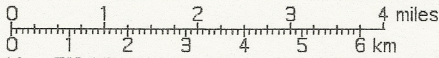


CORNISH TOWN FOREST MANAGEMENT PLAN



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Leo Maslan 12/9/12

CORNISH TOWN FOREST MANAGEMENT PLAN 2012 update

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1. THE PURPOSE OF THE MANAGEMENT PLAN

The purpose of the management plan is to describe the purposes and establish goals for the Town Forest for the foreseeable and imaginable future, and to outline general and specific procedures for achieving these goals and protecting the Forest for future generations to enjoy.

It is the management committee's hope that the plan will institute consistent management philosophies and techniques for many generations, so that practices begun now will have a chance to bear fruit over the life span of natural organisms such as trees, without being limited by the life span of a human owner. The plan may also serve as an educational resource for residents and others interested in management of undeveloped land.

2. PURPOSE OF THE TOWN FOREST

The purpose of the town forest is to preserve undeveloped land for the benefit and enjoyment of the residents of Cornish. Benefits include preservation of aesthetic, accessible, natural lands; maintenance (or restoration) of forest, shrub and grass ecosystems; hunting access; development and maintenance of trails for hiking, skiing and mountain biking as well as suitable access for horses and motorized vehicles; access for disabled individuals; opportunities for education about forest and wildlife management, and the ecology, geology and history of the area; preservation of the Connecticut River Valley "scenic corridor"; preservation of water quality; community involvement and management for sustainable forest products.

Specific management priorities include insuring that residents have access to natural, healthy lands; protection and preservation of unique natural habitats such as vernal pools, mesic forests, wetlands and near "old growth" woods; recognition and protection of the existing and potential natural systems of flora and fauna; access and education programs to foster appreciation of these natural resources; and minimum impact sustainable forest harvests in selected areas for improved forest health as well as cash income to finance town forest projects.

In order of importance, timber harvest is last and should be performed only when forest health will not be harmed. It must be done in strict accordance with current best management practices and with meticulous attention to minimizing aesthetic impact.

3. OVERVIEW OF THE CORNISH TOWN FOREST

The Cornish Town Forest is an undeveloped property of about 270 acres. It is located at the southern boundary of the town near the southwest corner, on the south end of the north - south ridge next to the Connecticut River, known as "Wellman's Hill." It is bounded on the west by Root Hill Road, on the south by the Cornish - Claremont town line, and in part on the east by Tandy Brook Road.

The terrain is hilly and undulating. Forest types include mesic forest and abandoned pasture overtaken by mixed hard- and softwood forest. Other characteristics include many areas of exposed rock ledge, vernal pools, seasonal streams, wetland and about ½ mile of Granite State Power Company right of way, which roughly bisects the property. The property was heavily logged in the mid 1970s and has active regrowth with clumps of dense small hemlocks and hardwoods. There are scattered wild apple trees, a few very large trees, and multiple areas of medium aged (8 to 12 inch DBH) mixed growth of white pine, hemlock, oak, red maple, ash, birch, sugar maple, poplar, beech, and cherry. Various types of wildlife browse, den trees, and snags abound.

Elevations range from about 570 feet above sea level at the entrance of Root Hill Road from Claremont and at the low point on Tandy Brook Road, to about 1,110 feet at a ledgy overlook with westward views of Mt. Ascutney near the northwest corner of the forest.

When considered with abutting properties, as of 2001 the Forest comprised part of an approximately 1800-acre area of currently undeveloped woodland.

4. GEOLOGICAL ATTRIBUTES

A. Topography

The topography of the property is generally hilly. The flattest areas are the central and southwest portions where undulating terrain ranges from 0% slope in very small areas to 15% slopes. Steep slopes of 25-50% occur along Tandy Brook road (the eastern edge of the property) and on either side of the seasonal stream, which parallels Root Hill Road (in the western quarter of the property). More moderate slopes of 15-25% extend from the height of land near the northwest corner of the property south and east towards the power line and the southern boundary of the forest.

B. Aspect

The predominant aspects are southerly, with eastern aspects along Tandy Brook Road and Root Hill Road, and a steep slope descending to the west from the highest elevation at the northwest corner of the property.

C. Geological History

In essence, the character of the land in the Cornish Town Forest is due to three major geologic processes: the initial bedrock formation, its transformation by plate tectonics, and finally weathering and scouring by glaciers and erosion.

1. *Formation of the bedrock*

1300 million years ago the landmasses of the earth formed a single continent. This supercontinent split apart about 650 million years ago, leaving a “proto - Atlantic” ocean between the land pieces. The soil washed off these ancient continents accumulated as sediment on the ocean floor.

Much of what eventually became New York State and western New England existed at this time but was under water.

2. *Plate tectonics*

According to the theory of plate tectonics and continental drift, 415 million years ago the proto continents began to come back together, squashing the silty crust of the ocean bottom in the narrowing space between them. Eventually, the inexorably merging continents smashed completely together during the period from 445 to 335 million years ago, forging the supercontinent called Pangea.

The exposed bedrock in the Cornish Town Forest is a remnant of the ancient mountain range created by this collision. The fine grained mud silts laid down on the ancient ocean floor were transformed and lifted up by the pressure of the continental collision into metamorphic rocks, specifically slates and pyllites. The north - south orientation of the rock ridges in the town forest shows that this area was formed by the east - west tectonic compression of the colliding continents. The rock ridges poking out of the soil in the town forest can be compared crudely to the wrinkles in a rug that is pushed aside when we move furniture - - in this case the “furniture” of the African continent pushing the old ocean bottom against the “wall” of the North American continent, leaving “rug folds” that run north and south.

Similar rock outcroppings are exposed in cross section along Route 12A, north of the Cornish - Windsor Covered Bridge.

Strips of softer or cracked rocks within this bedrock have eroded over time, leaving the depressions between rock ridges that, in the case of the town forest, catch water and have become vernal pools, seeps and seasonal streams.

After a period of erosion and tectonic inactivity, continental movements eventually reversed and about 150 million years ago Pangea began splitting up. The new break line resulted in part of Africa being left behind on the North American land mass (what is now parts of Maine and Eastern New Hampshire).

The Connecticut River Valley is positioned along what some geologists believe to be the collision zone between the original North American and African tectonic plates. Evidence of this collision can be seen in road cuts along I-91, where rocks stand in a near vertical position and are also severely crumpled. Fracturing along the collision zone weakened the rocks so that weathering and the resulting breakdown of the rocks was more pronounced along the collision zone. The result of this selective weathering process was the development of a long, north - south linear trough that eventually became the Connecticut River Valley.

3. *The glaciers*

Much more recently, from 2 million to 6,000 years ago, all of Vermont and New Hampshire was sculpted by glaciation. Exposed high rock ridges in the Town Forest show north - south grooves left by the abrasion of stones carried by the southward advance of glacial ice. The grinding action of the glaciers scoured mineral particles from the bedrock and pulverized rocks, creating the typical Cornish area soil mixtures of loam, sand, stones and boulders. Due to glacial scouring, the soil depth is also relatively shallow (compared to the deep soils of Iowa, for instance). Soil maps of the area classify the resulting soils by the specific types of soil particles (silt, sand, and clay content), sizes of soil particles (fine, coarse, gravelly), depth of various soil layers, the slope of the surface and the degree of wetness.

The last great glacier, the Wisconsin Stage Ice Sheet, disappeared 10,000 to 20,000 years ago. As the glacier melted, the western margin of

Cornish was temporarily inundated by a deep pool of water, Lake Hitchcock, which extended from near Middletown, Connecticut to the Canadian border. The relatively flat, fertile "river bottom" land along the Connecticut River is sediment deposited on the bottom of Lake Hitchcock. Finally the glacial ice melted completely and unplugged the outlet of Lake Hitchcock. The escaping water carved the Connecticut River bed and left high terraces of sediment, such as those found to the east and west of Platt Road. Although the Cornish Town Forest lands were within the Lake Hitchcock watershed, these forestlands were probably shoreline property, and not under the lake's waters.

4. *Today*

Since the departure of the last glacier, the land continues to change slowly due to a number of influences, including barely measurable continental movement, erosion, freeze - thaw action, accumulation of decaying plant material and the activities of man.

D. *Soils*

The U.S.D.A. Conservation Service map shows six different soil types in the Cornish Town Forest (see Figure 1). The majority of soil types are shallow to moderately deep stony loam of steep to moderate slope. This holds true for all except the southwest corner and several small areas in the central part of the Cornish Town Forest where the slope ranges from 0-3%. In these low-lying areas the soils tend to be deep, but poorly drained.

While white pine is present throughout the forest, the more sloped and rocky areas are suitable for northern hardwood species as well. The poorly drained, low-lying areas are more suited for red maple, spruce, and balsam fir.

Overall, the soil types found in the Cornish Town Forest are best suited for stands of timber (rather than other agricultural uses). While the moderately sloped areas do have some potential as pasture, their rocky nature makes this impractical. In fact, these sites on moderate to moderately steep (8-25% slope), well-drained soils have excellent woodland productivity potential. The steeper slopes of the northwestern region (25-50% slope) have

low timber management potential due to proximity of bedrock to the surface, droughtiness and difficulties with mechanical access. Only water tolerant tree species will grow in the low lying areas of the southwest portion and access is limited in a number of other areas due to steep slopes and patchy wet areas (vernal pools). Because of these factors and the relatively good soil productivity (which is reflected in the trees currently growing on the property) the area is particularly well suited to wildlife habitat and recreation.

Please see Appendix 1 for descriptions of each soil type found on the property, the species of trees most commonly growing on those soils and other woodland characteristics.

E. Wetlands

There are two seasonal streams. The largest one flows in all but the driest seasons and runs roughly from north to south, more or less parallel to and about 100 yards east of Root Hill Road. Near the intersection of the logging road with Root Hill Road, this watercourse expands into an approximately 1-½ acre marsh, which is the largest wetland on the property. The east - west causeway of the logging road has probably acted as a dam to increase the pooling of water in this area. After draining through a culvert in the causeway, this stream is joined by the second stream near the southwest corner of the property.

The second stream arises near the middle of the property, just west of the power line right of way and north of the northernmost point of the logging loop road. It is fed by a number of small seasonal trickles, seeps and marshy areas on both sides of the power line. This stream runs southwest and joins with the first stream, then flows south by southeast across the town forest boundary into Claremont to join Walker Brook, which reaches the Sugar River shortly before its confluence with the Connecticut River.

The eastern half of the property contains numerous vernal pools and several marshes. These wetlands range in size from about 25 square feet to ½ acre. Most are located in the low spots between the north south oriented rock ridges. There are at least half a dozen vernal pools, which support active amphibian populations (wood frogs, spotted salamanders and spring peepers).

A very small, southerly flowing seasonal stream drains the eastern-most vernal pool overflow and several low boggy spots along the southeastern border of the forest. This water eventually flows into a large wetland just north of Hewitt Road in Claremont, which contributes to Walker Brook.

5. FOREST HISTORY

Much of this property appears to have been farmed, as evidenced by the substantial cellar hole and associated labyrinth of stonewalls in and around the logging

road loop. Based on similar parcels of land with better-known history, the land may have been cleared (except for a few widely scattered hardwood trees, and the very steep slopes west of the highest point) in the early 1800s, and then abandoned toward the end of that century. Forest quickly reclaimed the land, which was then logged at least twice. The 1997 timber cruise estimated that the most recent cutting occurred 25 years previous to the cruise and encompassed the entire property except the steepest slopes.

More specific information about the past ownership of the farm and uses of this property is obscure and would make a good future research project. (*See Footprints of the Past: Images of Cornish, New Hampshire* for the history of the naming of Wellman's Hill).

The power line right of way was cut in 1947. Since then it has been maintained by aerial and hand application of herbicides and manual cutting.

In 1972 the property was owned by Davis Forest Industries, a subsidiary of Davis Alaiyo Corporation, which performed a survey and laid out an 18-lot subdivision. In 1995 Davis Forest Industries sold the property to Stanley C. Olsen, a developer from Crystal River, Florida (Olsen Family Partnership IV LTD).

Construction of the housing development hinged on road access from the south through Claremont. Permission from the city of Claremont was required to upgrade Root Hill Road; it was denied.

Around late 1997 or early in 1998, an aging Stanley Olsen followed his son's recommendation to sell the family corporation's holdings of 3,000 acres of New Hampshire land to the Society for the Protection of New Hampshire Forests. This land sale included 150 acres adjacent to the Yatsevitch Forest in Cornish, and 270 acres on Wellman's Hill (now the Cornish Town Forest). Mike Yatsevitch alerted the Cornish Conservation Commission to the fact that SPNHF would be reselling the Wellman's Hill Property.

The Wellman's hill property had a 1990 current use assessment of \$166,100 (as of 1998 annual taxes were \$596). The liquidation value of the timber (cutting and sale of all trees over 6 inches DBH) was assessed in September 1997 at \$95,243. However an analysis of the timber valuation done for the conservation commission by forester Leo Maslan in December 1998 estimated the selective harvest value at \$63,812.47. This result was based on a harvest that kept long-term timber management in mind, rather than liquidation value. The Society set a sale price of \$100,000, and a potential buyer was interested in purchasing the property for its timber liquidation value.

