence Municipal Airport and North Andover High School are both within one mile of the property.

The Osgood Hill Conservation Area parcels have been acquired periodically since 1995. The Steven's Estate and 153.15 acres of land were purchased in 1995 from Boston University. In 1986, 28.53 acres were purchased from George M. Naylor, Jr. while the remaining 45.64 acres were acquired after 2006 from the Trust For Public Lands. The historic Steven's Mansion was built in 1886 by Moses T. Stevens who was the founder of The Stevens Company. The Stevens Company was one of America's earliest and most well known textile manufacturers. The mansion is owned by the Town of North Andover and managed by the Stevens Estate Trustees. The mansion is often used as a conference center and leased for wedding receptions and social events. Other nearby lands with long term protection, and owned by the Town of North Andover, include the Mazurenko Farm and Rea's Pond parcels located north of Lake Cochichewick off of Bradford Street. These two parcels consist of approximately 120 acres.

The property lies in the Merrimack River Watershed. Water that passes through the property flows into Lake Cochichewick and east into the Merrimack River approximately 4,500 feet west of the property. Lake Cochichewick is a public water supply for the Town of North Andover. Water quality protection and improvement is the primary management goal and objective on this property.

Forest soils on the property are capable of producing high quality timber resources. The upland areas consist of well and moderately well drained fine sandy loam soils (Paxton-Woodbridge-Charlton). The wetland areas are somewhat poorly and poorly drained and consist of fine sandy loam and muck soils (Ridgebury-Freetown). Over 90% of the property consists of upland forest soils.

The forest stewardship land consists of mature woodlands (85%), open fields (14%), and open marsh wetlands (1%). Mixed oaks and mixed hardwoods dominate the forest overstory. Pockets of white pine, red pine and hemlock are present as well. Many of the trees surrounding the Stevens mansion were planted by the Stevens family.

There are several forest health concerns associated with the property. Invasive and non-native vegetation is prolific around the Stevens mansion, the open telephone right-of-way, and in areas along Osgood Street. Bittersweet, honeysuckle, buckthorn, Japanese barberry, Japanese knotweed, and firebush can all be found on the property and are threatening natural communities. The hemlock woolly adelgid is present in the hemlock stands along Lake Cochichewick. Mortality from the defoliating insect is occurring within the stand and many hemlock trees are declining in health. The probability is high that mortality will continue to increase over the next few years. Forest regeneration is also a concern in the forest understory. A mature forest and closed canopy, coupled with a high population of white-tailed deer in the area, prohibit adequate levels of new forest production in the understory. During the winter months the deer have been browsing on the new seedlings that have regenerated. Very little oak regeneration was observed during the inventory of forest resources.

Owner(s) Town of North Andover, Conservation Commission Town(s) North Andover



Property Overview, Regional Significance, and Management Summary

The following goals have been designated “High Priority” by the Conservation Commission:

- Protect and Improve Water Quality.
- Improve Access for Walking/Skiing/Recreation
- Promote Biological Diversity/ Reduce Invasives
- Preserve or Improve Scenic Beauty
- Enhance Habitat for Birds, Small Animals, and Large Animals
- Improve Hunting and Fishing
- Educate Users about Ecosystem and Forest Management/ Environmental Education
- Highlight the Property as a Complement to the Stevens Estate
- Foster Partnerships with other Organizations to assist Stewardship

The primary goal is to protect and improve water quality of the municipal drinking water supply of Lake Cochichewick. All forest management activities will be sensitive to protecting public safety, 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. Educating the public through work shops, site walks, newspaper articles and local cable television are all possible avenues that the Conservation Commission will pursue to help educate and inform the residents of North Andover about the properties resources and management pursuits prior to implementation.

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	
Defer or Defray Taxes				NA
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 or Fishing	X			
Preserve or Improve Scenic Beauty	X			
Protect Water Quality	X			
Protect Unique/Special/ Cultural Areas	X			
Other: Attain Green Certification			X	

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

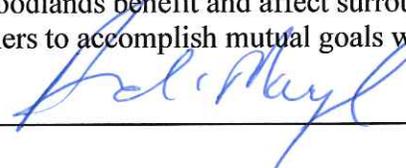
1. In your own words please describe your goals for the property:

The Town of North Andover's overall goal, as stated in the Conservation Restriction for the property, is Watershed Protection followed closely by the protection of Biological Diversity. The Town is also very interested in improving Passive Recreation and general awareness of the property.

