

**Massachusetts Department of Conservation and Recreation
Bureau of Forest Fire Control and Forestry
Forest Management Proposal
Name: Brookline Road**

Date Posted: February 26, 2016
End of Comment Period: April 10, 2016

Region: Central
Recreation District: Central Highlands
Forest Management District: Northeast
State Forest: Townsend State Forest
Closest Road: Brookline Rd (Rt. 13)
Town: Townsend, MA

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Overview:

The purpose of this proposal is to outline the background, scope, objectives, and benefits of proposed harvests in two locations located on the East and West sides of Brookline Road (Rt. 13) in the 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. In the mid 1930's the Civilian Conservation Corps, with a camp located in Townsend, set about reforesting these cutover, degraded lands. Many thousands of softwood (e.g. pine, spruce) tree seedlings were planted providing much needed work during the depression as well as promoting the reforestation of this area.

The proposed project area is divided into two sections for purposes of this proposal; Brookline Road-East (BRE), covering approximately 31 acres and Brookline Road-West (BRW), approximately 57 acres.

The major objectives of Brookline Road-East:

- 1) Demonstrate thinning regimes that will help stimulate regeneration in the overstocked and declining pine plantations
- 2) Thin remaining forest stands removing low quality, poorly formed trees to improve forest vigor.
- 3) Increase species diversity and forest structure in all stands to benefit wildlife.

The major objectives of Brookline Road-West:

- 1) Increase diversity and structure of the forest by stimulating regeneration through the creation of patch openings (not larger than 1/3 acre in size).
- 2) Thin the existing stands between patches to remove low quality, poorly formed trees.
- 3) Remove hazard trees along the existing woods road leading into the project area to promote safety of forest users.
- 4) Improve access for emergency equipment by upgrading the existing forest road.

The Brookline Road-East and Brookline Road-West areas were selected as a proposed forestry project because:

- 1) The red pine and white pine plantations are overstocked and experiencing mortality due to competition for sunlight and growing space (BRE).
- 2) Creation of gaps will help diversify forest structure by mimicking natural disturbance patterns creating a mosaic of age, size and species distribution over the project area promoting forest diversity beneficial to wildlife (BRW).
- 3) The forest stands will benefit from a thinning by removing poorly formed, less vigorous and damaged trees (BRE & BRW).
- 4) Demonstrate Best Management Practices (BMP's) that protect water and soil resources through use of a state of the art cut to length harvesting system (BRE & BRW).
- 5) Promote regeneration in the forest stands that is currently lacking due to competition for sunlight, growing space, along with regeneration interference caused by mountain laurel (*Kalmia latifolia*), and damage to existing regeneration caused by the 2008 ice storm (BRE & BRW).
- 6) The project area will help fulfill management approaches to Woodlands as directed by the Forest Futures Visioning Process (2010) and subsequent Management Guidelines (2012).

Stand Description-Brookline Road-East:

The proposed Brookline Road East project area is comprised of 4 stands that are generally even aged with trees ranging for pole size to sawlog size trees (topographical detail map 1). Stand 1 (approximately 8 acres) is an even aged white pine stand that was thinned back in 1983 with a home fuelwood project and again with a commercial thinning in 1995. Stand 2 (approximately 11 acres) is a mixed white pine-hardwood stand that was thinned along with stand 1 back in 1995. Stand 3 (approximately 4 acres) is a white pine-hardwood stand that has not been treated since acquisition by the state. Stand 4 (approximately 8 acres) is a red pine-white pine plantation that has not been treated since acquisition and planting by the state. The trees are approximately 80-90 years old and are a result of natural regeneration and plantings.

There are a variety of tree species present in the project area including: planted and naturally seeded white pine (*Pinus strobus*) and planted red pine (*Pinus resinosa*), along with naturally occurring hardwood trees consisting of red oak (*Quercus rubra*), black oak (*Quercus velutina*), white oak (*Quercus alba*), white ash (*Fraxinus americana*), black birch (*Betula lenta*), white birch (*Betula papyrifera*), black cherry (*Prunus serotina*) and red maple (*Acer rubrum*). There are scattered hemlock (*Tsuga Canadensis*) trees found along the brook flowing between stands 2 and 3.

