

**Massachusetts Department of Conservation and Recreation
Bureau of Forest Fire Control and Forestry
Forest Management Proposal
Name: West Hill Lot**

Date Posted: February 16, 2017
End of Comment Period: April 2, 2017

Region: Central
Recreation District: Central Highlands
Forest Management District: Northeast
State Forest: Townsend State Forest
Closest Road: Fessenden Hill Road, Townsend / West Hill Road, Brookline, NH
Town: Townsend, MA

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Overview:

The purpose of this proposal is to outline the background, scope, objectives, and benefits of a proposed harvest located in the north easterly part of Townsend State Forest in the Town of Townsend, Middlesex County, MA. (See attached locus map and topographical detail maps). This property is part of approximately 1700 acres deeded to the Commonwealth in the 1930's by the Fessenden Companies based in Townsend. These lands, along with other acquisitions, were consolidated into what is now Townsend State Forest.

At the time of acquisition these properties were heavily cut over to provide the raw material necessary for the manufacture of barrels and other lumber products. Cutting was focused on trees that could provide the material necessary for industry and little focus was placed on promoting the long term viability of the forest. This type of extractive cutting left the forest in a degraded condition subject to outbreaks of wildfires due to fuel loading. There was a catastrophic wildfire in this area that burned approximately 28 square miles in Massachusetts and New Hampshire in 1927.

This proposal is meant to build upon the work begun in 2005 by the Department of Conservation and Recreation (DCR) Bureau of Fire Control and Forestry access improvements located to the north of the project areas. Prior to this work, access to this portion of the State Forest was poor due to deferred maintenance and staffing reductions within the agency.

This area of Townsend State Forest was selected as a proposed forestry project to achieve the following goals:

1. Demonstrate even aged and uneven aged silviculture techniques that will establish needed regeneration within the forest due to interference caused by mountain laurel (*Kalmia latifolia*).
2. Improve the conditions of forest stands by removing poorly formed, less vigorous and damaged trees.
3. Demonstrate Best Management Practices (BMP's) that protect water and soil resources.
4. Provide the ecosystem services that Woodlands provide as directed by the Forest Futures Visioning Process (2010) and subsequent Management Guidelines (2012). Examples include:
 - Sustainable production of renewable wood products for the local forest products industry.

- Sequestration of carbon through the production of solid wood products, retention of woody material of all sizes and an energetically regenerating forest of native species.
- Creation of diverse habitats that benefit native wildlife and build forest resilience to stressors.

The major objectives for this project are:

1. Improve access to the project area utilizing in kind services for the benefit of first responders and recreational users.
2. Remove all hazard trees along trails within project areas to protect public safety.
3. Use uneven and even age forest management to increase species diversity and forest structure for the benefit of wildlife.
4. Promote vigorous regeneration of native species within forest stands currently limited due to competition for resources.

Stand Description:

The proposed ±111 acre project area is comprised of 4 stands that are generally even aged with trees ranging from pole size to sawlog size trees (topographical detail map 1). The overstory trees in the proposal area are generally 80 to 100 years old and are a result of the forest that grew up after the wildfire, or were trees that were too small and passed by during previous harvesting operations prior to State ownership and survived the wildfire.

There are a variety of tree species present in the project area including: white pine (*Pinus strobus*), along with hardwood trees consisting of red oak (*Quercus rubra*), black oak (*Quercus velutina*), scarlet oak (*Quercus coccinea*), white oak (*Quercus alba*), chestnut oak (*Quercus prinus*), black birch (*Betula lenta*), white birch (*Betula papyrifera*), black cherry (*Prunus serotina*), and red maple (*Acer rubrum*). Occasionally observed trees found in these stands consist of pitch pine (*Pinus rigida*), black tupelo (*Nyssa sylvatica*), American beech (*Fagus grandifolia*), white ash (*Fraxinus americana*), and eastern hemlock (*Tsuga canadensis*). Some American chestnut (*Castanea dentata*) sprouts were noted in project area

Stand 1 (approximately 75 acres) is an even aged mixed hardwood and white pine stand. The trees are pole sized to saw log with some larger specimens in the stand (>16" DBH). This stand has thick patches of mountain laurel throughout essentially shading out any tree regeneration. In areas where gaps have formed in the canopy due to wind throw, or natural mortality of overstory trees, and mountain laurel is not as thick, white pine, red maple and black birch has seeded in.