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:

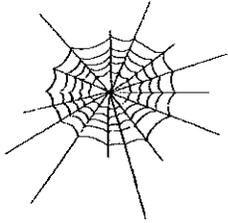
1. Managing for long-term forest health, productivity, diversity, and quality.
2. Conserving or enhancing water quality, wetlands, soil productivity, biodiversity, cultural, historical and aesthetic resources.
3. Following a strategy guided by well-founded silvicultural principles to improve timber quality 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: 4/26/13

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

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.

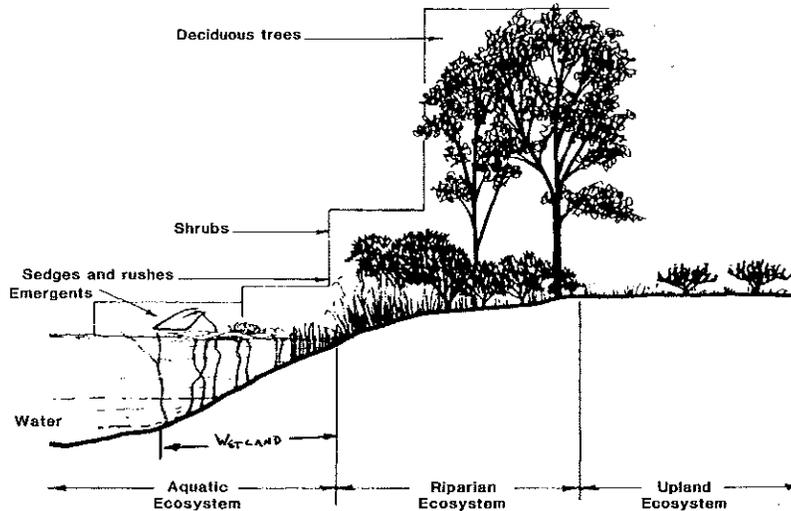


Figure 1: Example of a riparian zone.

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.

regulated timber harvest, if an occurrence does show on the map, the NHESP will recommend protective

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.



STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	1	OH	120.01	11.9" DBH Sawtimber-Pole	99 sqft	5,245 BF & 18.8 Cds	66 (RO)

Mixed oaks and mixed hardwoods dominate the overstory of this well stocked sawtimber sized stand. Red oak, black oak, white oak, American beech, sugar maple, red maple, hickory, white ash, basswood, white birch, aspen, and American elm of poor to good form and timber quality can all be found. Scattered white pine, red pine and hemlock poles and sawtimber of poor to good form and timber quality are also present. Forest regeneration is scattered with primarily mixed hardwood saplings. The white tailed deer have had an impact on new regeneration due to browsing in winter months. Invasive species within this stand include bittersweet, buckthorn, honeysuckle, barberry and Japanese knotweed. There are several trees scattered throughout the stand that exceed 25 inches in DBH. The area is gently to steeply sloped with well drained and moderately drained fine sandy loam soils (Paxton-Woodbridge). The soils are capable of producing high quality timber resources. All management activities conducted in this stand will consider the protection and improvement of the Lake Cochichewick watershed. This may involve improvement and salvage harvesting practices designed to improve forest structure and regeneration. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while protecting the Lake Cochichewick watershed and preserving high aesthetics along the trails that overlook the Lake.

STEW	2	RM	8.51	12.5" DBH Pole-Sawtimber	100 sqft	1,945 BF & 25.8 Cds	63 (RM)
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Red maple is the dominant overstory species in this wetland resource area. The red maple stems are poor to fair in form and timber quality. Scattered mixed oaks, white ash, birch and white pine poles and sawtimber can also be found. The understory vegetation includes sweet pepperbush, winterberry, highbush blueberry, arrowwood, witch hazel, buckthorn, ferns and alders. The area is flat, hummocky in spots, with poorly drained fine sandy loam soils (Ridgebury/Walpole). A stream flows north through this stand into Lake Cochichewick. No management is expected to occur in this area. The desired future condition is a wetland resource area that continues to be a filter and protection of water quality for water that passes through the property into Lake Cochichewick.