The understory consists of: witch-hazel (*Hamamelis virginiana*), low bush blueberry (*Vaccinium angustifolium*), high bush blueberry (*Vaccinium corymbosum*), partridge berry (*Mitchella repens*), Canada mayflower (*Maianthemum canadense*), along with various ferns, shrubs, and grasses. Some green briar (*Smilax spp.*) plants were noted on the eastern portion of stand 4.

The soils associated with the Brookline Road East project area are; Scarboro mucky fine sandy loam, Wareham loamy fine sand, Freetown muck, Hinckley loamy sand, Sudbury fine sandy loam, and Canton fine sandy loam. The stand and tree vigor in this area is moderate due to soil limitations with a site index rating of 61 for white pine and 49 for northern red oak for Hinckley loamy sand type soils.

Aesthetic, Recreation, Wetlands, Cultural, Rare Species and Wildlife Considerations-Brookline Road-East:

Aesthetic:

The Brookline Road-East project area is located adjacent to Rt-13 that is travelled by hundreds of vehicles daily making aesthetics paramount. There will be a 50 foot no cut buffer along Brookline Road to minimize visual impacts. The only exception to this will be tree removal necessary to access the log landing located off of Brookline Road. All tree slash will be lopped within two feet of the ground and run over by equipment to promote rapid decomposition.

Recreation:

This area is most widely used for passive recreation. Hunting and walking are the most prevalent activities in this area of the forest. There is one hiking trail that is located in Brookline Road-East project area. The trail follows an old road that bisects the property. Beaver activity has flooded a portion of the trail and restricts travel. The harvest area will be posted with signage and a walk hosted to increase public awareness of program activity in the area.

Wetlands:

The Brookline Road-East project area has several associated wetlands (see detail map). The most significant is Wolf Swamp. Beaver activity over time has expanded the swamp due to dam building and subsequent flooding of previously forested areas. This flooding has improved habitat for

wetland dependant species of flora and fauna. There are two streams associated with the project area. One stream runs south out of Wolf Swamp and the other small intermittent stream flows south-east between stands 1 and 2 into Wolf Swamp. There is one small potential vernal pool located near the hiking trail. This 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 (with the exception of the existing forest road).

The Brookline Road-East 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. 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. 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.

Cultural Resources:

There are several stone walls located within the Brookline Road East project area. These areas will be mapped and documented to protect their historical significance during operations. Consultation with the Office of Cultural Resources will take place prior to preparing a written prescription for the project area in order to better document and preserve these structures for future generations. In areas where stone walls will be crossed, existing breaks will be utilized to protect their integrity.

Rare and Endangered Species:

Review of the Massachusetts Natural Heritage and Endangered Species Priority Habitat geographical information system data layer of the Brookline Road-East 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:

Beaver activity has been the driver of ecological development of this site. Dam building has resulted in several acres of flooded snags. These snags provide habitat for invertebrates and the avian species that feed on them. These snags also provide perches for raptor species present in the area for hunting. There is evidence of ungulate species (deer and moose), but generally this area is used by large animals to pass through to other feeding and bedding areas; therefore, they should make minimal impact on regeneration. Other animal species that have been noted in the area are; black bear, bobcat, coyote, opossum along with a variety of avian species.

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 (18 inch DBH) mast producers will be retained and released. 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 activity for the Brookline Road-East project will provide positive benefits to wildlife by increasing species diversity and vertical structure of the forest. Retention of snag trees and coarse woody material on the forest floor will benefit invertebrates, amphibians, and small mammal species that depend on them for their life cycles. Retention of mast trees (oak and cherry) will benefit numerous bird and mammal species that utilize these sources of food as part of their diet. Although the proposed project will have positive benefits to wildlife, the planned thinnings will provide little habitat to species that require substantial patches of early successional habitat.

Sale Layout and Harvesting Limitations-Brookline Road-East:

Access to the project area is excellent due to the proximity to Brookline Road. Existing roads and skid trails will be re-used during operations to minimize site impacts. The landing area will be moved closer to Brookline Road from its previous location due to the latter's proximity to wetland resources. At project completion the landing area will be seeded and straw mulched to rapidly vegetate the area and the access road will be blocked with boulders to prevent illegal access.

Two stream crossings are located in the Brookline Road-East project area. These crossings will be made with temporary bridges that will be removed at project completion. Wetland resource areas, potential vernal pools, filter strips, and no cut areas will be buffered and marked with paint in the field prior to operations.