Stand 2 (approximately 11 acres) is an even aged mixed hardwood and white pine stand located south of stand 1 and to the north west of the so called "Dead Swamp". The trees are pole to saw log sized class with some larger specimens scattered throughout the stand. Scattered regeneration is present in the understory but generally the canopy is closed limiting seedling establishment.

Stand 3 (approximately 9 acres) is an even aged white pine stand with a hardwood component. This stand is currently overstocked and experiencing some mortality due to competition for resources. The trees are generally pole sized to small saw log class with a few larger diameter trees scattered throughout the stand. There is very little regeneration within this stand due to the closed canopy conditions.

Stand 4 (approximately 16 acres) is an even aged hardwood and white pine stand similar to stands 1 and 2. The trees are pole to saw log sized class and similar to the other stands there are occasionally larger specimens found throughout the stand. As with the other stands there is some regeneration present but interference from mountain laurel and a generally closed canopy limits the ability of seedlings to establish themselves.

The understory of all these stands consists of: mountain laurel, sheep laurel (*Kalmia angustifolia*), witch-hazel (*Hamamelis virginiana*), low bush blueberry (*Vaccinium angustifolium*), high bush blueberry (*Vaccinium*

corymbosum), partridge berry (*Mitchella repens*), Canada mayflower (*Maianthemum canadense*), dewberry (*Rubus flagellaris*), Canadian serviceberry (*Amelanchier canadensis*), along with various ferns, shrubs, and grasses. Some green briar (*Smilax spp.*) plants were noted within the stands. No invasive species were noted.

The soils associated with the project area are; Scarboro mucky fine sandy loam, Freetown muck, Canton fine sandy loam, Scituate fine sandy loam, Charlton-Hollis-Rock outcrop complex, Whitman fine sandy loam, and Montauk fine sandy loam. The stand and tree vigor in this area is moderate due to soil limitations with a site index rating of 70 for the Whitman series, to 47 for the Hollis-Rock outcrop complex type soils for red oak. Elevations range from 500 to 600 feet, with the terrain best described as rolling with occasional steep sections with a south and south-east aspect.

Aesthetic, Recreation, Wetlands, Cultural, Rare Species and Wildlife Considerations:

Aesthetic:

As outlined in the Management Guidelines Document forest management activities will be designed to promote native vegetation, retain large diameter trees, promote species diversity and provide a safe experience for users. Legal recreational users of the State Forest will be given proper consideration during project implementation by marking trees for removal on one side within 50' of trails to minimize aesthetic impacts. Slash will be kept low (< 2 feet), away from trails, and run over or otherwise treated to promote rapid decomposition and a light appearance. Landing areas will be seeded at the cessation of operations to rapidly re-vegetate disturbed areas.

Recreation:

This area is most widely used for passive recreation. Hiking, mountain biking, horseback riding, and hunting are the most prevalent activities in this area of the forest. Most of the trails follow old cart roads within the project area. There is some illegal ATV activity within the forest, but mostly confined to the main forest roads. There are no scenic roads located within the project area.

The harvest area will be posted with signage and a walk hosted to increase public awareness of program activity. The project area will be closed to the public during operational hours and activities will be timed seasonally to minimize impacts to recreational users as much as possible.

Wetlands:

Located within the proposed project area are 3 small wetlands and a wetlands complex that contains a potential vernal pool along with 3 small intermittent streams (see detail map). The potential vernal pool will be treated as certified and there will be no tree cutting within 50 feet of the pool depression and no main skid trails will be located within 100 feet of the pool depression. No cutting will be allowed within the 50 foot filter strips along streams with the exception of any trees removed at an approved stream crossing for equipment access.