At this time the Cornish Conservation Commission had been searching for an appropriate property to purchase for a town forest. The Commission had saved up about \$70,000 from its annual appropriations from the town (at up to about \$3,000 per year this represented savings over a long period of time). The Commission made an offer of its entire treasure chest to the Society, and on December 22, 1998 the Society's executive committee approved the offer, while retaining a conservation easement. The conservation easement states that, "The Property shall be maintained in perpetuity as open space without there being conducted thereon any industrial or commercial activities, except agriculture and forestry..." This purchase agreement finally removed the possibility of liquidation clear cutting and construction of a housing development, and preserved the woodland as Cornish Town Forest.

6. FOREST ECOLOGY

A. Forest composition

Jeff Smith of Ecosystem Management performed a timber cruise in 1997 for the Olsen family (owners of the property at that time). The cruise inventoried the species and ages of trees present on the property (see Appendix 2).

The cruise identified the major tree species as white pine, hemlock, red oak, and white ash, with smaller amounts of sugar maple, red maple, poplar, white birch, yellow birch, black birch, black cherry, hop hornbeam and red pine.

Small numbers of spruce are scattered throughout the property, but are found primarily in an area with very thin soil over ledge east of the power line, near a single nurse tree.

B. Age and age class distribution:

Past land use (in this case farming and logging), and to a lesser extent soils and aspect are largely responsible for the current age - class distribution of this forest (see Appendix 3). Scattered older (about 100 year old) trees can be found, mostly on the very steep slopes south and west of the height of land where logging appears to have been minimal. Two four-foot diameter trees (one hemlock and one sugar maple) are located near the southern boundary of the property. As of 2012 the maple was nearly dead and the hemlock was not in good health.

Medium aged trees (pole timber and young saw timber classes) with actively growing understories predominate in most stands. Vigorous growth of seedling and sapling hemlocks is found in areas of small patch cuts and skid roads.

C. Tree quality and health

There is a wide variety of tree quality ranging from actively regenerating saplings and rapidly growing pole timber to high graded areas where poor quality trees make up a significant proportion of the stand. In addition there are patches of overstocked pole - age white pine. In some areas tree health would benefit from some type of thinning. Much of the beech is affected by beech scale. Due to the high percentage of hemlock, especially in the eastern half of the forest, hemlock woolly adelgid may have a significant impact on the forest in the future. In 2004 Scout Troop # 332 performed TSI by girdling in a several acre patch of even aged pasture pine bordered by Root Hill Rd, the southwest parking area and the north-south stream and wetland. A windstorm in February 2010 with straight-line east winds resulted in a blow down of about ½ acre in this area, and as of 2012 there was rapid growth of hardwood trees.

D. Future potential

The 1997 timber cruise estimated that due to the favorable soils, tree growth rates on this land would be somewhat higher than the average of 2 to 3% occurring in

unmanaged New Hampshire forests, which translates to growth rates of at least 0.5 cords or 250 board feet per acre per year.

Because of the predicted growth rate, diverse tree species and a mix of healthy younger age classes, there is excellent potential for the forest to be maintained in a healthy state, and for the forest to support the multiple uses described in the goals. In the long-term future, mixed “old growth - like” forest should result from a combination of natural forces and management practices (gardening on a forest scale).

E. Other plant life

In addition to supporting a wide variety of non-timber species (witch hazel, ironwood, osiers, alders, wildflowers, ferns, blueberries, etc.) the forest has sites that could support the growth of rare plants. Care should be taken to preserve any rare plants and sensitive plant communities, and to monitor and control invasive plant species. As of the 2012 management plan review, invasive buckthorn and barberry had increased substantially in areas of blow down and tree thinning, from scattered plants to thick stands. Honeysuckle and autumn olive populations appeared to be controlled though not reduced by mowing along the loop road. There was an increase of buckthorn and autumn olive on the power line from a few shrubs to about 50 including 3 glossy buckthorn, ½ dozen autumn olive and 3 or 4 dozen common buckthorn shrubs.

7. WILDLIFE ECOLOGY

The forest contains a wide variety of habitat types (see Appendix 4). Hardwood and softwood stands of varying ages are found. Over time, developing an “old growth” type habitat will extend the variety of habitat characteristics. Even now there are significant numbers of snags, large old den trees and coarse woody debris, especially in areas with older beeches affected by beech scale. Currently there are extensive areas of dense young hemlock growth, which support an active deeryard and snowshoe hare population. Shrub, hardwood and softwood browse is scattered throughout the property in old logging cuts, around the vernal pools and along the power line right of way and the logging loop road. Small areas of spruce regeneration can be found and should be released to provide more variety of dense softwood cover. This may be particularly important if the hemlock woolly adelgid infests the large hemlock population of the Forest. As of 2012 releasing of spruce trees had resulted in several stands of healthy saplings, most notably east of the power line within the “blue” trail. Release of apple trees performed in 2002 successfully preserved about 1/3 of the apple trees, but the rest had been suppressed for too long and died. These trees are located mostly in 2 areas: at the south boundary within the yellow loop trail and at the northwest corner of the forest.

Moose cycle through the area periodically, feeding on red maple browse in the winter and understory and wetland browse of various other types seasonally.

Significant mast contributions are made by apple, beech and oak trees, which are abundantly scattered through the property. Wild turkey, deer, squirrels, chipmunks, grouse and multiple other bird species are attracted by these food sources. Bear could be expected to feed in this habitat but have not been observed. Porcupines have been seen, however, and raccoons are probably frequent visitors.

Elusive fur bearing animals such as fisher and bobcat have been tentatively identified, and coyotes pass through the area often. There are indications that there may be a bobcat denning area on the property immediately north of the forest.

Brushy and grassy areas are found along the logging loop road and the power line. More active management of these areas to select for desirable wildlife food and cover sources will enhance these habitats for birds of all types, small mammals, deer browse, etc. As of 2012 yearly to every other year mowing has been performed, while preserving stands of milkweed. Less frequent mowing of any area appears to allow honeysuckle, autumn olive and/or barberry to multiply.

The wetlands support numerous kinds of wildlife, and the vernal pools are particularly outstanding in abundance and variety. Wood frogs, peepers and salamanders all appear to have healthy breeding populations.

Management activities will strive to preserve and enhance these diverse habitats in order to provide habitats for as many different species as the property can support. Additionally, attention should be paid to complimenting and enhancing the habitats of the abutting properties, to provide for species with larger home ranges (bear, moose, bobcat, hawk, possibly bald eagle, etc.), to protect migration corridors and to take advantage of surrounding seed sources for regeneration.

Surrounding acreages were logged extensively between 1992 and 2000, providing plentiful low browse such as blackberry and raspberry bushes and saplings. At this time, preserving older age classes of trees and the deer yard will compliment the abutting habitats. Also maintaining the open areas preserves grassland and shrub habitat, which is relatively lacking on surrounding properties.

8. ARCHEOLOGY

A large cellar hole is located just north of the southern arm of the logging loop road, about 100 yards west of the power line (see HISTORY section). An extensive network of stonewalls radiates from the cellar hole and probably includes foundations of a barn and other outbuildings. Some of these walls were disrupted by construction of the logging road and by associated stump dumps. Most of the stonewalls are to be found in the southwestern third of the property where the gentler slopes were more suited to pasture and farming, but scraps of walls, some only 50 feet long, can be found scattered throughout the area. In addition, the north, south and southeast boundaries of the property follow broken stonewalls, which sometimes have wire fence filling in the breaks. There are traces of an old barbed wire fence running from north to south at the top of the steep slope along Tandy Brook Road.

9. SPECIFIC FOREST MANAGEMENT PROCEDURES AND ACTIVITIES

A. Supervision of management procedures and activities

The management committee will consist of 5 members: one representative from the selectboard, one from the conservation commission and three community members appointed by the selectboard.

The management committee will supervise all management procedures. The committee will meet three times a year and additionally as needed to review current and proposed management activities, to evaluate the state of the forest and to arrange for implementation of management activities.

Activities which could have or could develop a negative effect on the health, viability and aesthetics of the forest, its wildlife or its visitors should be considered carefully as needed and permitted only if the management committee is satisfied that damaging effects can be acceptably controlled. The committee may prohibit such activities if judged necessary. Any timber harvests will be planned and closely monitored by a licensed forester and the management committee.

B. Mapping and other information

A detailed map of the topography, wetlands, trails, stone walls and foundations and any other points of interest will be made, with copies available to the public. (See Figure 4). A file or notebook of information may be kept at the Town Office, library or other site where it will be available to the public. This file will contain information gathered to date such as flora and fauna inventory, photographs, the management plan, reports on management activities and any other pertinent information.

C. Inventory of flora and fauna

While many species have been observed, an inventory should be made to document what animal and plant species are present over time. Any rare plants and endangered animals or insects should be identified and protected along with their habitats. In particular, the area of rich, moist soils, steep slopes and sensitive plants along Tandy Brook Road should be protected and monitored. At the 2012 management plan review, the conservation commission and forest management committee agreed that a natural resource inventory of the forest would be performed in conjunction with the town-wide natural resource inventory in the next 5 years.

D. Education and research programs

Possibilities include youth group study projects of any aspect of the forest, and informational programs and tours for the public.

E. Photographic record

An ongoing photographic documentation of growth and changes in the forest over time should be made, preferably by local volunteers.

F. Access policy and recreation opportunities

The property will be open to foot travel such as hiking, skiing, and mountain biking, as well as tent camping and hunting and fishing in season.

Horses and motorized vehicles, including snowmobiles, will be restricted to designated routes: the logging road loop, power line service road and Root Hill Road. The forest will be closed to motorized wheeled vehicles and horses during mud season when all class VI roads are closed to motorized wheeled vehicles (from March 1 to June 1), and at the discretion of the management committee at any additional times to prevent soil damage. Our hope is to upgrade and maintain the southern access by Root Hill Road and the logging road so that disabled individuals can drive into the property. Small areas for parking have been constructed at the intersection of the logging road with Root Hill Road, on Tandy Brook Road at the northeast corner of the property, and on Root Hill Road at the northwest corner of the property.

The property is available for minimum impact, primitive camping of short duration (no long term residence, motorized camper vehicles or camper trailers). One or two lean-tos or other simple shelters may be constructed in locations where environmental and aesthetic impact will be minimal. Site selection, construction and upkeep will be overseen by the management committee. In 2008 Boy Scout Troop #332 constructed the Eagles Ledge lean to near the northwest corner of the town forest. The scouts constructed a privy nearby the following year.

In 2011 a use survey was performed. Surveys were available at the entrances to the town forest, at the lookout and at the town office. Approximately 50 individuals filled out a survey in 2011 (See Appendix 7). Most common activities pursued by respondents were hiking, mountain biking and nature study. The trails, natural features, views and quiet were cited as the best attributes of the forest, and top 2 worst things about the forest were “nothing” and access. A majority of respondents said that the acreage open to timber harvest should not be increased.

G. Trail construction and maintenance

The existing trail network will be expanded and maintained according to the following guidelines:

1. Trails will be routed to provide access to most areas of the property from different parts of town. The trail network will make it easy to view items of particular interest such as vistas, cellar holes, vernal pools, very large trees, and other ecological attractions.
2. Trails will be located where they minimize environmental impact such as causing erosion, damaging major tree root systems or rare plants, disrupting animal dens or disturbing wetland habitat.

3. Trail construction techniques should minimize upkeep and trail damage. Some specific techniques include trail hardening, creating disincentive for cutting switchbacks, and following rock ridges.

4. Trail construction will be supervised by the management committee, and trail condition will be assessed by the committee annually or as needed.

H. Forest management procedures

In keeping with the goals of wildlife management, recreation and aesthetics, uneven - aged management should be implemented to encourage development of a more “old growth like” forest, except in areas designated specifically for possible commercial timber product harvest, where even - aged management is more efficient and economical. Uneven - aged management may occur through natural processes and by intervention. Release of diverse understory and wildlife food source species, small patch cuts and thinning of overstocked and single species stands are all acceptable forms of intervention (see Appendix 5 for a discussion of even - aged versus uneven - aged management techniques).

Based on the purpose of the Town Forest as described above, the management plan prescribes the following three management areas instead of using the timber stands identified in the timber cruise (see FIGURE 2).

Area 1. All of the town forest except specific areas described below shall be “minimum disruption areas” where the only activities are trail construction, and intervention for wildlife and plant species management and forest health.

Appropriate activities include:

1. Construction of trails for non - motorized use
2. Release of food trees and plants
3. Small (one acre or less) patch clear cuts or burns for regeneration of specific vegetation
4. Cutting to select for diverse tree species, increase edge habitat along the power line, preserve snags and den trees, release understory and selected desirable trees, protect individual large trees, and to remove individual disease- and insect- prone trees
5. Removal of damaged trees when this can be done without harming the surrounding forest
6. Protection of rare plants
7. Monitor for and control invasive plant species (invasive plants identified to date include buckthorn, honeysuckle, barberry and Russian and autumn olive) and
8. Other similar, low impact types of intervention.