A cut-to-length logging system employing a harvester and forwarder will be utilized to harvest the forest stands. This system of operation processes trees at the stump retaining woody material throughout the site providing nutrient retention and short term carbon sequestration. Forwarding processed trees out of the project area will minimize soil disturbance because logs are carried out on the machine, and not skidded along the ground. Soil compaction is minimized since the equipment is working on a mat of woody material. Log landings are small and highly organized into different products to be trucked to market.

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.

Silviculture-Brookline Road-East:

An improvement cut (Stands 2 and 3) and irregular shelterwood (Stands 1 and 4) silvicultural system will be employed within the Brookline Road-East project area. The overall goals to employing these systems are:

- Improve structure and diversity of the forest stands. Improve size, quality and vigor of residual trees in thinned areas, thus increasing growth of sawlog sized trees and improving food production for wildlife.
- Reserve and release large mast producing species to provide food for wildlife.
- Establish regeneration within the red pine and white pine plantation
- Reserve areas from management (potential vernal pool, wetlands, filter strips) due to their ecological significance and allow natural process to take place.
- Improve soil structure through the retention of coarse woody material of all sizes.

This approach will lead to a desired future condition from forest stands that are currently even aged in nature to a more diverse uneven aged structure. Establishing regeneration in the red pine-white pine stands will allow for native species to diversify the current forest type to one where white pine and native hardwood species become dominant.

Stand Description-Brookline Road-West:

The proposed Brookline Road-West project area is comprised of three stands that are generally even aged and the trees are sawlog and pole size class (topographical detail map 2). Stands 1 and 2 (approximately 54 acres) are white pine stands that were treated with a pulpwood thinning in 1991 removing low grade trees. There are scattered red pine and hardwood trees found throughout these stands. Stand 3 (approximately 3 acres) is a mixed white pine-hardwood stand that was partially treated with a home fuelwood cut in 1991. The trees in these stands are approximately 80-90 years old and are a combination of plantings of white and red pine (Stands 1 and 2) and natural regeneration (Stand 3) following a forest fire in 1927. The topography is generally rolling in nature with slopes in the range of 3%-15%. The steep slopes found between Stands 2 and 3 are excluded from this project as they are inoperable.

There are a variety of tree species present in the project area including: planted white pine and red pine, and naturally occurring hardwood trees consisting of red oak, chestnut oak (*Quercus prinus*), black oak, white oak, scarlet oak (*Quercus coccinea*), white ash, black birch and red maple. There is also scattered American chestnut (*Castanea dentata*) found throughout the area, but because of chestnut blight (*Cryphonectria parasitica*) these trees never reach maturity.

The understory consists of mountain laurel, low bush blueberry, partridge berry, Canada mayflower, along with various ferns, shrubs, and grasses. No invasive plant species were noted in the Brookline Road-West project area at this time.

The soils associated with the Brookline Road-West project are; Charlton-Hollis-Rock outcrop complex, Rock outcrop-Hollis complex, Canton fine sandy loam, Hinckley loamy sand, and Windsor loamy sand. These are moderate to well drained soils and should present no issues for equipment. The stand and tree vigor in this area is moderate due to soil limitations with a site index rating of 61 for white pine and 49 for northern red oak for the Hinckley loamy sand soil types.

As noted in the overview these stands currently have limited regeneration of trees. Mountain laurel is very effective at shading out tree seedlings limiting regeneration to scattered patches where they can become established. The 2008 ice storm also caused significant regeneration mortality in

Stands 2 and 3, and since the tree canopy is generally closed this provides little sunlight to the forest floor for seedling establishment.

Aesthetic, Recreation, Wetlands, Cultural, Rare Species and Wildlife Considerations- Brookline Road-West:

Aesthetic:

The Brookline Road-West project area is located adjacent to Rt-13 that is travelled by hundreds of vehicles daily making aesthetics paramount. There will be a 50 foot no cut buffer along Brookline Road to minimize visual impacts. The only exception to this will be where the previous log landing was located along Rt-13 that will be reused for this project. Tree slash will be lopped within two feet of the ground and run over by equipment to promote rapid decomposition.

Recreation:

This area is most widely used for passive recreation. Hunting, walking, bird-watching, geocaching and mountain biking are the most prevalent activities in this forest. Illegal all-terrain vehicle use is an issue, but confined mostly to the main forest roads. There is one hiking trail located in the Brookline Road-West project area that bisects Stands 2 and 3. The harvest area will be posted with signage and a walk be hosted to increase public awareness of program activity in the area. The Department of Conservation and Recreation Trails Guidelines and Best Practices Manual will be followed to minimize impacts to recreational activities.

