

**Massachusetts Department of Conservation and Recreation
Bureau of Forest Fire Control and Forestry
Forest Management Proposal
Name: Warwick State Forest – Bass Swamp**

Date Posted: February 16, 2017

End of Comment Period: April 2, 2017

Region: Central
Recreation District: CT Valley
Forest Management District: Eastern CT Valley
State Forest: Warwick State Forest
Closest Road: White Road
Town: Warwick

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Overview:

Warwick State Forest consists of approximately 11,500 acres and encompasses a significant percentage of total land within the town of Warwick. This particular forest management project will include a contiguous 133 acre portion of the state forest, located near the Warwick-Northfield town line.

This portion of Warwick State Forest has a rich history of forest management, with timber sales being implemented on different portions of the project area in 1959, 1981 and 1988.

This specific site was selected for the following reasons:

- The red pine plantation is at risk of decline due to red pine scale which has devastated plantations throughout the region. This stand is currently heavily stocked with an abundance of native regeneration which is now ready for further release.
- The white pine stand has reached a point of stagnation, due to being overstocked. This stagnation generally results in limited growing space and resources available to individual trees, limiting growth rates.
- The white pine-oak stand is currently two aged with an abundance of advanced regeneration. Proposed harvesting operations will allow for the release of advanced regeneration and further diversify structural complexity, while establishing a new cohort of overstory trees.
- Area has an extensive history of past silvicultural treatments.
- Minimal presence of invasive species.
- Potential for infrastructure improvements to the state forest through in-kind services.

Forest Management Objectives:

As stated in the DCR “Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines” document, this particular portion of Warwick State Forest falls under a woodland designation, which is defined as a “forested area actively managed for forest health, resource protection, sustainable production of timber and recreation.” In accordance with the management objectives set forth in the above mentioned document, this forest management project intends to:

- Enhance forest productivity, species diversity and forest complexity
- Provide for locally sourced sustainable forest products
- Improve forest infrastructure with the use of in kind services
- Create educational opportunities by demonstrating sustainable active forest management
- Sequester carbon in retained overstory trees, permanent forest products produced from the harvest, and in the vigorous regenerating forest.

Stand Description: The following stand descriptions are based on observations in the field, as well as information obtained from an array of datalayers in ArcGIS, and are subject to change as more information is obtained through a formal inventory of the area.

1. Red pine plantation: This +/-9 acre, even aged, red pine stand is located north of the New England Scenic Trail (NET) and to the south east of Bass Swamp. Red pine dominates the overstory, with scattered occurrences of native species including but not limited to red oak, black oak, eastern hemlock, and red maple. The overstory trees are almost exclusively sawtimber size, with occasional pole size trees scattered throughout. Advanced regeneration is present throughout and includes species such as white pine, eastern hemlock, red maple, American beech, and black birch, among others. There are no records indicating previous management in this stand, although it is evident that some smaller trees have been removed in the past 30 years.
2. White pine plantation: This +/-26 acre even aged stand is located both north and south of the NET trail and on the western side of the proposed harvest area. The overstory is dominated by white pine, with scattered occurrences of red maple, red oak, black oak, white oak, black birch, and eastern hemlock. Although some management has occurred over the past 60 years, it is evident that the overstory white pine is currently overstocked, leaving growth rates stagnant. Advanced regeneration is present and includes species such as white pine, eastern hemlock, American beech and black birch, among others.
3. Hemlock / hardwood: This stand is located along the eastern edge of the proposed timber sale area and stretches across approximately 23 acres. It is predominantly even aged, and consists of a mix of eastern hemlock and an assortment of hardwood species including, red oak, black cherry, red maple, and American beech, among others. There are scattered occurrences of large diameter white pine legacy trees which stand considerably taller than the majority of the stand. Regeneration is present and varies throughout the stand, including white pine, eastern hemlock, black birch, red maple, and American beech, among others.
4. White pine / hemlock: This stand is approximately 38 acres, with an overstory dominated by white pine and eastern hemlock. Other overstory species present include the occasional red

maple, black birch, black cherry, and red oak. Regeneration occurs throughout the stand, but is scarce in some locations due to an entirely closed canopy, species include eastern hemlock, American beech, and black birch, with scattered occurrences of red maple.