Area 2. Open areas - the power line ROW, logging road and clearings:

Management activities include:

1. Search for alternate maintenance methods for the power line ROW that are environmentally safe and create desirable wildlife browse,
2. Allow no herbicide spraying unless the safety can be unequivocally demonstrated and this is the most suitable method for controlling plant growth,
3. Create more edge habitat and soften the visual impact of the right of way with timber cuts at the edge of the ROW in areas that would be maintainable (by mowing for example)
4. Enforce mud season restrictions of motorized vehicles to prevent deepening of the mud bogs on the service road
5. Mow appropriate areas at one to three year intervals in order to maintain grass habitat. Mow late in the season to avoid disrupting nesting, insect hatching and seeding
6. Cyclic cutting of poplar and other browse species in the edge habitat to maintain distributed ages and sizes of browse species,
7. Monitor for and control invasive plant species
8. Maintain views and associated blueberry patches at the lookout areas on the height of land by hand cutting and possibly by controlled burning as needed
9. Other similar management practices judged necessary by the management committee.

In the fall of 2006 National Grid replaced all the utility poles and electric line on the power line. Repeated travel to and from the right of way by their heavy equipment in wet weather caused extensive damage to the south end of Root Hill Road and the loop road, which the project supervisor refused to repair. Ultimately after intervention by the selectboard and Cornish's representative to state government National Grid did repair the woods roads and also place posts at the Root Hill entrance to the forest, which made it possible for the committee to hang gates and effectively control motor vehicle access into the property.

Area 3. Timber production - 20 acres or about 7% of the total acreage of the town forest, consisting of the following 2 areas:

- a. Regrown pasture in the southwest corner of the property: this area is delineated by the Cornish - Claremont town line, the power line ROW and the south arm of the logging loop road.
- b. Regrown pasture along Root Hill Road: this area is delineated by Root Hill Road, a rocky elevation near the northwest corner of the property, the stream which parallels Root Hill Road, and the logging road causeway.

Note that steep banks, wetlands and the area within 75 feet of the stream are not included in the harvest management area.

1. *Stand description*

These areas were inventoried in the timber cruise and reviewed by the management committee and forester, and consist of 20 acres of mixed wood with areas of white pine.

This area has an even - aged stand structure of pole - timber size class. Stand composition by basal area is as follows: white pine 24.5%, hemlock 20%, red oak 13%, red maple 10%, ash 8.5%, black birch 7.5%, sugar maple 5%, white birch 4.5%, poplar 3%, beech 2%, cherry 1%, red pine 0.5%, yellow birch .25%, and hop hornbeam and other hardwoods 0.25%. The area is fully- to over- stocked with trees, which have regenerated vigorously following the heavy cutting about 25 years ago.

Slopes in this area are moderate. Operability is somewhat limited due to wet areas and seasonal streams. However the proximity to the maintained logging road and Root Hill Road provides good access in dry weather and winter months, unlike the eastern portion of the property where access is hampered by the band of vernal pools and steep eastward slopes adjacent to Tandy Brook Road.

2. *Stand History*

The area was pasture at one time. After the land was abandoned it reverted to woods, which were heavily cut at least once, the last time being about 25 years ago. A few low quality white pines were left but the bulk of the growth is active opportunistic growth, which has led to overstocking.

3. Stand data

Mean Stand Diameter (inches): 9.5

Basal Area (sq. feet/ac): 91

Stocking Level: B

Stand Height: 40 to 60 feet.

Stand Age: 40 years

Stand Quality: Fair

Insects and disease: some white pine weevil is present

Site Class: I and II

Regeneration: Minimal

Volume/acre: 2,792 board feet/ac.

4. *Recommendations*

Due to the small size of the management area and the current even - aged structure of the stand, this area should be managed for continued even aged production of sawlogs (see appendix 5). For optimum tree vigor, a pre - commercial thinning is overdue. This thinning should identify and release “crop” trees (crop trees are selected on the basis of species, form and vigor). In this stand white pine, red oak and black birch are preferred species.

5. *Treatment Schedule*

Weeding and thinning by girdling (possible youth group project) as soon as possible then evaluate for further thinning or harvest in 10 years. Subsequent evaluation of residual stand should be at 15-year intervals.

In June 2004 Scout troop 332 performed TSI in the white pine area in the southwest corner of the forest. As noted above much of this area suffered from the blow down in 2010. In 2007 thinning was conducted in the area to the south of the south arm of the loop road (the TV trail) and adjacent to the area of TSI along Root Hill Rd.

Approximately 4 thousand board feet (mbf) of over mature hemlock trees and declining poplars were salvaged. Harvesting these trees released future hardwood crop trees that had been suppressed by the dominant decedent trees. The material harvested was utilized by the Town of Cornish to construct a shed at the recycling center and in the repair of a historic covered bridge.

6. *Other considerations for timber harvesting*

a. Terms of the easement

At least 30 days before any harvest, the management committee must provide written certification (signed by a licensed forester or other qualified person approved in advance and in writing by the Grantor of the conservation easement, the Society for Protection of New Hampshire Forests,) that a harvest plan has been prepared in compliance with the terms of the conservation easement and the management plan. In addition, if any harvest is planned more than 10 years after the adoption of this management plan, the entire plan must be reviewed and updated by a licensed forester and the management committee at least 30 days before the harvest.

b. Aesthetics of harvest or any other human activity

The aesthetics and visual quality of the Town Forest are of crucial importance. By nature the woods are a messy place: trees often die, fall down, rot or drop limbs. Retention of snags (dead or partially dead standing trees) and den trees (live trees with existing cavities) helps to maintain populations of cavity nesting wildlife. Dead and down woody material in various stages of decay (logs, stumps, limbs, tree tops and upturned tree roots) serves many critical functions in a forest and should be present in most if not all stands. Such debris is used as habitat by many small mammals, amphibians, reptiles, insects, other invertebrates, mosses, fungi and lichens. In addition, rotting wood is an important part of the recycling of biomass, which is necessary to avoid long-term depletion of soil nutrients.

It is important to distinguish between natural, desirable disorder and man-made mess. Slash and debris left from logging operations can be extremely unsightly and may impede foot travel. Logging operations will not be undertaken in the town forest if this will result in unacceptable impact on aesthetic appearance, access or the health of any part of the ecosystem. When logging does occur, techniques to minimize the undesirable effects of slash should be used at all times (chipping, crushing by forwarder, etc.). The effect of removal of biomass by whole tree harvest should be taken into consideration.

Log landings will be scrupulously cleaned and reseeded or replanted so that they can be maintained as a natural appearing contribution to the ecosystem. Roads and trails should be pleasing to the eye and fit into the natural landscape.

c. Boundaries

Boundaries of the Town Forest have been clearly identified and marked with green - on - white Cornish Conservation Land medallions.

d. Laws and permits

New Hampshire state laws pertaining to the harvesting of wood will be observed. This includes filing "Intent to Cut" forms, obtaining any wetlands permits or other permits required and abiding by all water quality regulations.

e. Water quality protection

Any time heavy equipment is used in the woods the potential for water quality problems exists. Skid trails must be laid out correctly and used only when the ground is firm. In addition to layout, other erosion control measures must be carefully attended to, such as water bars, reseeded and mulching. Brook crossings will be kept to a minimum. Slash and other logging debris will be kept out of streams and vernal pools. Low - impact techniques should be employed to insure that physical and aesthetic disruption is minimized.

f. Sustainable harvesting

Any tree harvests will preserve regeneration capabilities of the forest so that there is continuous production of healthy, high quality trees of all ages in the forest as a whole. The goal is to achieve a complex, balanced forest structure, which benefits plant and animal diversity, aesthetics, and recreational opportunities as well as wood product harvest potential over the long term.

Best management practices will also be followed to control damage to residual trees during and after harvest (such as from skidding wounds, soil compaction and wind vulnerability).

The most suitable harvest technique(s) will be determined for each area. Specific harvest methods may include group selection, single tree selection, shelterwood cutting or small (1/4 to one acre) clearcuts.

g. Products and markets

Markets for various types of forest products have fluctuated historically. In the long term, there probably will always be markets for wood products of some type. Wood is a renewable resource, and the harvest of appropriate types and volumes of wood at appropriate times and with current best techniques from the Cornish Town Forest should be an example of ideal multi - use forest management. This may mean that harvests are rare and small, and targeted for specific markets as they occur.

10. SUMMARY:

It is our hope that the Cornish Town Forest may serve as an example and possibly an experiment in long term (multigenerational) consistent management for a healthy forest, multiple uses and the enjoyment of all.

This plan was approved on December 20, 2002

The updated plan was approved on December 1, 2012

GLOSSARY OF SELECTED TERMS

Age classes of trees - Foresters generally categorize the forest stands by four different age classes: seedlings (1-5 years), saplings (6-15 years), pole timber (15-40 years), and saw timber (40+ years). A variety of age classes is important for providing diverse wildlife habitats, for allowing for tree regeneration after natural or human disturbances, for natural aesthetic appearances and for sustainable harvest of forest products. The juxtaposition of trees of different age classes is important for long term forest health and Wildlife management.

Aspect - The direction that a slope faces (north, south, etc.).

Basal area - A measure of tree density. It is determined by estimating the total cross-sectional area of all trees measured at breast height (4.5 feet) and expressed in square feet per acre. It may also indicate the cross-sectional area of a single tree, in square feet, at breast height.

Beech scale - **Bark disease**, *Nectria coccinea* var. *faginata*. This disease occurs in conjunction with infestation by the woolly beech scale. Feeding punctures made by the insects kill the living bark and produce cracks through which the causal fungus enters the tree. The fungus causes a canker, which may be sunken, with small orange lumps of fungal tissue on the surface. Leaves are usually yellow and small, and the tree lacks vigor. When cankers are large enough to encircle the twig, branch, or trunk, the foliage wilts, and the parts of the tree distal to the canker die. Infection usually does not occur when the insects are removed soon after infestation.

Biodiversity - The variety and variability of all living organisms.

Bog - A low -lying area with standing water or saturated soil for a significant portion of the year that is dominated by grass like vegetation, shrubs and dwarf trees, and which has a thick vegetative mat under foot.

Browse - Leaves, buds and woody stems used as food by woodland mammals like deer and moose.

Channery - A term to describe flat rock fragments 2 to 150 mm long.

Crop tree - A tree that is retained for maximum longevity in a stand due to desired characteristics such as commercial quality or biotic contribution.

DBH - Diameter at breast height: The average diameter of a standing tree, measured outside the bark, at a point 4.5 feet above the ground.

Yard - Any place where animals congregate for protection from the elements. Deeryards are often associated with coniferous cover.

Den tree - A living tree with a hollow cavity large enough to shelter wildlife.

Easement - A voluntarily created land use agreement between a landowner and a land conservation organization or government agency. The agreement permanently protects a defined parcel of land and its associated values by restricting certain uses or activities that could occur on the property.

Ecology - The science of the relationships between organisms and their environments.

Ecosystem - A community of species (or group of communities) and its physical environment, including atmosphere, soil, sunlight and water.

Edge habitat - The area where the variety of types of food, cover, water or terrain required by a particular species come together.

Even - aged management - Forest management with periodic harvest of all trees on part of the forest at one time, or over a short period to produce stands containing trees all the same, or nearly the same age or size.

Harvest - In general use, removing all or portions of the trees on an area. It can mean removing trees to obtain income, to develop the environment necessary to regenerate the forest, and to achieve special objectives such as development of particular wildlife habitat needs. Contrast with weeding and thinning cuts.

Hemlock woolly adelgid - An introduced insect pest that infests and kills hemlock trees.

High grading - An exploitive logging practice that removes only the best, most accessible and marketable trees in a stand.

Liquidation cut - An exploitive harvest that removes all marketable timber for purely economic reasons.

Loam - Soil consisting mainly of sand, clay, silt and organic matter.

Marsh - A low -lying area with standing water or saturated soil for a sufficient portion of the year that is dominated by reeds, cattails, sedge or grass - like vegetation.

Mast - Nuts of trees such as oak, beech, walnut and hickory that serve as food for many species of wildlife.

Mean stand diameter - Based on a relationship of the number of trees per acre and the sum of their basal areas, it is the DBH of the tree of average basal area in a stand.

Mesic forest - hardwood forest generally occurring on lower elevation concave slopes and characterized by deep, fine - textured soils and relatively high nutrient status ... They are dominated by sugar maple with white ash or basswood ... understory plants include blue cohosh, rattlesnake fern, maidenhair fern, wild ginger, and Dutchman's breeches. A considerable number of New Hampshire's rare upland forest plants occur in this forest type, including butternut, flowering dogwood, ginseng, etc.