Wetlands:

There is one certified vernal pool, two small wetlands, and two intermittent streams located in the Brookline Road-West project area (see detail map). The Brookline Road West project area also falls within the ACEC and valuable resource areas will be further protected with additional safeguards. To protect these valuable resources there will be no tree cutting within 50 feet of the certified vernal pool and no main skid trails will be located within 100 feet of the pool (with the exception of the existing truck road that will be used to access the Brookline Road-West project area). There will be no cutting in wetlands and an additional 50 foot no cut buffer around wetlands will provide additional protection to these important resources. 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. 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. Impacts to the Brookline Road-West project area will also be minimized by restricting the project to times of year when conditions are favorable for harvesting.

Cultural Resources:

There is one cellar-hole and associated stone walls located within the Brookline Road-West project area. These areas will be mapped and flagged to protect their historical significance during operations. Consultation with the Office of Cultural Resources will take place prior to preparing a written prescription for the project area in order to better document and preserve these structures for future generations. Existing breaks in the stone walls will be utilized when the project is implemented to protect integrity of wall.

Rare and Endangered Species:

Review of the Massachusetts Natural Heritage and Endangered Species Priority Habitat geographical information system data layer of the Brookline Road-West 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:

As per the 2012 Management Guidelines large trees (18 inch diameter at breast height (DBH)) with wildlife cavities, live snags and known nest trees shall be retained. Large (18 inch DBH) mast producers will be retained and released. The Department of Fish and Game/NHESP shall be consulted and their recommendations implemented as part of a written silviculture prescription for this project. There is evidence of deer, but generally this area is used by animals to pass through to other feeding and bedding areas; therefore, they should make minimal impact on regeneration. Other animal species that have been noted in the area are; moose, black bear, bobcat, coyote and a variety of avian species.

The proposed activity for the Brookline Road-West project area will provide positive benefits to wildlife by increasing species diversity and vertical structure of the forest. Establishment of regeneration will be a benefit to animals that utilize young forests as part of their life cycle. Creation of gaps within the forest will provide an “edge” effect that is attractive to many bird species for nesting and foraging. Retention of snag trees and coarse woody material on the forest floor will benefit invertebrates, amphibians, and small mammal species that depend on them for their life cycles. Although the proposed project will have positive benefits to wildlife, it will provide limited habitat to species that require large expanses of early successional habitat.

Sale Layout and Harvesting Limitations-Brookline Road-West:

Access to the project area is excellent due to the proximity to Brookline Road and forest road work upgrades that were accomplished during prior harvests along with work conducted by DCR's Bureau of Fire Control. Existing roads, landings and skid trails will be re-used during operations to minimize site impacts. Several loads of crushed aggregate will be trucked in and spread along the existing road northwest of the second landing to improve access for recreational users, emergency vehicles, and future forestry projects.

Two landing areas will be used during operations. One landing will be located along Brookline Road in an area that was previously used during a prior treatment, and the other landing will be adjacent to Stand 3. The landing along Brookline Road will be blocked with large boulders when the project is completed to prevent illegal access. Both landings will be seeded and straw mulched at project completion to rapidly revegetate the area.

A cut-to-length logging system employing a harvester and forwarder will be utilized to harvest the forest stands. Forwarding processed trees out of the project area will minimize soil disturbance because logs are carried out on the machine, and not skidded along the ground.

Wetland resource areas, vernal pools, filter strips, and no cut areas will be buffered and marked with paint in the field prior to operations. Stream crossings are culverts that already exist along the forest road in Stand 2.

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. The harvesting operation should proceed rapidly due to proximity to good truck roads and be completed during one season.

Silviculture-Brookline Road-West:

An improvement cut and patch cut silvicultural system will be employed within the Brookline Road-West project area (Stands 1, 2, and 3). The overall goals to employing these systems are:

- Improve structure and diversity of the forest stands. Cutting small patches will allow regeneration of various tree species to become established in the forest stands promoting diversity and providing wildlife habitat.
- Improve size, quality and vigor of residual trees in thinned areas, thus increasing growth of large trees and improving food production for wildlife.
- Reserve and release large mast producing species to provide food for wildlife.
- Reserve areas from management (vernal pool, wetlands, filter strips) due to their ecological significance and allow natural process to take place.
- Improve soil structure through the retention of coarse woody material of all sizes.