STEW	3	MS	2.36	Open Marsh Wetland Resource Area	NA	NA	50 (RM)
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This is an open wetland resource area vegetated with wetland shrubs and plants which include cattails, alder, spicebush, winterberry, highbush blueberry, dogwood, spirea, and ferns. The area is flat and hummocky with very poorly drained organic soils (Freetown Muck). The only management that may occur in this area is the possibility of installing a wood duck box. Otherwise, the area will continue to be a filter for water that passes through the property into Lake Cochichewick. The desired future condition is a wetland resource area that provides habitat for wildlife and protects water quality on the Lake Cochichewick 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) Town of North Andover, Conservation Commission Town(s) North Andover

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	4	WO	25.68	12.4" DBH Sawtimber	170 sqft	13,890 BF & 27.1 Cds	66 (WP)

White pine and mixed oaks are the dominant overstory species in this overstocked sawtimber sized stand. Timber quality ranges from poor to good. Scattered hickory, red maple, sugar maple, American beech, white ash, and birch poles and sawtimber can also be found. Forest regeneration is scattered and is comprised of mixed hardwood sapling. The area is flat to steeply sloped with well drained fine sandy loam soils (Paxton-Charlton) capable of producing high quality timber resources. All management activities conducted in this stand will consider the protection and improvement of the Lake Cochichewick watershed. This may involve improvement and salvage harvesting practices designed to improve forest structure and regeneration. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while protecting the Lake Cochichewick watershed and preserving high aesthetics along the trails that overlook the Lake.

STEW	5	RM	10.21	7.8" DBH Pole	80 sqft	14.3 Cords	63 (OM)
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Red maple is the dominant overstory species in this adequately stocked pole sized stand. Scattered mixed oaks, aspen, sugar maple, white ash, and American beech poles of poor to good form and timber quality can also be found. The red maple component is poor to good in form and timber quality. Honeysuckle, buckthorn, bittersweet, and Japanese barberry are well established in the understory in most areas of the stand. The area is seasonally wet in the drainage ways that flow north through the stand. Soils in the higher elevations are moderately well drained fine sandy loam (Woodbridge) capable of producing high quality timber resources. Management will focus on biological diversity with efforts to reduce the presence of invasive species. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while protecting the Lake Cochichewick watershed and preserving high aesthetics along the trails and Osgood Street.

STEW	6	MX	12.05	11.5" DBH Pole-Sawtimber	120 sqft	1,245 BF & 23.9 Cds	66 (WP)
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This is a mixed forest stand of trees situated around the Stevens Mansion. It appears that most of the trees in close proximity to the mansion, yard and access road were planted by the Stevens family. The planted trees include Scotch pine, concolor fir, Norway spruce, white cedar, larch, hemlock, red pine, Colorado blue spruce, basswood, sugar maple and copper beech. Many of these trees are in the large diameter class and showing signs of ageing with rotten stems and storm damaged tops. Mixed oaks, red maple, birch, black cherry, Norway maple and other mixed hardwood species in all size classes can also be found. Invasive species are prolific in many of the areas and include bittersweet, honeysuckle, buckthorn, Japanese barberry, and Japanese knotweed. Invasive species prohibit the natural regeneration of trees and are having an impact on the forests natural community development. The area is flat to gently sloped with well drained fine sandy loam soils (Paxton) capable of producing high quality timber resources. Aesthetic improvements and invasive species control are the primary management goals within this highly visible site. The desired future condition is a stand that is growing trees that are healthy and highly aesthetic with an understory that is regenerating native trees without the presence and competition of invasive species.

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) Town of North Andover, Conservation Commission Town(s) North Andover

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	7	WH	11.44	10.2" DBH Sawtimber-Pole	170 sqft	6,744 BF & 33.4 Cds	66 (RO)

Hemlock and mixed hardwoods are the dominant overstory species in this overstocked sawtimber and pole sized stand. The hemlock component has been infested with the hemlock wooly adelgid. Mortality has begun within the stand and a significant portion of the trees are chlorotic and also closing in on mortality. Scattered sugar maple, mixed oaks, hickory, red maple, white ash, birch and American beech poles and sawtimber can also be found. Forest regeneration is scattered and is comprised of mixed hardwood saplings and hemlock saplings also infected with the adelgid. The area is gently to steeply sloped with well drained and moderately drained fine sandy loam soils (Paxton-Woodbridge) capable of producing high quality timber resources. All management activities conducted in this stand will consider the protection and improvement of the Lake Cochichewick watershed. This may involve improvement and salvage harvesting practices designed to improve forest structure and regeneration. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while protecting the Lake Cochichewick watershed and preserving high aesthetics along the trails that overlook the Lake.