The stream between stands 3 and 4 can best be described as a drain channel as it does not flow out of a wetland resource and originates from slope runoff. Installation of a culvert at this crossing is proposed to improve access for first responders and recreational users. Consultation and approval of the local conservation commission will be needed prior to installation of the culvert in this area. Other stream crossings within the project area will be made utilizing temporary bridges that will be removed at project completion.

The project area is located within the Squannassit Area of Critical Environmental Concern (ACEC). ACEC areas provide protection to public and private groundwater supplies, provide flood control, and protect valuable fisheries and important wildlife habitat. Therefore, in order to minimize any impacts on the site there will be no cutting within wetlands. Additionally, a 50 foot no cut buffer from wetland resources will provide additional protection to these valuable areas. All resource areas will be mapped, flagged, and painted in the field in accordance with filing

a MGL Chapter 132 Forest Cutting Plan for this project with the Massachusetts DCR Service Forestry Program along with simultaneous filing of the cutting plan with the local conservation commission. The Massachusetts Forestry BMP's are required by law to mitigate any impact. Impacts will also be minimized by restricting the project to times of year when conditions are favorable for harvesting (fall/winter).

Cultural Resources:

Located within and around the project area are the remains of several old homesteads. These can be observed by the old cellar holes and stone walls along Fessenden Hill Road. Within the project area are the remains of an old well, pump house and parts of a three stone walls. No project activities will occur near the well or pump house as these structures are within wetland buffer areas. The stone walls will not be crossed as there is access around the ends of the walls. These resources will be mapped and documented to protect their historical significance and consultation with the Office of Cultural Resources will take place prior to preparing a written prescription for the project area in order to better preserve these structures for future generations.

Rare and Endangered Species:

Review of the Massachusetts Natural Heritage and Endangered Species Priority Habitat geographical information system data layer of the project area shows no habitat for rare or endangered species present. NHESP will be consulted and their recommendations will be included in a written silviculture prescription for the site.

Wildlife:

There is evidence of large ungulate species (deer and moose) feeding and bedding within the project area. Other animal species that have been noted in the area are; black bear, bobcat, coyote, fox, opossum, turkey, pileated woodpeckers and a variety of other avian species. Anticipated impacts by these animals on regeneration should be minimal as opening up the forest canopy will allow grasses, forbs and other forms of browse to become more plentiful.

As per the 2012 Management Guidelines large sawlog size trees (18 inch diameter at breast height (DBH)) with wildlife cavities, live snags and known nest trees shall be retained. Large mast producing species will be retained and released where possible. The Department of Fish and Game/NHESP shall be consulted and their recommendations implemented as part of a written silviculture prescription for this project.

The proposed project should provide positive benefits to native wildlife by increasing plant species diversity and vertical structure of the forest. Coarse woody material on the forest floor and retention of snags will benefit invertebrates, amphibians, and small mammal species that depend on them. Retention and releasing of mast trees (oak and cherry) will benefit numerous bird and mammal species that utilize these sources of food as part of their diet. Mastication by equipment of thick mountain laurel patches will allow the establishment of browse and berry producing plants for the benefit of wildlife. Although the proposed project will have positive benefits to wildlife, the planned silviculture treatments will provide little habitat to species that require substantial patches of early successional habitat.

Sale Layout and Harvesting Limitations:

Access to the project area is good due to the proximity to Fessenden Hill Road and Route 13. Existing roads will be used to haul forest products out of the project area. Sections of Fessenden Hill Road will be re-graded and clean crushed aggregate will be added where necessary to firm up the road base and improve access. Equipment skid trails through stands will be laid out after a thorough stand examination and prior to harvesting operations. Skid trails will be laid out taking care to avoid sensitive areas and minimize aesthetic impacts.

Three potential landing areas have been identified (see detail map). One off of Fessenden Hill Road between stands 3 and 4 and the other two potential landings in stand 4. Further investigation during stand examination will determine which location(s) are most appropriate. At project completion landing area(s) will be seeded and straw mulched to rapidly establish vegetation to mitigate aesthetic impacts.