This approach will lead to a desired future condition from forest stands that are currently even aged in nature to a more uneven aged structure. This will also 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, sequester carbon and provide local wood products.

District Forester:

Date:

Field Operations Team Leader

Or Park Supervisor:

Date:

Regional Director:

Date:

Management Forestry

Program Supervisor:

Date:

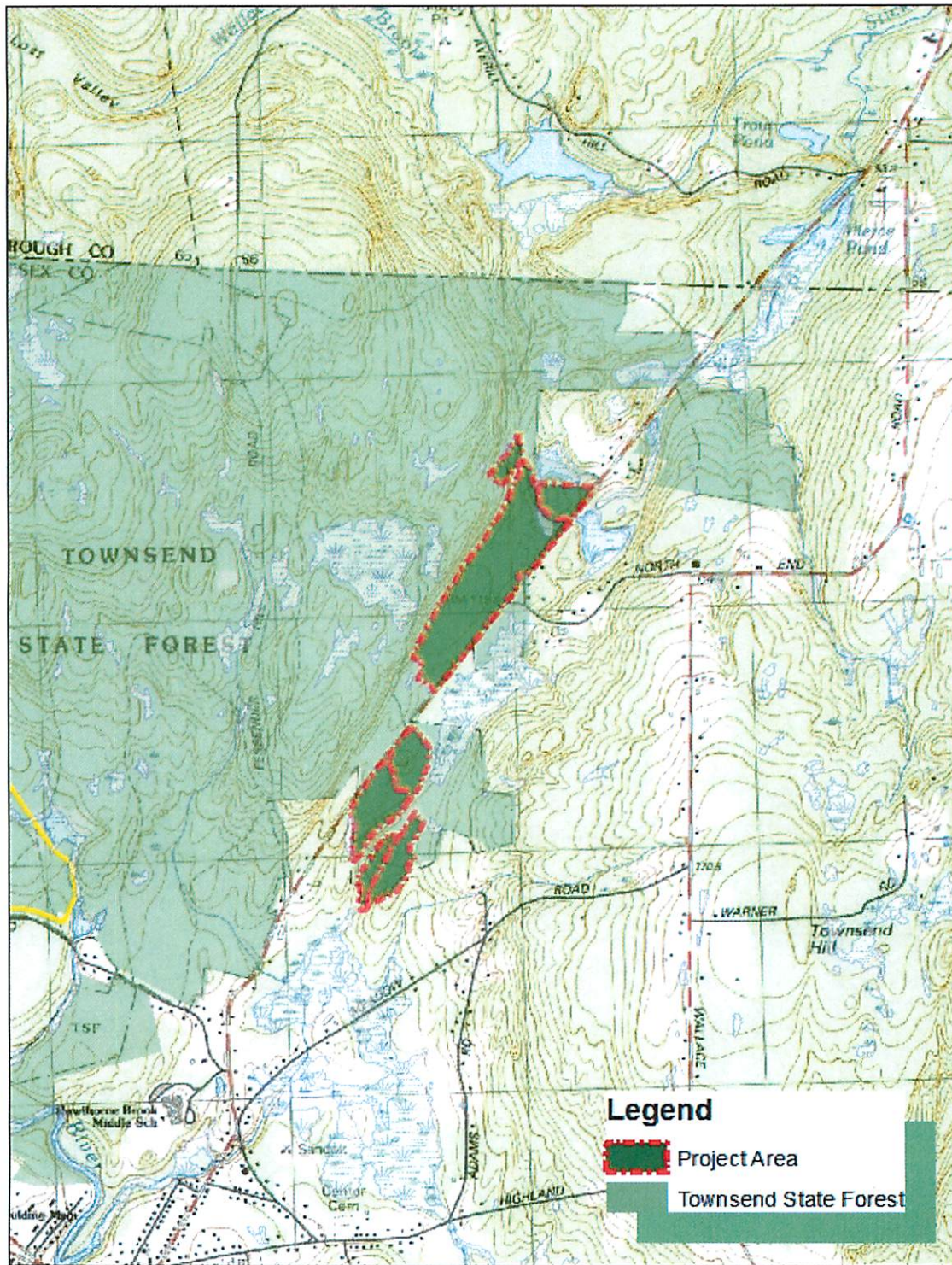
Attached: Topographic maps showing project details. Locus map showing project location within regional context.