Old growth - A self-perpetuating forest community that has reached a dynamic steady state (i.e. changes occur in the community only when gaps are formed as old trees die out, but the changes do not affect the overall character of the community) in the absence of silvicultural treatments. The dominant vegetation is considered to be climax with all age classes present.

Overstocked - A condition where a stand has more trees than at normal or optimal (full) stocking.

Regeneration - The renewal of a stand of trees either by natural or artificial means.

Seep - A spot where groundwater oozes slowly to the surface, forming a small pool.

Selective harvest - A common term in forestry that has no silvicultural meaning unless the criteria for selection are specified. A selective harvest simply means that someone indicated which trees would be cut.

Site class - (or index) A measure of the relative productive capacity of an area, based on tree height growth.

Slash - The residue left on the ground after felling, lopping, storm, fire, or girdling. It includes nonmerchantable portions of trees, such as stumps, broken branches, dead trees and other debris left on the ground.

Slope - The average angle of incline of the terrain, usually expressed as a percentage based on the amount the incline rises over a horizontal distance.

Snag - A standing dead tree generally left for wildlife management purposes.

Stand - A grouping of trees with similar characteristics (such as species, age or condition) that can be distinguished from adjacent groups.

Stand height - Average height of trees in a stand.

Stand quality - A silvicultural classification used to describe the condition of a stand, particularly in relation to its need for treatment.

Stocking level - An indication of the number of trees in a stand as compared to the optimum number of trees for some management objective, usually improved growth rates or timber values.

Suppressed trees - Trees with small crowns that are entirely below the level of the canopy, receiving no direct sunlight.

Sustainable forestry - Management to produce the goods we desire today without compromising the productive capability and biological integrity on which future generations will depend.

Swamp - A tree or shrub wetland, with standing water or saturated soils for a sufficient portion of the year that often has a "hummocky" appearance and buttressed tree roots.

Dominant full sized trees may include red maple, black ash, black willow, black spruce, tamarack or white cedar.

Tree quality - A measure of health and marketability.

Treatment - Any action in forest stands that is controlled by a silvicultural prescription.

TSI - Timber stand improvement: Silvicultural activities that improve the composition, constitution, condition and growth of a timber stand.

Uneven aged - A timber management method that produces a stand composed of a wide range of ages and sizes.

Vernal pool - An ephemeral body of water that fills in the spring, holds water for at least 10 days, and dries up by fall in some or all years and that does not contain fish.

Weeding and thinning - A reduction in the number of trees in an immature forest stand to reduce tree density and concentrate growth potential on fewer, higher quality trees. (See TSI).

Wetland - An area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic (water loving) vegetation and which has soils indicative of wet conditions.

APPENDIX 1: SOILS

TECHNICAL SOILS DESCRIPTION

MAP SYMBOL SOIL DESCRIPTION

BdC Bernardston Silt Loam, 8-15 % slopes. This soil is sloping and well drained. It is on the sides of smooth, rounded hills and on the lower smooth side slopes of hilly uplands. The areas typically are rectangular and range from 10 to 40 acres.

Typically the surface layer is dark grayish brown silt loam about 8 inches thick.

The subsoil is olive brown and light olive brown silt loam about 21 inches thick. The substratum is very firm and dense, olive gray silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Dutchess soils. Also included are small areas of Pittstown and Stissing soils in drainage ways and seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Bernardston soil is moderate in the surface layer and subsoil and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 1.5 to 2 feet. Rooting is impeded by the dense substratum. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Much of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. Most of the cleared acreage is used for hay or pasture. A few areas are used for cultivated crops.

This soil is suited to hay, pasture, and apple orchards. It is poorly suited to cultivated crops because of slope and an erosion hazard. Strip cropping, contour plowing, minimum tillage, and using grasses and legumes in the cropping system help to reduce the hazard of erosion in cultivated areas. The water table in the spring can hamper or delay tillage or haying.

Slope, the slow permeability in the substratum, the seasonal perched water table, and the moderate frost action potential are the main limitations of the soil for community development.

CbC Cardigan Kearsarge Rock Outcrop Complex, 8-15% slopes. This unit is on the tops and sides of hills and ridges. It consists mainly of moderately deep, well-drained Cardigan soils; shallow, somewhat excessively drained Kearsarge soils; and areas of exposed bedrock that makeup about 15 percent of the unit. The areas typically are long and narrow and range from 10 to 100 acres. The soils commonly have stones on the surface 1 to 2 feet in diameter and 5 to 30 feet apart. The Cardigan and Kearsarge soils and the areas of exposed rock are in such an intricate pattern that it was not practical to map them separately. The Kearsarge soils and areas of exposed rock generally are at slightly higher positions than the Cardigan soils.

Cardigan soils make up about 35 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 18 inches thick. The substratum is dark grayish brown silt loam about 8 inches thick. Gray phyllite bedrock is at a depth of 30 inches.

Kearsarge soils makeup about 30 percent of this complex. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 13 inches thick. Gray phyllite bedrock is at a depth of 17 inches.

Included with this unit in mapping are spots of very shallow, loamy soils; spots of Dutchess and Bernardston soils; and small areas of loamy soils that are moderately well drained, poorly drained, and somewhat poorly drained. Included areas make up about 20 percent of this unit.

These Cardigan and Kearsarge soils are moderately permeable. Available water capacity is moderate in the Cardigan soils and low in the Kearsarge soils. The Kearsarge soils are somewhat droughty. The depth to bedrock is 20 to 40 inches in the Cardigan soils and 10 to 20 inches in the Kearsarge soils. Both soils have moderate potential frost action.

Nearly all to the acreage of this unit is wooded. A few areas are used for unimproved pasture.

The stones on the surface and the areas of exposed rock make this unit generally unsuitable for farming. Productivity for most tree species is moderately high on the Cardigan soils and low on the Kearsarge soils. The shallow soil depth and droughtiness of the Kearsarge soils are the major limitations. The stones and exposed rock limit the use of equipment. The construction and location of woodland access roads is restricted by the depth to bedrock and areas of exposed rock.

Slope, the stones and exposed rock on the surface, the depth to bedrock, and the frost action potential are the main limitations of the soils for community development.

Capability subclass: VIs.

CbD Cardigan-Kearsarge Rock Outcrop Complex, 15 to 25 percent slopes.

This unit is on the sides of hills and ridges. It consists mainly of moderately deep, well-drained Cardigan soils; shallow, somewhat excessively drained Kearsarge soils; and areas of exposed bedrock that makeup about 15 percent of the unit. The areas typically are long and narrow and range from 10 to 100 acres. The soils commonly have stones on the surface 1 to 2 feet in diameter and 5 to 30 feet apart. The Cardigan and Kearsarge soils and the areas of exposed rock are in such an intricate pattern that it was not practical to map them separately. The Kearsarge soils and areas of exposed rock generally are at slightly higher positions than the Cardigan soils.

Cardigan soils make up about 35 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 18 inches thick. The substratum is dark grayish brown silt loam about 8 inches thick. Gray phyllite bedrock is at a depth of 30 inches.

Kearsarge soils makeup about 30 percent of this complex. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 13 inches thick. Gray phyllite bedrock is at a depth of 17 inches.

Included with this unit in mapping are spots of very shallow, loamy soils; spots of Dutchess and Bernardston soils; and small areas of loamy soils that are moderately well drained, poorly drained, and somewhat poorly drained. Included areas make up about 20 percent of this unit.

These Cardigan and Kearsarge soils are moderately permeable. Available water capacity is moderate in the Cardigan soils and low in the Kearsarge soils. The Kearsarge soils are somewhat droughty. The depth to bedrock is 20 to 40 inches in the Cardigan soils and 10 to 20 inches in the Kearsarge soils. Both soils have moderate potential frost action.

Slope, the stones on the surface, and the areas of exposed rock make these soils generally unsuited to farming.

Nearly all of the acreage of this unit is wooded. Potential productivity for most tree species is moderately high on the Cardigan soils and low on the Kearsarge soils. The shallow soil depth and droughtiness of the Kearsarge soils are major limitations the stones and exposed rock on the surface and the slope limit the use of equipment and restrict access. Erosion is a major concern where the Cardigan soils are disturbed by heavy logging equipment. Construction woodland access roads on the contour and seeding and mulching roads, skid trails, and other disturbed areas are practices that help to control erosion.

Slope, the stones and exposed rock on the surface, the depth to bedrock, and the frost action potential are the main limitations of the soils for community development.

Capability subclass: VIs.

Dud Dutchess Stony Silt Loam, 15-25% slopes. This soil is moderately steep and well drained. It is on the sides of hills. The areas typically are long and narrow or irregularly shaped and range from 5 to 35 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves and needles. The surface layer is very dark grayish brown silt loam about 4 inches thick. The subsoil is yellowish brown and light olive brown channery loam 25 inches thick. The substratum is olive brown channery sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained soils in drainage ways and seep spots and small areas of Bernardston soils. Also included are spots of Cardigan and Kearsarge soils on small ridges and sharp rises. Included soils make up about 20 percent of this unit.

The permeability and available water capacity of this Dutchess soil are moderate. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

A few areas of this soil are used for unimproved pasture, but the slope and stones on the surface make the soil generally unsuited to farming.

Most of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. The stones on the surface and slope limit the use of equipment, and erosion is a concern where this soil is disturbed by heavy logging equipment. Construction woodland access roads on the contour and seeding and mulching roads, skid trails, and other disturbed areas are practices that help to control erosion.

Slope is the main limitation of this soil for community development.

Capability subclass: VIs.

KeE Kearsarge Cardigan Rock Outcrop Complex, 25-50% slopes. This unit is on the sides of hills and ridges. It consists mainly of shallow, somewhat excessively drained Kearsarge soils; moderately deep, well-drained Cardigan soils; and areas of exposed bedrock that makeup about 20 percent of the unit. The areas of the unit typically are long and narrow and range from 20 to 250 acres. The soils of this complex commonly have stones on the surface that are 1 to 2 feet in diameter and 5 to 30 feet apart. The Kearsarge and Cardigan soils and the areas of

exposed bedrock are in such an intricate pattern that it was not practical to map them separately. The Kearsarge soils and areas of exposed rock generally are at a slightly higher position in the landscape than the Cardigan soils.

Kearsarge soils make up about 35 percent of this complex. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 13 inches thick. Gray phyllite bedrock is at a depth of 17 inches.

Cardigan soils make up about 30 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 18 inches thick. The substratum is dark grayish brown silt loam about 8 inches thick. Gray phyllite bedrock is at a depth of 30 inches.

Included with this soil in mapping are spots of very shallow, loamy soils and spots of Dutchess and Bernardston soils. Included soils make up about 15 percent of this unit.

These Kearsarge and Cardigan soils are moderately permeable. Available water capacity is moderate in the Cardigan soils and low in the Kearsarge soils. The Kearsarge soils are somewhat droughty. The depth to bedrock is 20 to 40 inches in the Cardigan soils and 10 to 20 inches in the Kearsarge soils. Both soils have moderate potential frost action.

Nearly all of the acreage of this unit is wooded. Potential productivity for most tree species is moderately high on the Cardigan soils and low on the Kearsarge soils. The depth to bedrock and droughtiness are the major limitations for trees on the Kearsarge soils.

The slope of the unit limits the use of logging and forestry equipment. Slope and the depth to rock and the areas of exposed rock restrict the construction of access roads. Placing access roads on the contour and seeding and mulching roads, skid trails, and other disturbed areas are practices that help to control erosion.

Slope, the depth to bedrock, and the stones and exposed rock on the surface make this unit generally unsuitable for farming or community development.

Capability subclass: VIIs

LyA Lyme-Moosilauke Stony Loam, 0-3% slopes. This unit is mainly in broad, low-lying depressions and long, narrow drainage ways. It consists mainly of deep, poorly drained to somewhat poorly drained soils that have a water table at or near the surface 6 to 8 months of the year. The areas typically are long and narrow and range from 5 to 40 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface. The Lyme and Moosilauke soils are in such an intricate pattern that it was not practical to map them separately.

Lyme soils make up about 50 percent of this unit. Typically, they have a surface layer of very dark grayish brown loam about 7 inches thick. The subsoil is mottled and grayish brown, gray and olive gravelly sandy loam 23 inches thick. The substratum is mottled, gray and olive gravelly sandy loam that extends to a depth of 60 inches or more.

Moosilauke soils make up about 30 percent of this unit. Typically, they have a surface layer of very dark grayish brown loam about 8 inches thick. The subsoil is mottled, gray olive gray sandy loam 12 inches thick. The substratum is mottled and olive, yellowish brown, and pale olive gravelly sand that extends to a depth of 60 inches or more.

Included with this unit in mapping are small areas of Sunapee soils; very poorly drained, loamy and sandy soils, and Pillsbury soils. Included soils make up about 20 percent of this unit.

The Lyme soils of this unit are moderately permeable. The Moosilauke soils are moderately rapidly permeable in the surface layer and subsoil and rapidly permeable in the substratum. The available water capacity is moderate in the Lyme soils and low to moderate in the Moosilauke soils. The depth to bedrock is generally more than 5 feet in both soils, and the frost action potential is high in both.