STEW	8	FD	30.67	Field	NA	NA	NA
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This area is an open field that is leased for hay production. The area is used by the public for hiking, mountain biking, and dog walking. Scenic views of Lake Cochichewick and the landscape south and east of the property are visible from the highest elevations of the field. The area is moderately sloped with well drained fine sandy loam soils (Paxton). Management will continue to focus on haying and keeping the field open for recreation and habitat diversity. The desired future condition is a field that provides habitat for wildlife, scenic vistas and recreational opportunities for the public while protecting the Lake Cochichewick 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) Town of North Andover, Conservation Commission Town(s) North Andover

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 1-21 All Invasive Species Control 390+/- NA NA 2013-2022

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. Buckthorn, firebush (winged euonymus), bittersweet, honeysuckle, Norway maple, Japanese knotweed and Japanese barberry are currently known to be growing on the property and are prolific in areas. Natural communities are being affected by their presence in several areas within the forest. The heaviest concentrations of invasive species growth can be found near the Stevens mansion and along Osgood Street. Cutting the stems 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. The Conservation Commission will also consider chemical control of invasive species by seeking licensed applicators for applying herbicides to the stems of the invasive plants that have been cut mechanically. 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 #6 for more details.

The Conservation Commission is currently seeking 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 Osgood Hill Conservation Area's forest lands.

Recreation Management

STEW All All Trail Management 220+/- NA NA 2013-2022

The existing trails system at the Osgood Hill Conservation Area has been well maintained over the years and identified for public use with trail markers, educational signs at trail heads, and foot bridges at wetland crossings. Existing trails will be maintained by removing hazard trees, pruning, constructing and repairing foot bridges, and making general repairs when necessary. The Boy Scouts have created trails on the property in the past and may be called upon for future maintenance and trail construction projects.

OBJECTIVE CODE: CH61 = Forest Products (for Ch. 61/61A) STEW= Stewardship Program practices
 STD= stand Type= Forest type AC= acre MBF= thousand board feet BA= basal area VOL= volume

Owner(s) Town of North Andover, Conservation Commission Town(s) North Andover

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	1	OH	Selection Harvest Improvement Thinning	50+/-	25 sqft	50 MBF & 1,250 Tons	2013-2022
------	---	----	---	-------	---------	------------------------	-----------

Management will focus on improvement thinning by selection harvesting. The target is to harvest approximately 1/4 of the overstory volume. The emphasis will be to harvest trees that have been damaged in storms and trees that pose a potential threat to public safety along the access roads and trails that wind through this stand. Large diameter mixed oaks and mixed hardwood sawtimber (18" DBH+) will also be harvested to improve the growing conditions of the developing high quality mixed oak and mixed hardwood poles and small sawtimber sized stems. Trees that have been burned in the past and are showing signs of internal decay are also a high priority for harvesting. Poorly formed and low quality mixed hardwood stems of all sizes will also be harvested to improve the health and productivity of the stand. A portion of the trees that are healthy and have reached a diameter of 25-30" DBH will be retained as "Legacy Trees". Advanced regeneration will be released and the site will be prepared for new production in the understory as a result of thinning. 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. Chipping the tops of trees will be important for protecting and improving aesthetics and reducing the threat of forest fires.

STEW	4	WH	Improvement Thinning By Selection Harvest	20+/-	40 sqft	60 MBF & 700 Tons	2013-2022
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Management will focus on improvement thinning by selection harvesting. 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 poles and small sawtimber sized stems. Poorly formed and low quality white pine and mixed hardwood stems of all sizes will also be harvested to improve the health and productivity of the stand. Advanced regeneration will be released and the site will be prepared for new production in the understory as a result of thinning. Whole-tree chipping equipment will be used for the purpose of improving aesthetics and reducing the threat of forest fires on the property.