A whole tree harvesting or a cut-to-length harvesting system will be utilized to carry out this project. There is a significant amount of small, low grade material within the project areas and whole tree systems are better equipped to handle significant amounts of low quality, small diameter stems. A thorough stand examination will determine volumes of material to be harvested and which harvesting system is preferred to carry out the project. At a minimum 256 cubic feet per acre of coarse wood material will be retained per the Management Guidelines Document.

Operations will be seasonally restricted to dry or frozen times of year to minimize impacts to the project area. Operations during “spring breakup” will not be allowed in order to prevent any soil rutting. At close of operations all skid trails will be stabilized as required in the latest edition of the Massachusetts Forestry Best Management Practices Manual.

Silviculture:

DCR Management Guidelines state the forest stands will be classed and considered for silvicultural treatments that generally fit their productivity, structural complexity (or potential thereof), and diversity. Analyzing the site productivity and complexity using GIS data layers of prime forest soils, potential vegetation complexity, late successional potential, forest diversity, early successional potential, continuous forest inventory (CFI) site index, and CFI stand structure verifies the low to medium productivity of these forest stands. Forests with low to moderate productivity levels lend themselves to both even aged and uneven aged silvicultural systems.

Stands 1, 2, and 4 will be treated using an irregular shelterwood silvicultural system. This type of system is one that has a long regeneration period with a continuous cover of trees. Small gaps are made in the canopy to encourage the regeneration process and over time these gaps are expanded creating a mosaic of age and size classes across the landscape. Outside of these gaps, trees are thinned removing low vigor, low quality trees promoting growth of the residual forest. The major goals for using this type of system within these stands are:

- Improve structure and diversity of forest stands.
- Improve size, quality and vigor of residual trees, thus increasing growth of sawlog sized trees and improving food production for wildlife.
- Treat dense mountain laurel thickets by cutting or crushing to provide seed beds for regeneration to become established.
- Reserve areas from management (potential vernal pool, wetlands, filter strips) due to their ecological significance and allow natural process to take place.
- Provide wildlife habitat and food to native species.
- Improve soil structure through the retention of coarse woody material of all sizes.
- Remove all hazard trees within trail corridors to protect public safety.


This approach will lead to a desired future condition from these forest stands that are currently even aged in nature to a more uneven aged structure over time. This will help increase tree species diversity and build complexity to the age structure found in these stands. The increasing complexity of the forest will help to build resilience to stressors, provide habitat for wildlife, protect water and soil quality, and sequester carbon.

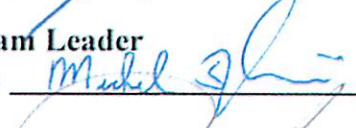
Stand 3 will be treated using a uniform shelterwood system. This type of silvicultural treatment establishes a new forest of trees under the cover of the existing overstory which is reduced over time with a series of thinnings releasing established regeneration. The major goals to using this type of system are:

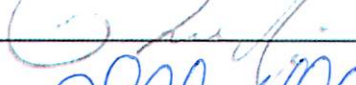
- Thin overstocked and declining white pine trees within the stand to improve vigor.

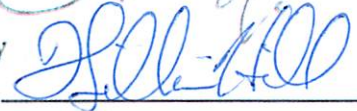
- Establish regeneration currently lacking within this stand.
- Improve size, quality and vigor of residual trees.
- Provide wildlife habitat and food to native species.
- Improve soil structure through the retention of coarse woody material of all sizes.
- Remove all hazard trees within trail corridors to protect public safety.

This approach will lead to a desired future condition for this forest stand from one that even aged and low vigor to one that is actively regenerating the future forest of white pine and native hardwood species.