The high water table and stones on the surface make the soils of this unit generally unsuited to cultivated crops and poorly suited to hay and pasture.

Nearly all of the acreage of these soils is wooded. The soils have moderated potential productivity for water tolerant tree species. The stones on the surface and the high water table limit the use of equipment for logging and forestry management. Logging operations are more easily conducted in winter when the soils are frozen or in summer when the water table is lower.

The water table and high potential frost action are the main limitations of the soils for community development. The soils are suitable for storm water retention areas.

Capability subclass: VIIs.

PvB Pittstown Stony Silt Loam, 3-8% slopes. This soil is gently sloping and moderately well drained. It is on the tops of smooth, rounded hills and on slightly concave foot slopes of smooth hillsides. The areas typically are irregularly shaped and range from 5 to 30 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves, needles and twigs. The surface layer is very dark grayish brown silt loam about 4 inches thick. The subsoil is 18 inches thick. It is light olive brown silt loam that is mottled in the lower part. The substratum is a very firm and

compact layer of mottled, olive brown silt loam that is mottled in the lower part and extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Bernardston soils on high spots and small areas of Stissing soils in low spots. Included soils make up about 20 percent of this unit.

The permeability of this Pittstown soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, the water table is perched at a depth of 1 ½ to 3 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

Most of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. A few areas are used for unimproved pasture, but the stones on the surface make the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

The slow permeability in the substratum, the seasonal wetness, and the moderate potential frost action are the main limitations of the soil for community development.

Capability subclass: VIs.

PvC Pittstown Stony Silt Loam, 8-15% slopes. This soil is sloping and moderately well drained. It is on the sides of smooth, rounded hills and on slightly concave lower side slopes of hilly uplands. The areas typically are irregularly shaped and range from 10 to 40 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves, needles and twigs. The surface layer is very dark grayish brown silt loam about 4 inches thick. The subsoil is 18 inches thick. It is light olive brown silt loam that is mottled in the lower part. The substratum is a very firm and compact layer of mottled, olive brown silt loam that is mottled in the lower part. The substratum is a very firm and compact layer of mottled, olive gray and olive gravelly loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Bernardston soils on high spots and small areas of Stissing soils in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Pittstown soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, the water table is perched at a depth of 1 ½ to 3 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

Most of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. A few areas are used for unimproved pasture, but the stones on the surface make the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

The slow permeability in the substratum, the seasonal wetness, and the moderate potential frost action are the main limitations of the soil for community development.

Capability subclass: VIs.

Soil Conservation Service

WOODLAND MANAGEMENT AND PRODUCTIVITY

Survey Area - SULLIVAN COUNTY, NEW HAMPSHIRE

Map Symbol and soil name	Ordination symbol	Erosion hazard	Management concerns				Plant competi- tion	Potential product Common trees
			Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard			
BDC BERNARDSTON	3A	SLIGHT	SLIGHT	SLIGHT	SLIGHT	SLIGHT	SLIGHT	sugar maple eastern hemlock eastern white pine northern red oak
CBC CARDIGAN	9A	SLIGHT	SLIGHT	MODERATE	MODERATE	MODERATE	MODERATE	sugar maple eastern white pine northern red oak
KEARSAUCE	9D	SLIGHT	SLIGHT	MODERATE	SEVERE	SLIGHT	SLIGHT	eastern white pine northern red oak sugar maple
CND CARDIGAN	9R	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	sugar maple eastern white pine northern red oak
KEARSAUCE	9D	MODERATE	MODERATE	MODERATE	SEVERE	SLIGHT	SLIGHT	eastern white pine northern red oak sugar maple
DND DUTCHESS	3R	MODERATE	MODERATE	SLIGHT	SLIGHT	SLIGHT	SLIGHT	sugar maple eastern hemlock northern red oak white oak hickory

U.S. Department of Agriculture
Soil Conservation Service

WOODLAND MANAGEMENT AND PRODUCTIVITY

Survey Area - SULLIVAN COUNTY, NEW HAMPSHIRE

Map Symbol and soil name	Ordi- nation symbol	Erosion hazard	Management concerns			Plant compati- tion	Potential Product Common trees
			Equip- ment limbs- tion	Seedling mortal- ity	Wind- throw hazard		
KEE REARSARGE	9R	SEVERE	SEVERE	MODERATE	SEVERE	SLIGHT	sugar maple eastern white pine northern red oak
CARDIGAN	9R	SEVERE	SEVERE	MODERATE	MODERATE	MODERATE	sugar maple eastern white pine northern red oak
LYA LYNE	9M	SLIGHT	SEVERE	MODERATE	SEVERE	SEVERE	balsam fir eastern white pine red spruce red maple
MOOSILAUKE	8W	SLIGHT	SEVERE	MODERATE	SEVERE	SEVERE	balsam fir eastern white pine red spruce yellow birch red maple
PVB PITTSFOWN	4A	SLIGHT	SLIGHT	SLIGHT	SLIGHT	MODERATE	sugar maple eastern white pine northern red oak red spruce
PVC PITTSFOWN	4A	SLIGHT	SLIGHT	SLIGHT	SLIGHT	MODERATE	sugar maple eastern white pine northern red oak red spruce

APPENDIX 2 Timber cruise

A timber cruise creates an inventory of the trees growing in an area.

In performing the timber cruise, the forester systematically walked back and forth through the property along lines parallel to each other and 360 feet apart, stopping every 360 feet to record all the trees in view that were over 6 inches DBH. The diameters of the trees were measured using a prism and then tallied according to size (number of 8 foot lengths at each diameter over 6 inches), species and quality (sawlogs, pulpwood, etc.).

A computer program summarized the sizes and species of trees growing on the property, as well as grouping them by similar characteristics such as age and density.

Timber Liquidation Value
Gulf to Lakes Corp. Cornish/Clairmont Lot
264 wooded acres
September, 1997

<i>Species</i>	Grade	Quantity	Unit	Stumpage Price	Stumpage Value
<i>Hemlock</i>	Sawlog	66	MBF	\$40.00	\$2,640.00
<i>White pine</i>	Sawlog # 1	302	MBF	\$100.00	\$30,200.00
<i>Red pine</i>	Sawlog	7	MBF	\$40.00	\$280.00
<i>Aspen</i>	Sawlog	11	MBF	\$40.00	\$440.00
<i>Black Birch</i>	Sawlog	5	MBF	\$125.00	\$625.00
<i>White birch</i>	Boltwood	9	MBF	\$110.00	\$990.00
<i>Red Maple</i>	Sawlog	16	MBF	\$40.00	\$640.00
<i>Sugar Maple</i>	Sawlog	23	MBF	\$350.00	\$8,050.00
<i>White Ash</i>	Sawlog	34	MBF	\$150.00	\$5,100.00
<i>Yellow Birch</i>	Sawlog	3	MBF	\$150.00	\$450.00
<i>Red oak</i>	Sawlog	72	MBF	\$300.00	\$21,600.00
<i>Softwood</i>	Pallet	284	MBF	\$25.00	\$7,100.00
<i>Hardwood</i>	Pallet	36	MBF	\$25.00	\$900.00
subtotal	SAWTIMBER	868	MBF		\$79,015.00
<i>Hardwood</i>	Pulpwood	1448	Cords	\$5.00	\$7,240.00
<i>White pine</i>	Pulpwood	439	Cords	\$2.50	\$1,097.50
<i>Hemlock</i>	Pulpwood	789	Cords	\$10.00	\$7,890.00
subtotal	PULPWOOD	2676	Cords		\$16,227.50
TOTALS					\$95,242.50

NOTE: Volumes are estimates and are not guaranteed.

Volumes estimated by J. Smith

Job Title-----Olsen Wellmans Hill lot Cornish, N.H.

Job--CLA

MULTICRUISE VER. 1.0
 COPYRIGHT (C) 1988-1995
 COMPUTER FOREST CONSULTANTS
 DATE RUN: 10-02-97

DIAMETER CLASS SIZE = 1 NUMBER OF STANDS SAMPLED = 6
 TOTAL ACREAGE SAMPLED = 264.2 TOTAL POINTS SAMPLED = 79
 CONFIDENCE LEVEL = .95

LEVEL =ALL Trees

Job Title-----Olsen Wellmans Hill lot Cornish, N.H.

Job--CLA

 * ALL SPECIES LEVEL = ALL Trees *
 * * * * *

DIAMETER CLASS	Veneer INT. 1/4" VOLUME	sawlog INT. 1/4" VOLUME	pallet INT. 1/4" VOLUME	g.stock CORDS VOLUME	pulpwood CORDS VOLUME	cull CORDS VOLUME
6	0	0	0	84	348	9
8	0	992	8554	85	682	3
10	0	25289	53627	24	567	3
12	0	133163	120684	12	347	4
13	0	9269	0	1	16	0
14	0	127684	73291	2	208	0
15	0	2734	852	0	0	0
16	0	123406	26764	0	104	0
17	0	4774	1434	0	1	0
18	0	40778	8044	0	59	3
20	0	41195	14676	0	52	18
22	0	16146	6673	0	16	11
24	0	11857	832	0	19	6
26	0	5308	0	0	14	0
28	0	2880	1813	0	7	0
30	0	0	1247	0	5	0
32	0	2717	2041	0	15	0
34	0	0	0	0	7	0
TOTAL	0	548191	320533	209	2467	63
S.E.	± 0%	± 20%	± 29%	± 46%	± 10%	± 55%

Job Title--Olsen Wellmans Hill lot Cornish, N.H.

Job--CLA

 *
 * VOLUME TOTALS FOR ALL SPECIES
 *
 * LEVEL = ALL Trees
 *

SPECIES	Veneer INT. 1/4" VOLUME	Sawlog INT. 1/4" VOLUME	Pallet INT. 1/4" VOLUME	g. stock CORDS VOLUME	pulpwood CORDS VOLUME	cull CORDS VOLUME
WHITE PINE	0	301732	49786	15	422	12
RED PINE	0	6946	0	0	2	0
HEMLOCK	0	65897	234639	17	762	0
SUGAR MAPLE	0	23826	8513	0	83	14
RED MAPLE	0	16140	9629	21	351	6
WHITE ASH	0	34014	2006	50	215	8
ASPEN	0	10857	3911	0	82	0
BLACK CHERRY	0	0	0	0	17	0
WHITE BIRCH	0	9046	0	21	137	0
YELLOW BIRCH	0	2790	0	8	17	3
SWEET BIRCH	0	5375	716	15	137	6
BEECH	0	0	5573	0	47	6
RED OAK	0	71569	5760	62	168	0
HOPHORNBEAM	0	0	0	0	28	3
OTHER HARDWOODS	0	0	0	0	0	4
ALL SOFTWOODS	0	374574	284426	32	1185	12
ALL HARDWOODS	0	173616	36108	176	1282	52
ALL SPECIES	0	548191	320533	209	2467	63

APPENDIX 3: Wildlife habitat requirements

Habitat may be defined as “The area or type of environment in which an organism or ecological community normally lives or occurs.” Wildlife habitat takes on many forms. The components of habitat (food, water, cover and spatial relationships) are all interrelated.

Food for animals occurs in many different forms. Herbaceous plants, woody plants, mast (nuts, fruits and berries), insects and grubs, prey and carrion are all eaten by wildlife. The location and abundance of food sources play a primary role in determining the quality of the habitat for any species.

All living things require water. Standing water, running water, seeps and springs are all used. Some animals use water only periodically while others live in and around it.

Cover is analogous to a human’s home. Cavities in trees, brush piles, nests, ledge outcrops, and holes in the ground are used to provide cover for different animals. Cover is necessary for nesting, resting and escape.

Spatial relationships, or patterns, tie the habitat components together. If all the habitat requirements of a particular species are found within its “home range,” the animal will probably remain in the vicinity. Creating the proper juxtaposition of food, cover and water is important for wildlife to be attracted to and perhaps remain in a particular area.

APPENDIX 4: Even aged vs. uneven aged management techniques

Due to previous logging this stand is currently even aged.

To transform the structure to uneven aged, multiple disruptive stand entries would need to be made (small patch cuts) at intervals of about 15 years. Following four or more of these cutting episodes the original undisturbed trees would have “matured” to about 100 years, with regrowth in the various cut areas distributed through the younger age classes. Due to the small acreage, none of these cuts would remove enough marketable trees to pay for the harvests and leave any extra income. Subsequent harvests (100 + years in the future) would continue to have the small volume drawback.

Under an even aged management technique, thinning of the entire stand removes a larger number of trees at each entry and is therefore more economically viable. In addition, thinning allows the remaining trees to grow faster by reducing the number of stems and leaving more space, soil nutrients and moisture for the residual trees. By allowing more light to reach the ground, understory trees may become established, providing trees for the future. Subsequent harvests result in release of remaining trees and understory, which are positioned to grow into another generation of crop trees. Planning harvests so that there is already a seedling crop in place, or natural production of desirable tree seeds, is important to insure continued growth of preferred species.