STEW	6	MX	Aesthetic Thinning By Selection Harvest	10+/-	30 sqft	300Tons	2013-2022
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Management will focus on improving the aesthetic appearance of woodlands surrounding the Stevens mansion. The emphasis will be to remove storm damaged and hazard trees, trees that are diseased and rotting from within, and trees that have low aesthetic value. In the process of thinning, efforts will be made to reduce the presence of invasive species that are prolific in the forest understory. Mechanically cutting the bittersweet, buckthorn, honeysuckle and barberry will be done during the harvesting of trees. Post harvest treatments to control the development of the invasives will be needed, but the mechanical cutting will be beneficial in starting the process of invasive species control (Please see Biological Diversity Management on page #15 for details). The harvesting will also encourage the establishment of native tree regeneration in the understory which will help reduce invasive species development after the harvest. Whole-tree chipping equipment when harvesting timber around the Stevens mansion is recommended for the purpose of improving aesthetics and reducing the threat of forest fires on the property.

OBJECTIVE CODE: CH61 = Forest Products (for Ch. 61/61A) STEW= Stewardship Program practices
 STD= stand Type= Forest type AC= acre MBF= thousand board feet BA= basal area VOL= volume

Owner(s) Town of North Andover, Conservation Commission Town(s) North Andover

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	7	HH	Salvage Harvest Improvement Thin	11+/-	50 sqft	15 MBF & 330 Tons	2013-2022
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Management will focus on a salvage harvest of hemlock wooly adelgid infested trees as well as improvement thinning. Approximately 1/3 of the overstory volume will be targeted for harvesting. All of the infested hemlock trees as well as poor quality mixed hardwood timber of all sizes will be cut in order to improve the growing conditions of the best formed sugar maple, red oak and mixed hardwood poles and developing small sawtimber. Advanced regeneration will be released and new production will be established as a result of the harvesting. Quarantines on the adelgid infested trees will affect where and how the hemlock timber resources are sold. Whole-tree chipping and chipping the tops of trees that have sawlogs will be important for reducing the threat of forest fires and maintaining good aesthetics. Steep slopes exist in the proposed harvest area. Mitigation to prevent erosion will be pursued by installing silt fences or hay bales where necessary.

Wildlife Habitat Enhancement

STEW	3	MS	Artificial Nest Box Wood Duck Management	1+/-	NA	NA	2013-2022
------	---	----	---	------	----	----	-----------

This open wetland resource area provides habitat for *wood ducks*. The open water and emergent vegetation within this area is 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 (1) box in this area on an experimental basis.

Timber harvesting practices alone will enhance wildlife habitat. Creating an unevenaged forest structure while maintaining a variety of forest types and vegetation will greatly increase the diversity of wildlife species using this property for food, protection, mating and nesting. For more information on wildlife management please refer to "*Enhancing Wildlife Habitats; A Practical Guide For Forest Landowners*". Please also see the Timber Management Practices on pages 16 & 17.

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 STD= stand Type= Forest type AC= acre MBF= thousand board feet BA= basal area VOL= volume

Owner(s) Town of North Andover, Conservation Commission Town(s) North Andover

MANAGEMENT PRACTICES
to be done within next 10 years

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

Wildlife Habitat Enhancement

STEW 8 Field Mowing/ Hay Production 30+/- NA NA 2013-2022

This open field is leased and managed for the production of hay. The field will continue to be managed in this manner to provide habitat for wildlife and recreation opportunities for the public. The open field also provides scenic views of Lake Cochichewick and hills east and south of the property.

Wildlife Management

STEW 1-8 All Deer Hunting Program 220+/- NA NA 2013-2022

The Conservation Commission will continue the white-tailed deer hunting program in order to reduce the very high population of deer in the Osgood Hill Conservation Area. Permits to hunt on the property are issued annually by the Commission. Monitoring the deer herd population and health may be feasible through the Mass Fish & Game Department biologists. Currently, the deer are having an impact on the regeneration of trees on the property. Studies on the impacts of high deer populations at the Quabbin Reservoir Watershed are available to the public and could be useful to the Conservation Commission when making decisions about controlling the deer herd at the Osgood Hill Conservation Area.

Boundary Maintenance

STEW All All Identify, Blaze & Paint NA NA NA 2013-2022

Boundary identification of the property lines will be done to protect the property from encroachment and assist the landowner when conducting management near the property lines. The property lines will be identified with property signs or by blazing and painting. Iron pipes, cement bounds, stone bounds, wire fences and stone walls were all found on the property during the inventory of forest resources. The Boundary & Stand Type Map on pages #21 & 22 shows the physical boundary features that were found in the field. The property deeds and available property surveys will be used to identify the property lines.