5. White pine / oak: This stand is estimated to be approximately 38 acres and is a result of management in what was previously a white pine plantation. The overstory of this two aged stand is dominated by white pine and red oak, with scattered occurrences of red maple, eastern hemlock, black, cherry, American beech, black birch, among others. The second age class appears to be the result of harvesting activities in the early 1980's, which allowed for the regeneration of black birch, American beech, white pine, red maple, along with other native tree species.

The project area lies at approximately 900' in elevation, with a maximum elevation of approximately 985'. Topography is generally mild, with some slight to moderate slopes located primarily in the eastern half of the project area (USGS topographical map). Soils present include Ridgebury fine sandy loam, Whiteman fine sandy loam, Scituate fine sandy loam, Gloucester sandy loam, Canton fine sandy loam, and Newfields fine sandy loam. The majority of the soils present on site (covering approximately 85% of proposed harvest area) are described by the NRCS soil survey to be "moderately" or "well" suited for timber harvest operability. All of the above listed soils are classified as well drained, moderately well drained, or somewhat excessively well drained, with the exception of Whiteman fine sandy loam which is described as being very poorly drained.

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

Aesthetic: All required best management practices (BMP's) set forth in the most recent edition of the Massachusetts Forestry: Best Management Practices Manual shall be implemented across the entire project area, including those regarding buffers, filter strips, and slash. The New England National Scenic Trail (NET), formally known as the Metacombet-Monadnock trail, runs through the proposed project area, along an old county road known as the Fifth Massachusetts Turnpike. This road is planned to be used during harvesting operations including skidding and hauling; the AMC will be contacted in regards to the extent of use, temporary rerouting, and visual buffers. Tree marking will be done to minimize lasting visual impacts, by marking residual trees which lie within 50' of a trail or road on only one side. All trails and roads impacted by the forest management operations will be restored to their prior conditions.

Recreation: Warwick State Forest is home to miles of trails and roads which are utilized year round by hikers, skiers, snowmobiles, hunters, birders and more. Consideration will be given to minimize conflict with recreational users. During winter months some interior roads will be cleared of snow to allow for truck traffic; local snowmobile clubs will be notified prior to the start of operations. This area will be temporarily closed during active harvest operations to protect the safety of the public. Signs will be posted along main roads and trails indicating closed areas.

Wetlands: Several wetland resources are located in the immediate vicinity of the project area, including Stevens Swamp, Bass Swamp, a perennial stream known as Mill Brook, as well as potential intermittent streams and forested wetlands. The project area lies within the Connecticut

River watershed, which encompasses approximately 450,000 acres in the central/western portion of the state. The current DEP wetlands layer shows an array of wetland resources in the vicinity of proposed management. All regulated perennial streams will have a 50' no cut buffer and all potential vernal pools will be treated as certified vernal pools. Operations which will impact wetland resources such as stream crossings and wetland crossings will be kept to a minimum and shall comply with current Massachusetts BMP's.

Cultural Resources: Stone walls are present along portions of White Road as well as along the old "Fifth Massachusetts Turnpike," which has been abandoned as a county road but is commonly used for recreation. A survey plan of the area also indicates portions of the property boundary are delineated by stone walls, as well as remnants of old barbed wire fence. Aside from the above mentioned stone walls and barbed wire, no cultural resources have been identified within the project area at this time. All historical and cultural resources identified during further site work will be located using GPS and indicated on harvest maps accordingly and will be protected from disturbance when and where possible.

Rare and Endangered Species: According to the most recent Natural Heritage and Endangered Species Program (NHESP) layer available at www.mass.gov/mgis, there are two separate primary habitat areas located around Stevens Swamp and Bass Swamp. Prior to the start of harvesting operations this project will be reviewed by NHESP, where recommendations will be made in regards to harvesting within these priority habitat areas.