In an overstocked stand, dominant trees stagnate and understory trees are suppressed, sometimes to the point that they become permanently stunted or die. In the case of very dense softwood canopy such as mature hemlock forest, a nearly lifeless understory may result. Thinning of such dense or overstocked woods speeds up the natural processes where thinning would occur slowly from wind throw, lightning strike, diseases and the deaths of less suppressed or less vigorous trees.

Too frequent thinning or harvesting results in more damage to the ground from equipment entry and to residual trees and understory from crushing by the felling of large trees. Also excessively heavy thinning may expose the residual stand to wind throw and cause damage to understory saplings from exposure and drying.

When harvesting, careful timing and concentrating on fewer more complete cuts will minimize the impact compared to the more frequent disruption from singletree harvesting. At the same time having a relatively large number of healthy trees to harvest at one time, when needed or when markets are favorable, is more economically viable than taking only a few trees at any one time. In addition, over several cutting rotations (150 + years) careful selection of harvested and non - harvested trees will eventually result in varying ages of trees, blurring the distinction between even and uneven management.

APPENDIX 5: SELECTED REFERENCES

- A Local Guide to Land Protection (draft), Mary Beth Heiskell, April 2002.
- Forestry terms for the woodland owner, Carol B Trokey, the School of Natural Resources, and Fred Bergman, Missouri Department of Conservation.
- GOOD FORESTRY IN THE GRANITE STATE, Recommended Voluntary Forest Management Practices for New Hampshire, SPNHF, 1997.
- INTRODUCTION TO FOREST ECOLOGY AND SILVICULTURE, Second Edition. Natural Resource, Agriculture and Engineering Service, Cooperative Extension of New York, NRAES - 126.
- 36
- Lyme Town Forest 15 Year Forest Management Plan, John O'Brien, September 1995.
- Plant Pest Handbook, Dr. Sharon M. Douglas, Department of Plant Pathology and Ecology, The Connecticut Agricultural Experiment Station, 123 Huntington Street, P. O. Box 1106, New Haven, CT 06504-1106
www.caes.state.ct.us/PlantPestHandbookFiles
- Roadside Geology Of Vermont and New Hampshire, Bradford B. Van Diver, Mountain Press Publishing Company, Missoula 1987.
- SOIL SURVEY OF SULLIVAN COUNTY NEW HAMPSHIRE, USDA Soil Conservation Service
- WHY TREES GROW WHERE THEY DO In New Hampshire Forests, USDA Forest Service Northeastern Forest Experiment Station, NE-INF-37-79.

APPENDIX 6: EASEMENT AND DEED

APR 12 1999
[Handwritten signature and initials]

001710

WARRANTY DEED

Society for the Protection of New Hampshire Forests (hereinafter referred to as the "Grantor"), a corporation duly organized and existing under the laws of the State of New Hampshire, with a principal place of business at 54 Portsmouth Street, City of Concord, County of Merrimack, State of New Hampshire, 03301, for consideration paid, grants to the **Town of Cornish** of Town of Cornish, County of Sullivan, State of New Hampshire, 03745 (hereinafter referred to as the "Grantee"), with WARRANTY COVENANTS, a tract of unimproved land (hereinafter referred to as the "Property") in the Town of Cornish, County of Sullivan, State of New Hampshire, bounded and described in **Appendix A** attached hereto and made a part hereof,

SUBJECT TO the following conservation restrictions pursuant to RSA 477:45-47, which by accepting and recording this deed the Grantee, for itself and its legal representatives, successors and assigns, accepts and agrees to observe:

1. PURPOSE OF RESTRICTIONS

The Purposes of the following restrictions are the preservation and conservation of open spaces, particularly the conservation of the productive forest land of which the land area subject to these Restrictions consists, the preservation and conservation of the wildlife habitat on the Property, the scenic enjoyment of the general public, and the long-term protection of the Property's capacity to produce economically valuable agricultural and forestry products. These purposes are consistent with New Hampshire RSA Chapter 79-A which states: "It is hereby declared to be in the public interest to encourage the preservation of open space, thus providing a healthful and attractive outdoor environment for work and recreation of the state's citizens, maintaining the character of the state's landscape, and conserving the land, water, forest, agricultural and wildlife resources."

All of these purposes are consistent and in accordance with the U.S. Internal Revenue Code, Section 170(h).

The Restrictions on the Property are as follows:

2. USE LIMITATIONS (Subject to the reserved rights specified in Section 3 below)

A. The Property shall be maintained in perpetuity as open space without there being conducted thereon any industrial or commercial activities, except agriculture and forestry, including timber harvesting, as described below, and provided that the productive capacity of the Property to produce forest and/or agricultural crops shall not be degraded by on-site activities.

i. For the purposes hereof, "agriculture" and "forestry" shall include animal husbandry, floriculture, and horticulture activities; the production of plant and animal products

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for domestic or commercial purposes; the growing, stocking, cutting, and sale of Christmas trees or forest trees of any size capable of producing timber or other forest products; the construction of roads or other accessways for the purpose of removing forest products from the Property; and the processing and sale of products produced on the Property (such as pick-your-own fruits and vegetables and maple syrup) all as not detrimental to the scenic, agricultural, forestry, recreational and educational purposes of these restrictions.

ii. Agriculture shall be performed, to the extent reasonably practicable, in accordance with a coordinated management plan for the sites and soils of the Property. Agricultural management activities shall be in accordance with the then-current scientifically based practices recommended by the UNH Cooperative Extension, U.S. Natural Resources Conservation Service, or other government or private, nonprofit natural resource conservation and management agencies then active. Such management activities shall not be detrimental to the purposes of these Restrictions, as described above, nor materially impair the scenic quality of the Property as viewed from public roads.

iii. Forestry for industrial or commercial purposes shall be performed, to the extent reasonably practicable, as hereinafter specified and in accordance with the following goals, and in a manner not detrimental to the purposes of these Restrictions as described in Section 1 above.

- a. The goals are:
- maintenance of soil productivity;
 - protection of water quality, wetlands, and riparian zones;
 - maintenance or improvement of the overall quality of forest products;
 - conservation of scenic quality;
 - protection of unique or fragile natural areas;
 - protection of unique historic and cultural features; and
 - conservation of native plant and animal species.

b. Such forestry shall be performed in accordance with a written forest management plan consistent with these Restrictions, prepared by a licensed professional forester or other qualified person, said person approved in advance and in writing by the Grantor. Said plan shall have been prepared not more than ten years prior to the date any harvesting is expected to commence, or shall have been reviewed and updated as required by such a forester or person at least thirty (30) days prior to said date.

c. At least thirty (30) days prior to harvesting, Grantee shall submit to Grantor a written certification, signed by a licensed professional forester or other qualified person approved in advance and in writing by the Grantor, that such plan has been prepared in compliance with the terms of these Restrictions. Grantor may request the Grantee to submit the plan itself to Grantor. Grantee agrees to submit the plan within ten (10) days of receipt of such request, but Grantor acknowledges that purpose of said plan is to guide forest management activities in compliance with these Restrictions, and that the actual activities will determine compliance therewith.

d. The plan shall include a statement of landowner objectives and specifically address the long-term protection of those values for which these Restrictions are imposed, as described in Section 1 above.

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e. Timber harvesting with respect to such forestry shall be conducted in accordance with said plan and be supervised by a licensed professional forester or other qualified person approved in advance and in writing by the Grantor.

f. Such forestry shall be carried out in accordance with all applicable local, state and federal laws and regulations, and, to the extent reasonably practicable, in accordance with then-current, generally accepted best management practices for the sites, soils, and terrain of the Property. For references, see "Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire" (J.B. Cullen, 1996), and "Good Forestry in the Granite State: Recommended Voluntary Forest Management Practices for New Hampshire" (New Hampshire Forest Sustainability Standards Work Team, 1997), or similar successor publications.

g. In areas used by, or visible to, the general public, such forestry shall be carried out, to the extent reasonably practicable, in accordance with the recommendations contained in "A Guide to Logging Aesthetics: Practical Tips for Loggers, Foresters, and Landowners" (Geoffrey Jones, 1993) or similar successor publications.

B. The Property shall not be subdivided or otherwise divided in ownership and none of the individual tracts which together comprise the Property shall be conveyed separately from one another.

C. No structure or improvement, including, but not limited to, a dwelling, any portion of a septic system, tennis court, swimming pool, dock, aircraft landing strip, tower or mobile home, shall be constructed, placed, or introduced onto the Property. However, ancillary structures and improvements including, but not limited to, a road, dam, fence, bridge, culvert, barn, maple sugar house, or shed may be constructed, placed, or introduced onto the Property only as necessary in the accomplishment of the agricultural, forestry, conservation, or noncommercial outdoor recreational uses of the Property and, for forestry for industrial or commercial purposes, consistent with the forest management plan required in Section 2.A.iii above and provided that they are not detrimental to the scenic, agricultural, and forestry purposes of these Restrictions.

D. No removal, filling, or other disturbances of soil surface, nor any changes in topography, surface or subsurface water systems, wetlands, or natural habitat shall be allowed unless such activities:

i. are commonly necessary in the accomplishment of the agricultural, forestry, conservation, habitat management, or noncommercial outdoor recreational uses of the Property and, for forestry for industrial or commercial purposes, consistent with the forest management plan required in Section 2. A. iii above; and

ii. do not harm state or federally recognized rare, threatened, or endangered species, such determination of harm to be based upon information from the New Hampshire Natural Heritage Inventory or the agency then recognized by the State of New Hampshire as having responsibility for identification and/or conservation of such species; and

iii. are not detrimental to the scenic, agricultural, and forestry purposes of these Restrictions, and

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Prior to commencement of any such activities, all necessary federal, state, and local permits and approvals shall be secured.

E. No outdoor advertising structures such as signs and billboards shall be displayed on the Property except as desirable or necessary in the accomplishment of the agricultural, forestry, conservation, or noncommercial outdoor recreational uses of the Property, and provided such signs are not detrimental to the purposes of these Restrictions.

F. There shall be no mining, quarrying, excavation, or removal of rocks, minerals, gravel, sand, topsoil, or other similar materials on the Property, except in connection with any improvements made pursuant to the provisions of sections 2.A., C., D., or E., above. No such rocks, minerals, gravel, sand, topsoil, or other similar materials shall be removed from the Property.

G. There shall be no dumping, injection, burning, or burial of man-made materials or materials then known to be environmentally hazardous.

3. RESERVED RIGHTS

A. There is reserved from these Restrictions and granted to the Grantee the right to build, maintain and replace if destroyed, one building (with a footprint not to exceed one thousand five hundred [1500] square feet) on the Property for educational use and which may not be used for residential purposes, along with the right to construct a road and install utilities to serve said building. This provision is an exception to 2.C., 2.D. and 2.F. above.

B. The Grantee must notify the Grantor in writing at least thirty (30) days before any exercise of the aforesaid reserved rights 3.A. above.

4. NOTIFICATION OF TRANSFER, TAXES, MAINTENANCE

A. The Grantee agrees to notify the Grantor in writing 10 days before the transfer of title to the Property [or any division of ownership thereof permitted hereby].

B. The Grantor shall be under no obligation to maintain the Property or pay any taxes or assessments thereon.

5. BENEFITS, BURDENS, AND ACCESS

A. The burden of these Restrictions shall run with the Property and shall be enforceable against all future owners and tenants in perpetuity; the benefits of these Restrictions shall not be appurtenant to any particular parcel of land but shall be in gross and assignable or transferable only to the State of New Hampshire, the U.S. Government, or any subdivision of either of them, consistent with Section 170(c)(1) of the U.S. Internal Revenue Code of 1986, as amended, or to any qualified organization within the meaning of Section 170(h)(3) of said Code, which organization has among its purposes the conservation and preservation of land and water areas and agrees to and is capable of enforcing the conservation purposes of these Restrictions. Any such assignee or transferee shall have like power of assignment or transfer.

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B. The Grantor shall have reasonable access to the Property and all of its parts for such inspection as is necessary to determine compliance with and to enforce these Restrictions and exercise the rights conveyed hereby and fulfill the responsibilities and carry out the duties assumed by the acceptance of these Restrictions.

6. BREACH OF RESTRICTIONS

A. When a breach of these Restrictions, or conduct by anyone inconsistent with these Restrictions, comes to the attention of the Grantor, it shall notify the Grantee in writing of such breach or conduct, delivered in hand or by certified mail, return receipt requested.

B. The Grantee shall, within thirty (30) days after receipt of such notice or after otherwise learning of such breach or conduct, undertake those actions, including restoration, which are reasonably calculated to cure swiftly said breach, or to terminate said conduct, and to repair any damage. The Grantee shall promptly notify the Grantor of its actions taken under this section.

C. If the Grantee fails to take such proper action under the preceding section, the Grantor shall, as appropriate to the purposes of this deed, undertake any actions that are reasonably necessary to cure such breach or to repair any damage in the Grantee's name or to terminate such conduct. The cost thereof, including the Grantor's expenses, court costs, and legal fees shall be paid by the Grantee, provided that the Grantee is directly or primarily responsible for the breach.