Reference: Massachusetts Department of Conservation and Recreation, Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines, March 2012

Brookline Road Project Locus Map

Townsend State Forest

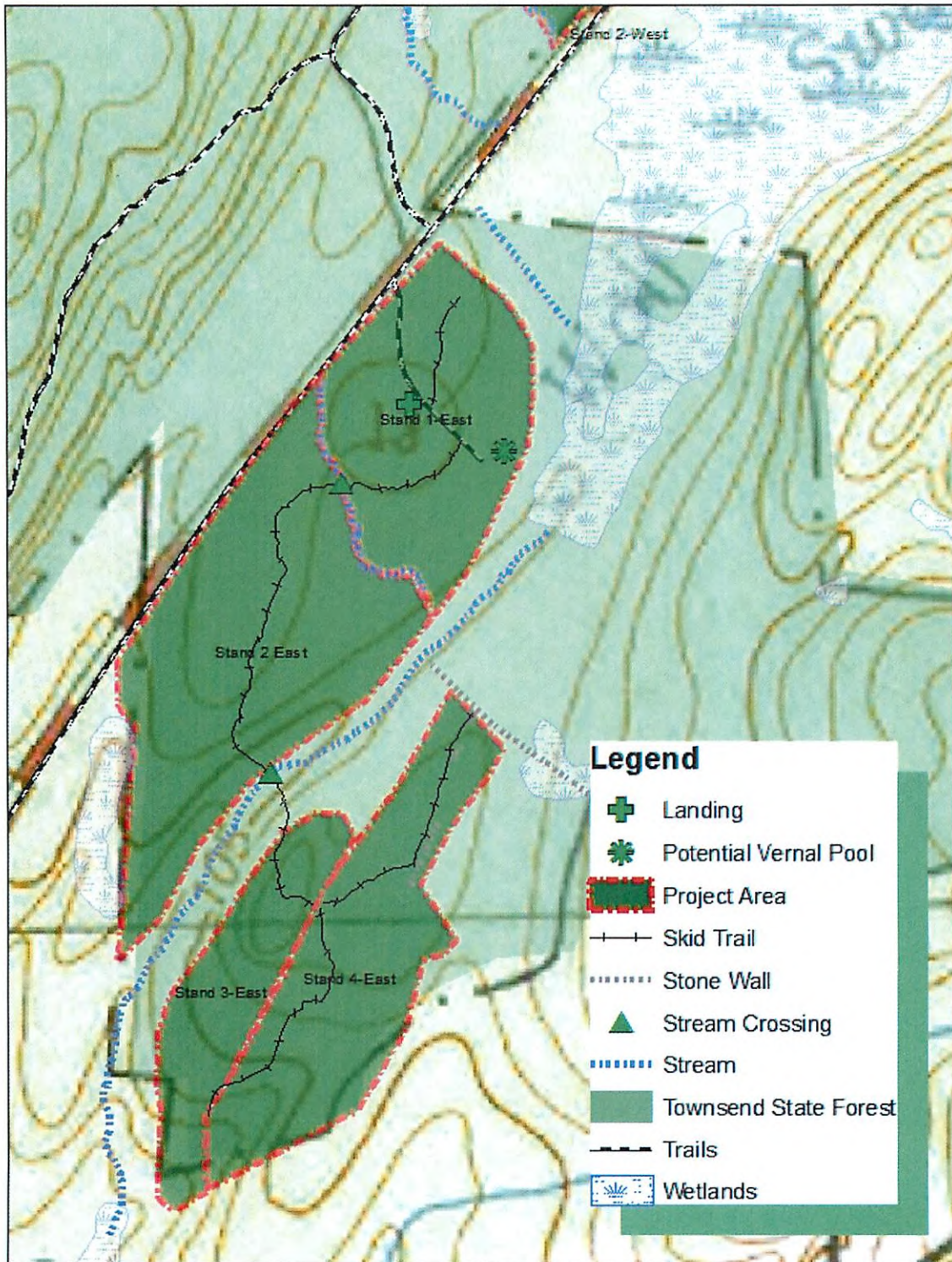
Townsend, MA



MJW1/15/16

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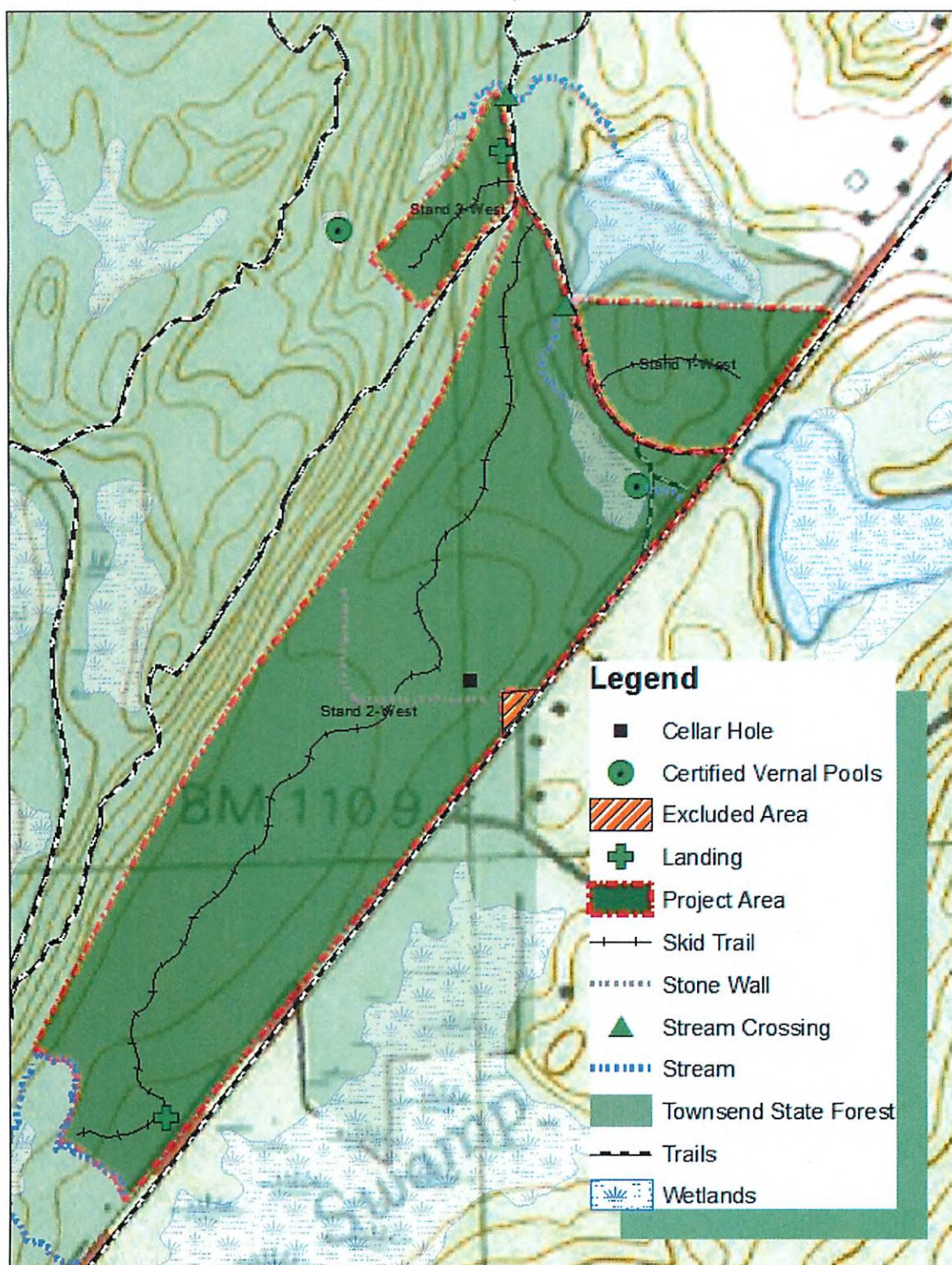
Brookline Road East Townsend State Forest Townsend, MA



MJW1/15/16

0 125 250 500 750 1,000
Feet

Brookline Road West Townsend State Forest Townsend, MA



Legend

- Cellar Hole
- Certified Vernal Pools
- ▨ Excluded Area
- ⊕ Landing
- ▭ Project Area
- +— Skid Trail
- Stone Wall
- ▲ Stream Crossing
- Stream
- Townsend State Forest
- Trails
- ▨ Wetlands

MJW1/15/16

0 155 310 620 930 1,240
Feet