District Forester:  Date: 2/14/17

Field Operations Team Leader
Or Park Supervisor:  Date: 2-14-17

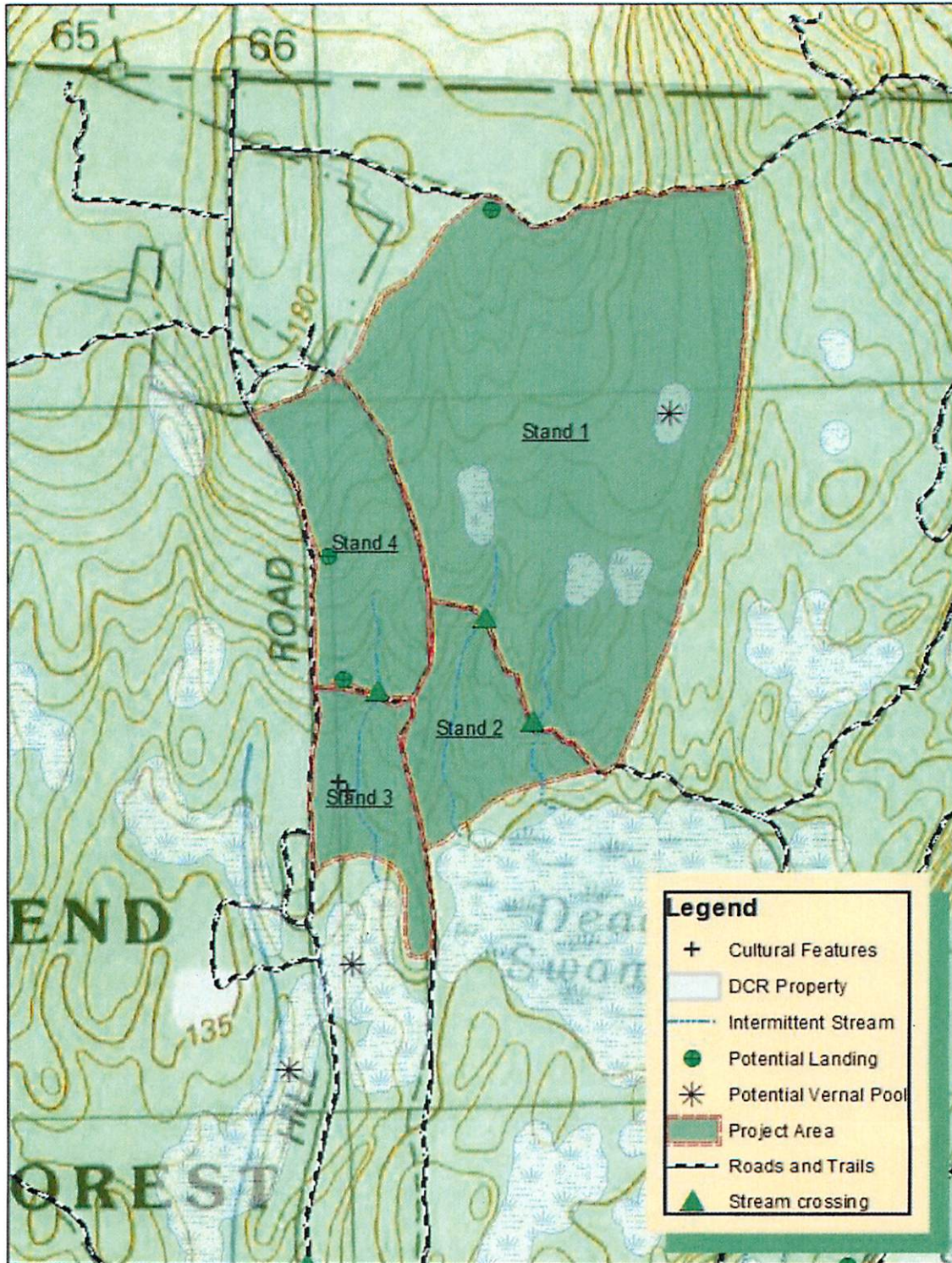
Regional Director:  Date: 2-16-17

Management Forestry
Program Supervisor:  Date: 2-16-2017

Attached: Topographic maps showing project details. Locus map showing project location within regional context.