Forest Stewardship Education

Educating the public through workshops, signs, the local cable television network, maps and interpretive walks will assure that visitors using the property have had an opportunity to learn about and respond to the practices that have been completed and recommended in this plan. Compiling a comprehensive list of the wildlife and flora on the property is also recommended. This will also build a greater understanding and knowledge of the property as a whole.

OBJECTIVE CODE: CH61 = Forest Products (for Ch. 61/61A)

STEW= Stewardship Program practices

STD= stand Type= Forest type

AC= acre

MBF= thousand board feet

BA= basal area VOL= volume

Owner(s) Town of North Andover, Conservation Commission

Town(s) North Andover

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) *Phil Mayhew* Date *4/20/13*
Town Manager Date _____

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

Plan Preparer *Mary E. Giddings* Date *3/28/2013*

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

Approved, Service Forester *Laura E. Dorley* Date *5/13/2015*

Approved, Regional Supervisor *Susan + Hannah* Date *5/20/13*

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) Town of North Andover, Conservation Commission Town(s) North Andover



BOUNDARY & STAND TYPE MAP

Land in North Andover, MA
Osgood Hill Conservation Area
COMPARTMENT #1

Owned By:
Town of North Andover
North Andover Conservation Commission

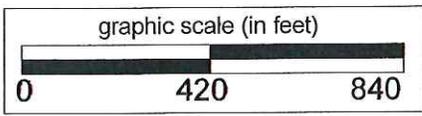


Legend

Wetland	
Stream	
Access Road	
Stone Wall	
Stand Type	
Building	
Trails	
Excluded Area	
White Pine-Oak	WO
Mixed Species	MX
Mixed Hardwoods	MH
Oak-Hardwoods	OH
Hemlock-Hardwood	HH
Red Maple	RM
Stand Type Line	
Parking	P
Iron Pipe	IP ●
Stone Bound	SB ■
Fence Line	
Tower	

Prepared By:
Gary H. Gouldrup
Consulting Forester
12/17/2012

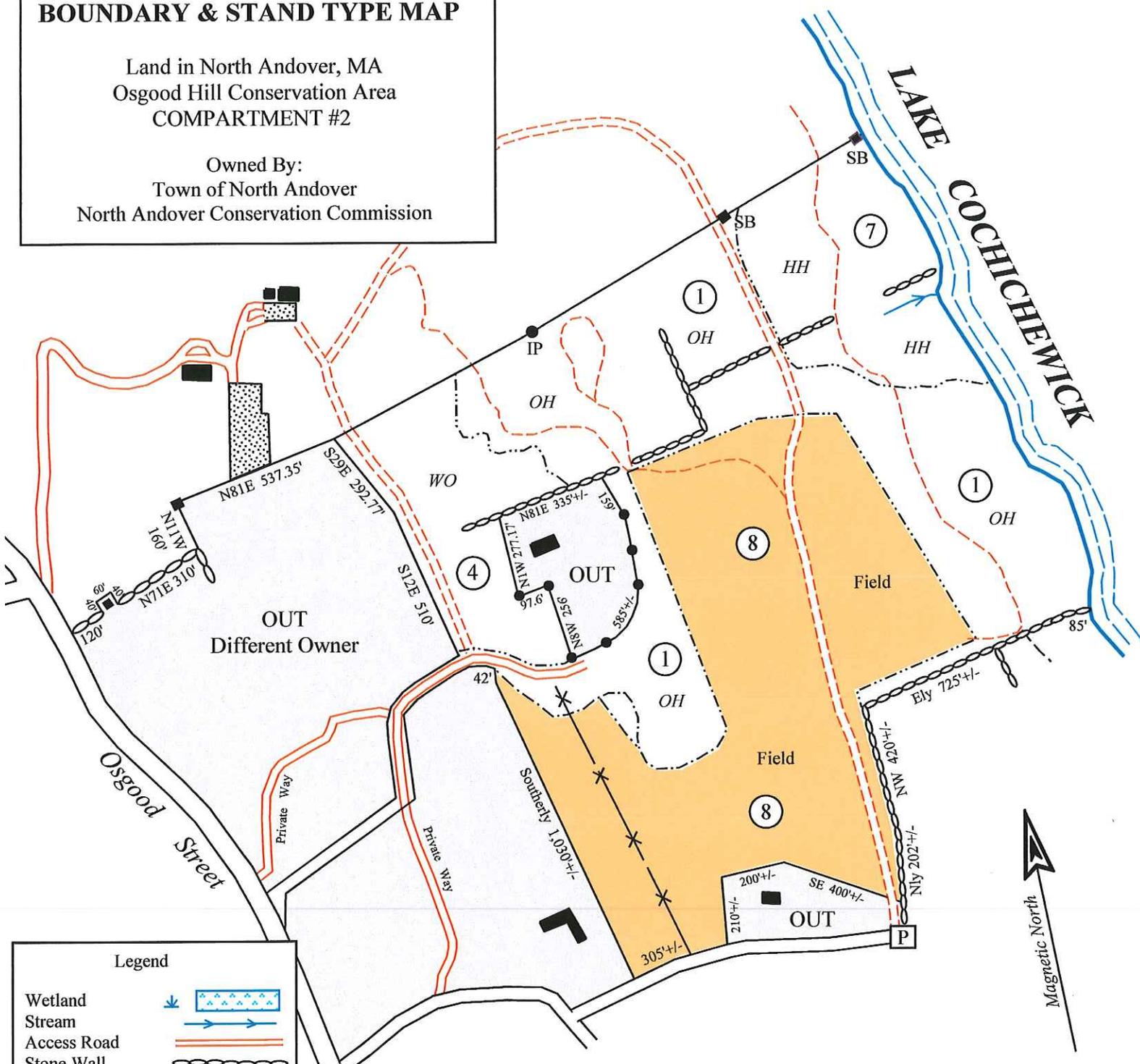
72 Townsend Street
Pepperell, MA 01463
(978) 433-8780