D. Nothing contained in these Restrictions shall be construed to entitle the Grantor to bring any action against the Grantee for any injury to or change in the Property resulting from causes beyond the Grantee's control, including, but not limited to, unauthorized actions by third parties, natural disasters such as fire, flood, storm, and earth movement, or from any prudent action taken by the Grantee under emergency conditions to prevent, abate, or mitigate significant injury to the Property resulting from such causes.

E. The Grantor and the Grantee reserve the right, separately or collectively, to pursue all legal remedies against any third party responsible for any actions detrimental to the conservation purposes of these Restrictions.

7. NOTICES

All notices, requests and other communications, required or permitted to be given under these Restrictions shall be in writing, except as otherwise provided herein, and shall be delivered in hand or sent by certified mail, postage prepaid, return receipt requested to the appropriate address set forth above or at such other address as the Grantor or the Grantee may hereafter designate by notice given in accordance herewith. Notice shall be deemed to have been given when so delivered or so mailed.

8. SEVERABILITY

If any provision of these Restrictions, or the application thereof to any person or circumstance, is found to be invalid by a court of competent jurisdiction, by confirmation of an arbitration award or otherwise, the remainder of the provisions of these Restrictions or the application of such provision to persons or circumstances other than those to which it is found to be invalid, as the case may be, shall not be affected thereby.

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9. CONDEMNATION

- A. Whenever all or part of the Property is taken in exercise of eminent domain by public, corporate, or other authority so as to abrogate in whole or in part the Easement conveyed hereby, the Grantor and the Grantee shall thereupon act jointly to recover the full damages resulting from such taking with all incidental or direct damages and expenses incurred by them thereby to be paid out of the damages recovered.
- B. The balance of the land damages recovered (including, for purposes of this subsection, proceeds from any lawful sale, in lieu of condemnation, of the Property unencumbered by the Restrictions hereunder) shall be divided between the Grantor and the Grantee in proportion to the fair market value of their respective interests in that part of the Property condemned on the date of condemnation. The value of the Grantor's and Grantee's interest shall be determined by an appraisal by a qualified appraiser and submitted to the Grantor.
- C. The Grantor shall use its share of the proceeds in a manner consistent with and in furtherance of one or more of the conservation purposes set forth herein.

10. ADDITIONAL EASEMENT

Should the Grantee determine that the expressed purposes of these Restrictions could better be effectuated by the conveyance of an easement with additional conservation restrictions, the Grantee may execute an instrument to that effect, provided that the conservation purposes of these Restrictions are not diminished thereby and that a public agency or qualified organization described in Section 5.A., above, accepts and records the same.

12. ARBITRATION OF DISPUTES

- A. Any dispute arising under these restrictions shall be submitted to arbitration in accordance with New Hampshire RSA 542.
- B. The Grantor and the Grantee shall each choose an arbitrator within 30 days of written notice from either party. The arbitrators so chosen shall in turn choose a third arbitrator within 30 days of the selection of the second arbitrator.
- C. The arbitrators so chosen shall forthwith set as early a hearing date as is practicable which they may postpone only for good cause shown.
- D. A decision by two of the three arbitrators, made as soon as practicable after submission of the dispute, shall be binding upon the parties and shall be enforceable as part of these Restrictions.

The property is also conveyed **SUBJECT TO** Current Use Assessment in favor of the Town of Cornish.

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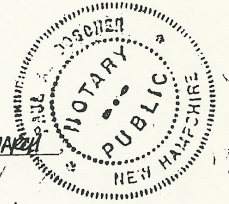
Witness the hand of the Society for the Protection of New Hampshire Forests by its duly authorized officer this 9TH day of March, 1999.

SOCIETY FOR THE PROTECTION OF
NEW HAMPSHIRE FORESTS

By: Jane A. DifleY
JANE A. DIFLEY
name
PRESIDENT / FORESTER
title

State of New Hampshire
County of Merrimack

The foregoing instrument was acknowledged before me this 9TH day of MARCH
1999 by JANE A. DIFLEY, PRESIDENT / FORESTER
(title)
of the Society for the Protection of New Hampshire Forests, on behalf of the corporation.



Before me, Paul A. DeS
Notary Public/Justice of the Peace

My commission expires: MARCH 18, 2003

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APPENDIX A

A certain tract of land situated in the Town of Cornish, County of Sullivan and State of New Hampshire, bounded and described as follows:

Beginning on the Claremont-Cornish Town Line at a wire fence on the east side of "Stage Coach Road," so-called,

Thence easterly following said Town Line Three thousand two hundred five (3,205) feet to a stone wall at land of Frederick Perry,

Thence following stone wall by land of said Perry North $20^{\circ} 30'$ East One thousand six hundred eighty-two and seven-tenths (1682.7) feet to a stone wall corner,

Thence following Stone wall South $69^{\circ} 30'$ East Two hundred sixty-six and nine-tenths (266.9) feet to the end of wall,

Thence South $73^{\circ} 15'$ East Four hundred sixty-two and one-tenth (462.1) feet to a twelve inch hemlock on the west side of the highway,

Thence northerly by the west side of said highway Nine hundred fifty-nine and five-tenths (959.5) feet to a fence line at the land of Tewksbury,

Thence following said fence North $71^{\circ} 15'$ West Three hundred seventy-six and seven-tenths (376.7) feet,

Thence following stone wall North $69^{\circ} 15'$ West Two hundred eighty-four and nine-tenths (284.9) feet,

Thence following wire fence North $68^{\circ} 45'$ West Three hundred sixty-nine and five-tenths (369.5) feet,

Thence following stone wall North $63^{\circ} 15'$ West One hundred seventy-two and nine-tenths (172.9) feet,

Thence following wire fence North 65° West One hundred twenty-four and nine-tenths (124.9) feet to a stone wall corner,

Thence following stone wall North $65^{\circ} 15'$ West Five hundred twelve (512) feet,

Thence following stone wall North 66° West One hundred eighty-two and nine-tenths (182.9) feet,

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Thence following stone wall North 73° West One hundred twenty-two and nine-tenths (122.9) feet,

Thence following stone wall North 70° West Four hundred forty and nine-tenths (440.9) feet to a wall corner,

Thence following stone wall North 19° 15' East Seven hundred sixty-two and five-tenths (762.5) feet to a wire fence at land of Peter Burling,

Thence following wire fence North 68° 30' West One thousand seven hundred seventeen and five-tenths (1,717.5) feet to a blazed tree on the east side of the Stage Coach Road,

Thence southerly by the east side of said road Three thousand four hundred ninety-four (3,494) feet to the point of beginning.

Containing 270.5 acres more or less,

Excepting and reserving from the within conveyance an easement granted to the Bellows Falls Hydroelectric Corporation by deed dated June 27, 1946, and recorded in Volume 300 Page 512 of the Sullivan County Registry of Deeds.

Meaning and intending to describe and convey all and the same premises in Cornish conveyed to the Society for the Protection of New Hampshire Forests by Warranty Deed of Olsen Family Partnership IV, LTD. dated December 22, 1998 and recorded at Vol. 1176, Page 145 at the Sullivan County Registry of Deeds. See also corrective affidavit Mark Chretien dated December 17, 1998 and recorded at said Registry at Vol. 1176, Page 151.

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SULLIVAN COUNTY
REGISTRY OF DEEDS

SULLIVAN COUNTY RECORDS
Sharon A. King, REGISTER

CORNISH TOWN FOREST USE SURVEY - Results

Responding: 55

Summary: Most respondents live in Cornish and nearly half have been to the forest more than 10 times. Hiking, mountain biking and nature study were the most common activities reported. Trails, views and quiet were most cited as the highlights of the forest. For worst things about the forest almost half said “nothing”, while “access” was the next most common response. 22 people would like to see nothing changed, and the next most common suggestion was for improved access and parking. A majority were not interested in more organized activities. Over half the respondents were against increasing the acreage available for logging.

1. How many times have you visited the town forest in the past?

never	14	once	2	2-9 times	16	10-49 times	11	50 + times	14
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2. How many times do you expect to visit the town forest in 2011?

Never	2
Once	3
2-9 times	18
10-49 times	17
50 + times	8
Don't know	1

3. Where do you live?

Cornish	28
Plainfield/Meriden	2
Claremont	4
Lebanon	2
Newbury NH	2
Windsor	2
Alexandria NH	1
Barre	1
Brownsville	1
Charlestown	1
Concord NH	1
Conneticut	1
Newport NH	1
Montpelier	1
Sunapee	1

4. What activities do you pursue in the forest?

Mt. biking	26
Hiking	26
Nature study	10
Dog walking	6
Work days	6
Snowshoeing	6

Skiing	5	
Hunting	4	
Running	4	
Meditation	3	(soul searching, talking about man, talking to God,
connecting with nature)		
Picnicking	1	
Rock climbing	1	
Tree climbing	1	
View seeking	1	
Camping and scout activities	1	(group)
Relaxation	1	
ATV riding	1	
Riding horses	1	

5. What are the best things about the forest?

Trails	30	
Natural features	17	(beauty, vernal pools, deer and other wildlife, trees, wildflowers,
habitats, geology)		
Views	13	
Quiet	13	(solitude, peacefulness)
Closeness to home	5	
Dog friendly	3	
No litter	1	
Protected status	1	
Multi user friendly	1	
Smell – “and it’s just good for you!”	1	
Everything	1	
Moneymaking potential from timber sales to offset taxes		1
That it is there and available for public use		1
Hunting close to home		1

6. What are the worst things about the forest?

Nothing	23	
Difficult access	12	
Bugs	3	
Lack of nearby parking on a main road	2	
ATVs	1	
“No” ATV access	1	(note ATVs are permitted on the loop road when
soil conditions permit)		
Trash	1	
“Forest works in the road during hunting season” (work day?)	1	
Uptight neighboring private landowners	1	
Big fallen trees	1	
Trails not clearly marked	1	
Lack of publicity	1	
Other people	1	
Skunks, bees and joeys	1	
Not enough views	1	
Not large enough	1	
Need to remember to go there	1	
Slippery footing	1	

7. What would you like to see changed about the forest management, access or other issues?

Nothing	22
Parking on a Cornish main road with an easier access trail	7
Improved access	5
More trails	3
Mark trails better	3
More map locations	3
Add acreage	1
No ATVs	1
ATV access for handicapped	1
Non-hunters out in hunting season	1
Better signage	1
Publicity	1
Keep this place a secret	1
More volunteer opportunities	1
Geocaching	1
Don't cut down anything	1
Get more people out using the forest	1
Better trail maintenance (raking)	1
More commercial timber management	1
More active wildlife management	1
Clean up blow down next to Root Hill Rd	1
Don't know	1

8. Would you like to have more organized activities in the forest, and if so what?

No	33
Annual informative naturalist talk/walk	5
More group bike rides	3
Bike race	3
More trail work days	2
Group hikes	2
Yes - not specified	1
Mountain biking clinic	1
Not sure	1
Trail runs	2
Snowshoes	1

9. Logging is permitted in 20 acres of the forest. Do you think more acreage should be open to logging?

No	29
Yes	8
If managed properly and good for the forest yes	8
No opinion	4
Maybe	4
Not sure probably not	1