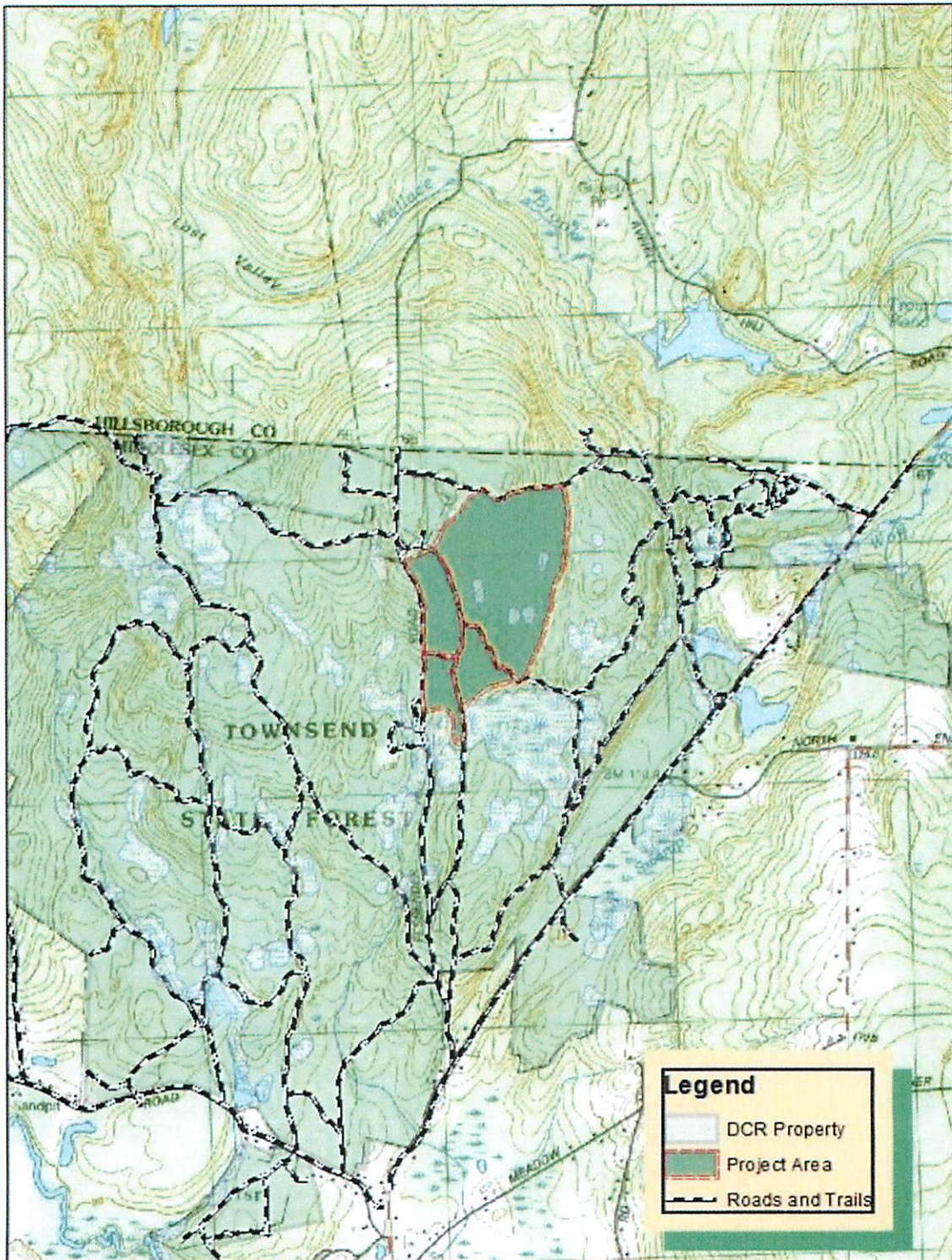
West Hill Lot Townsend State Forest Townsend, MA



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West Hill Lot-Locus Map Townsend State Forest Townsend, MA



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