BOUNDARY & STAND TYPE MAP

Land in North Andover, MA
 Osgood Hill Conservation Area
 COMPARTMENT #2

Owned By:
 Town of North Andover
 North Andover Conservation Commission



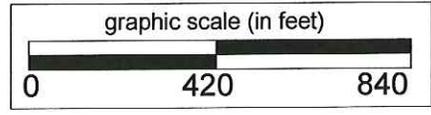
Legend

Wetland	
Stream	
Access Road	
Stone Wall	
Stand Type	
Building	
Trails	
Excluded Area	
White Pine-Oak	WO
Mixed Species	MX
Mixed Hardwoods	MH
Oak-Hardwoods	OH
Hemlock-Hardwood	HH
Red Maple	RM
Stand Type Line	
Parking	P
Iron Pipe	IP ●
Stone Bound	SB ■
Fence Line	



New England Forestry Consultants, Inc.

Prepared By:
 Gary H. Gouldrup
 Consulting Forester
 12/17/2012
 72 Townsend Street
 Pepperell, MA 01463
 (978) 433-8780



Town of North Andover
Osgood Hill Lot
North Andover, MA
2008 Aerial Photo



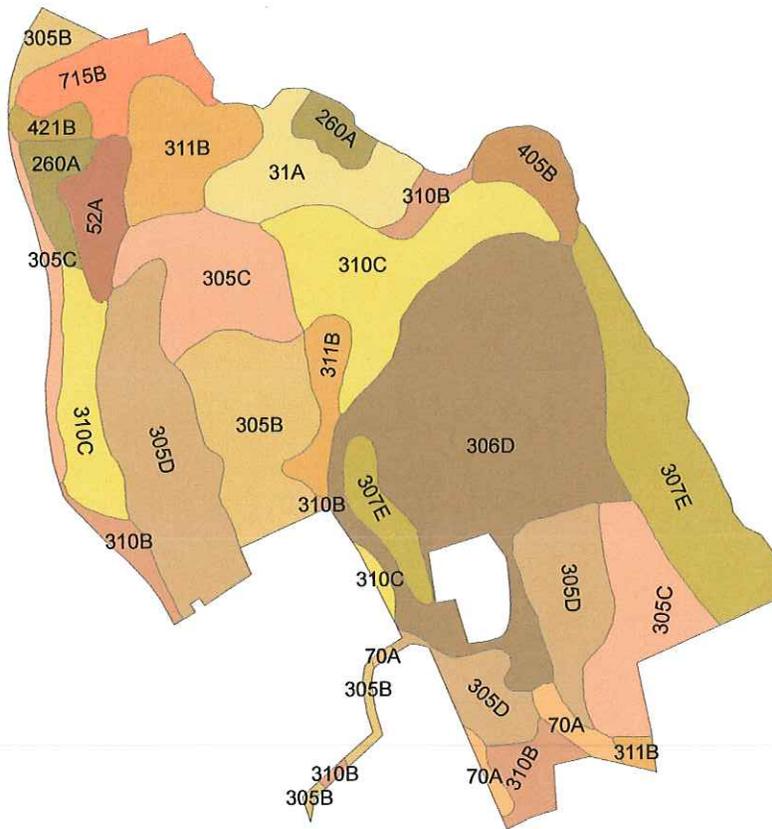
1,000 500 0 1,000 2,000 Feet



Prepared by:
New England Forestry Consultants, Inc
Sherman R. Small, Consulting Forester
Maine License # LF655
New Hampshire License # 409
December 15, 2012

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

Town of North Andover
Osgood Hill Lot
North Andover, MA
Soils Map



307B Soils Symbol



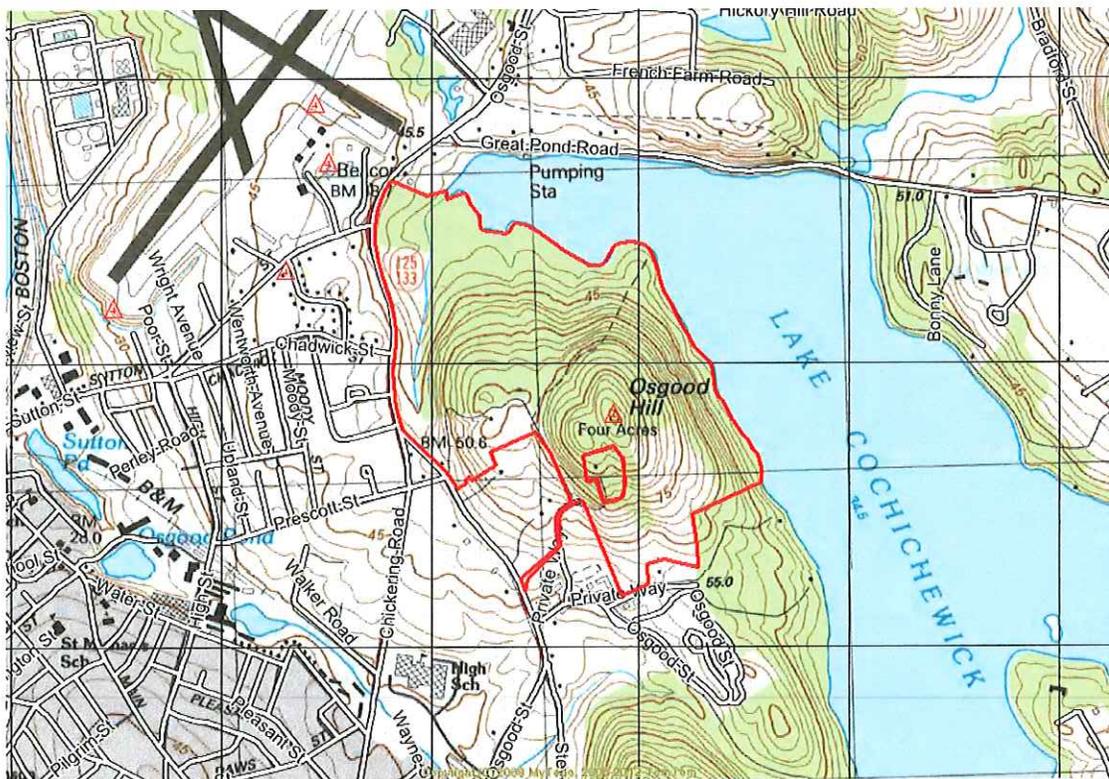
Prepared by:
New England Forestry Consultants, Inc
Sherman R. Small, Consulting Forester
Maine License # LF655
New Hampshire License # 409
December 15, 2012

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

LOCUS MAP

Land In:
North Andover, MA

Owned By:
Town of North Andover, c/o Conservation Dept.
120 Main Street
North Andover, MA 01845



Topographical Map – Lawrence Quadrangle

Scale 1 inch = 2000 feet

December 26, 2012

Prepared By: Gary H. Gouldrup, New England Forestry Consultants, Inc.