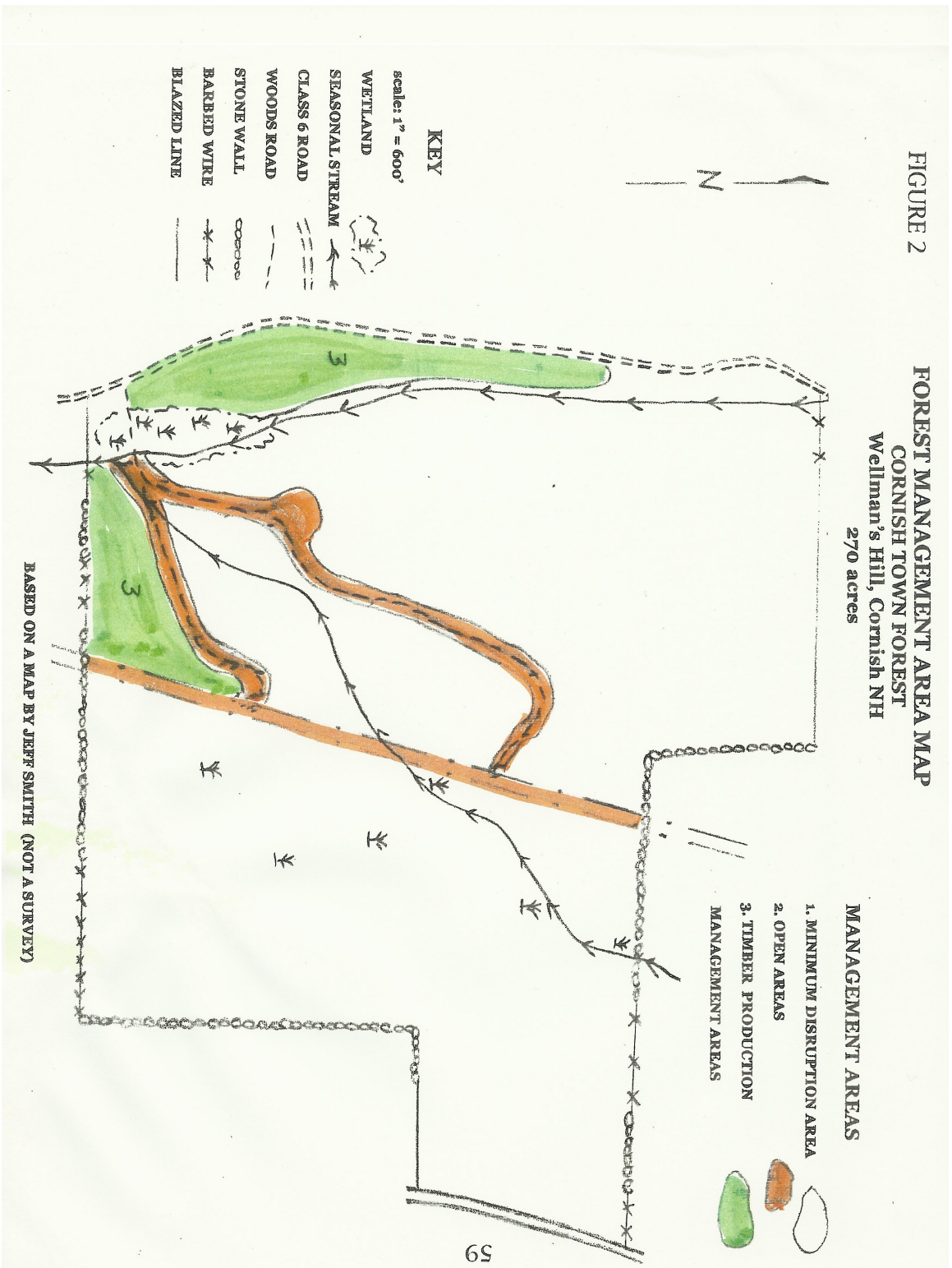
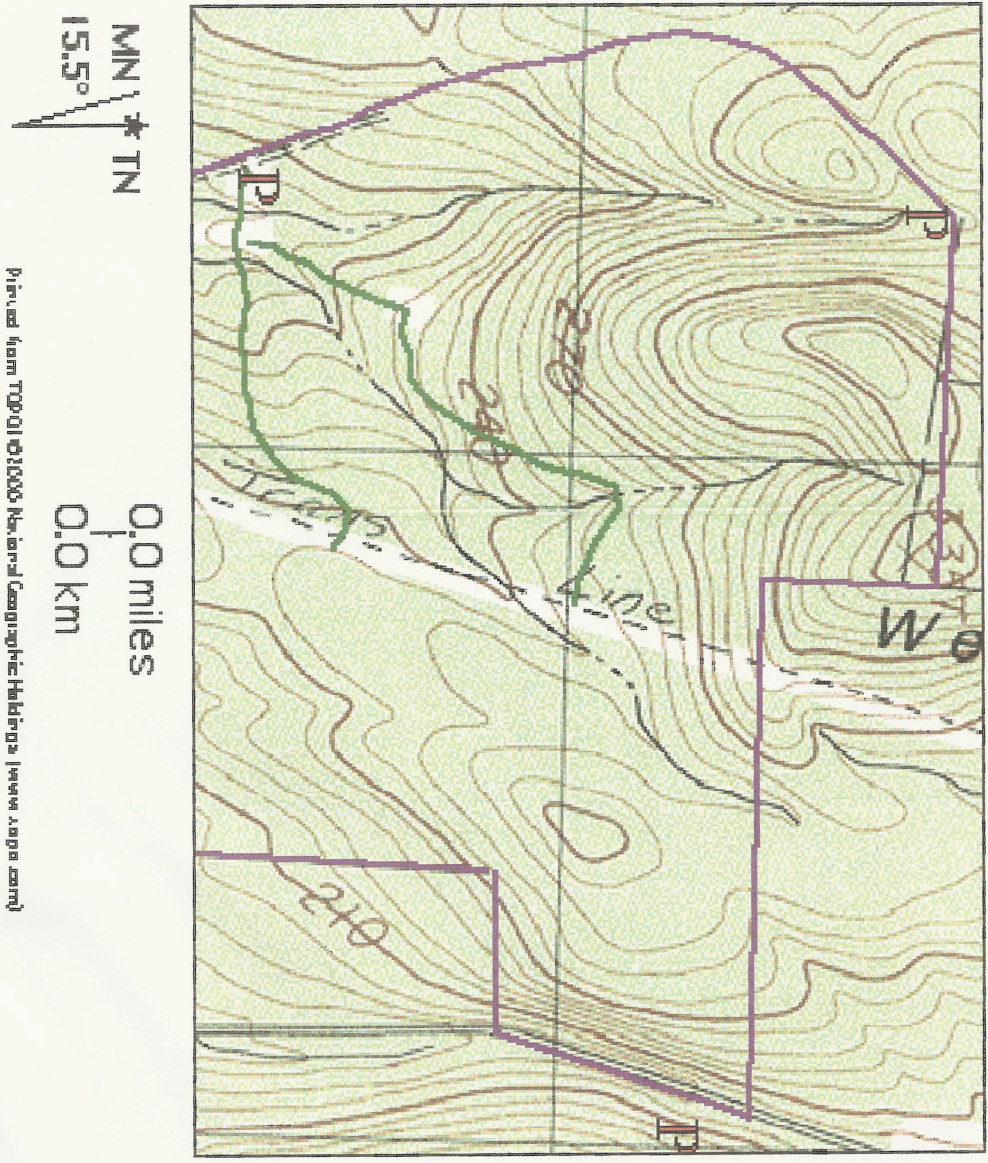
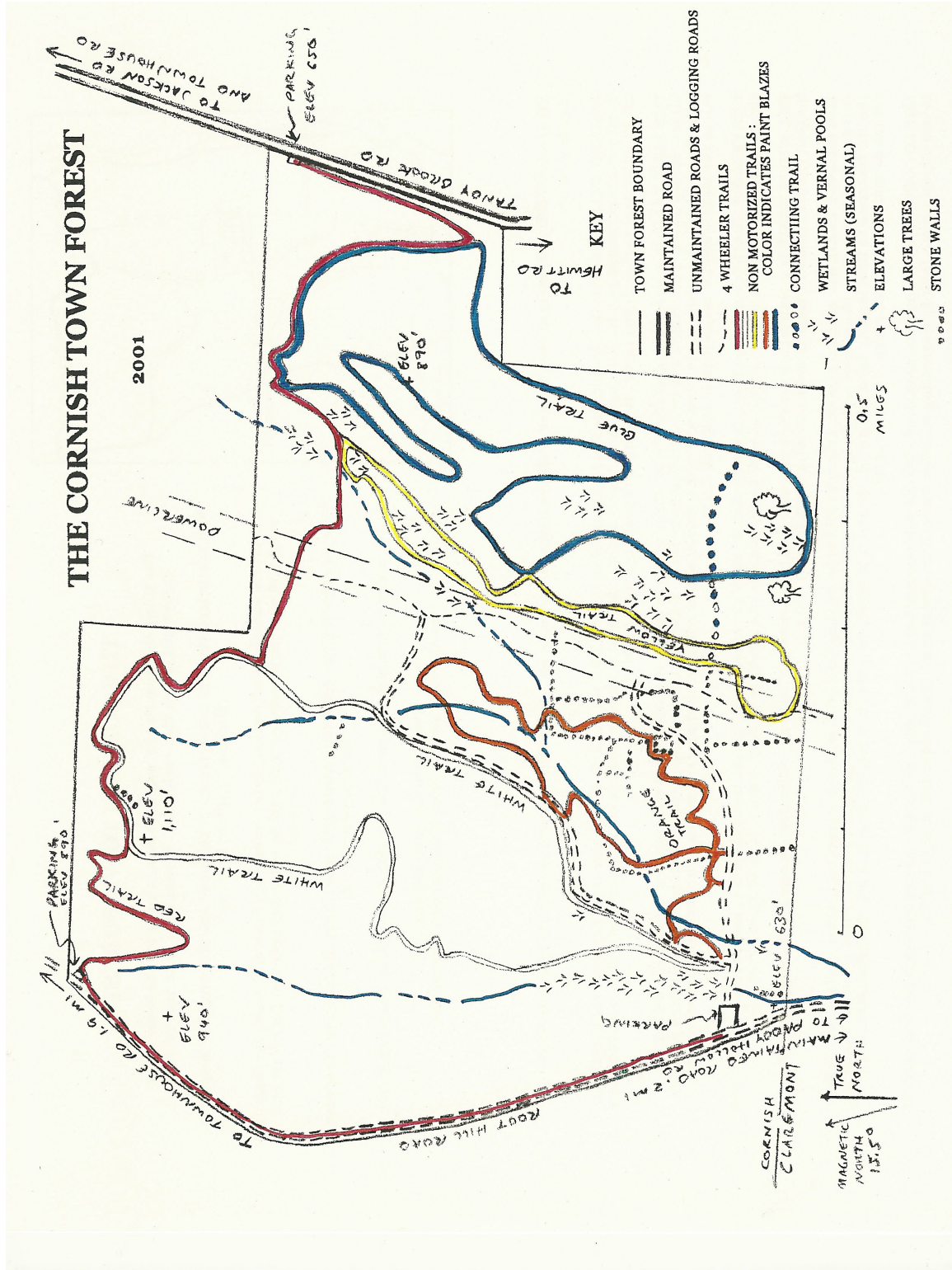
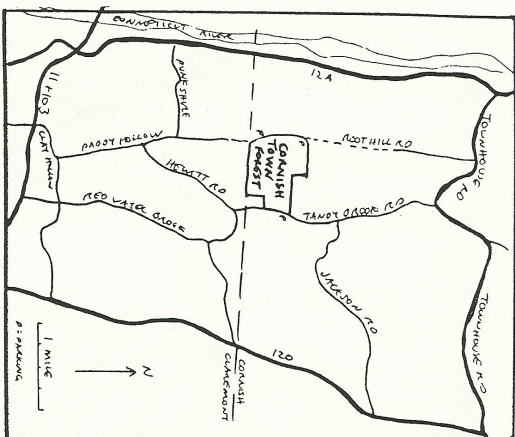


Figure 3. Cornish Town Forest topographic map







THE CORNISH TOWN FOREST

The Cornish Town Forest was set aside in 1999 for the benefit and enjoyment of Cornish residents. Please help take care of it!

Non motorized visitors are welcome at all times and the property is open to licensed hunters in season.

Motorized vehicles and horses please remain on Root Hill Road, the logging road and powerline service trail and do not enter between March 1st and July 1st.

Please refrain from gathering wood and rare plants, littering or otherwise harming our forest.

For more information contact the Cornish Town Office (603.675.5207)

Thank you for your interest,
the Cornish Town Forest Management Committee

TRAIL NOTES: All trails except the red trail are loops: if you stay on 1 color trail you will eventually return to your starting point.

THE RED TRAIL traverses the forest from Tandy Brook Rd to Root Hill Rd via the look out. There are steep and rough sections. Total elevation change 590 ft. Distances from Tandy Brook Rd: to jet with blue trail .15 mi, to powerline .7 mi, to lookout 1.25 mi, to northwest parking area 1.5 mi, to southwest parking area 2.25 mi.

THE BLUE TRAIL is a meandering, rolling loop. Runs partly in common with the red trail touring the eastern half of the forest, vernal pools, rock ridges and two 4 ft diameter trees. Total elevation change 450 ft. Distances from eastern junction with the red trail: to western junction with the red trail and the first vernal pools .3 mi, to junction with the yellow trail 1.1 mi, to the large trees 1.5 mi, return to red trail 2.3 mi.

THE YELLOW TRAIL (completion 2002) is nearly flat. It visits the other vernal pools, an apple grove, and denning trees. Total elevation change 40 ft. Distance from red trail to apple grove and south boundary .5 mi, return to start 1.1 mi.

THE WHITE TRAIL is a loop from near the southwest parking area to the lookout. Elevation change 475 ft. Logging road to lookout .75 mi, return to logging road 1.25 mi, return to start 1.75 mi.

THE ORANGE TRAIL has gradual grades. It loops within the logging road, visiting stream crossings, stone walls, a foundation and denning trees. Very short loops can be made using the connections with the logging road loop. Total elevation change: 190 ft. Distance to first logging road exit 50 yd., to 2nd exit .15mi, to 3rd exit .2 mi, to 4th exit .4 mi, to foundation .8 mi, return to main trail 0 mi, return to start 1.2 mi.

THE LOGGING ROAD is open to motorized wheeled vehicles and horses from July 1 to March 1 and to snowmobiles in season. It forms a loop 1.2 mi. long by connecting with the powerline service road. Total elevation change 195 ft.