Wildlife: As stated above, the current NHESP GIS layer indicates areas designated as priority habitat lay within the proposed project area. The stands proposed for management are currently classified as non-priority natural communities in the state of Massachusetts according to Massachusetts Division of Fish and Wildlife's State Wildlife Action Plan. Minimal sign of wildlife was observed during the early phases of reconnaissance including visual evidence of deer, squirrels, chipmunks, pileated woodpecker, and wild turkey. Despite deer presence observed and the potential for moose presence, the current state of regeneration is adequate and minimal browsing damage was observed at this time. In accordance to provision set forth in DCR's Management Guidelines document, the following wildlife habitat considerations will be implemented:

- Retention of at least 1 to 3 large diameter trees (where possible >18" dbh) and 4 live 10"-12" dbh trees per acre that have the potential to serve as cavity and den trees and future snags.
- Retention of all dead snags and stubs in harvest area as safe operating conditions allow.
- Retention of on average one of the oldest, largest diameter, well-formed dominant trees (where possible > 18" dbh) per acre in harvest area to serve as legacy trees.
- Maintain a minimum of 256 cords per acre of coarse woody material within the harvest area

Sale Layout and Harvesting Limitations: Skid roads and landings will be strategically placed in order to minimize soil compaction and erosion potential throughout the harvest areas. Where necessary erosion mitigation strategies such as water bars, hay bale installation and seeding of disturbed areas will be implemented. All stream crossings, buffers and filter strips will be consistent with the most current Massachusetts BMP manual and will be in compliance with MGL 132. Some in-kind services are to be expected as the project progresses, these may include road maintenance, gate installation, among other infrastructure improvements within Warwick State Forest.

All truck roads will be returned to their prior state if not improved upon during harvest operations, landings and skid roads will be graded and seeded where deemed appropriate by the DCR forester. All hiking trails impacted in harvesting operations will be returned to prior conditions, i.e. cleared of slash, graded, and properly marked.

Silviculture: Silvicultural treatments will coincide with the management guidelines set forth in DCR's Management Guidelines document and are anticipated to be as follows:

- **Even aged management:**
 - Clearcuts with reserves: This silvicultural method of regeneration will be implemented on both the red pine (stand 1) and the white pine (stand 2) stands. Clearcuts will not exceed 5 acres in size and will be placed with the intent of maximizing the potential for early successional habitat. Numerous reserve trees will be maintained to provide for a seed source for future regeneration, wildlife habitat, and to provide for vertical complexity. These clearcuts will allow for the larger scale removal of monocultures highly susceptible to rapid mortality, while providing more favorable conditions for regeneration, potentially increasing species diversity, and providing for early successional habitat. These areas subject to clearcuts will be left to regenerate naturally for a number of years, with future management objectives focusing on the creation of uneven aged conditions through the implementation of uneven aged management strategies. Total area subject to clearcuts has not been determined at this time, some factors which will be considered in the determination of applicability for clearcuts will include regeneration (both species and abundance), slope, access, and current state of overstory, among others.
 - Shelterwood with reserves: This method of regeneration will be implemented on stands 1 and 2 as well as clearcuts with reserves. In areas which are not subject to clearcuts this strategy will be implemented, with the intent of increasing growth rates in residual overstory trees, establishing new regeneration and releasing advanced regeneration. Poorly formed and less vigorous trees will be the focus for removal, allowing for an increase in available resources and growing space for residual trees. Future management for these areas will include an overstory removal with reserves, where the large majority of the overstory will be removed to allow for the release of advanced regeneration.
- **Uneven aged management:**
 - Expanding gap irregular shelterwood: This uneven aged management approach will be implemented across the remaining three stands; hemlock/hardwood (stand 3), white pine/hemlock (stand 4), and white pine/oak (stand 5). The intent is to increase structural complexity, forest productivity, and species diversity throughout each of these stands. Small openings (no larger than 1/2 acre) will be implemented throughout each stand, with the remaining areas being subject to a thinning. This thinning will focus on the removal of poorly formed less vigorous trees, which in turn will allow for an increase of sunlight and resource availability for advanced regeneration and will aid in the establishment of new regeneration. The small openings will be irregularly shaped and will attempt to mimic natural disturbance, with the goal being to increase structural complexity by sporadically creating a second age class throughout the stand. The "Forest Productivity and Complexity

Model," developed by Goodwin and Hill, labels this stand as moderately complex, which lends itself to an uneven aged management approach as stated in the DCR Management Guidelines. Future management will consists of the creation of additional gaps throughout these stands on a 15-25 year cycle, with the intent of creating a mosaic of age classes throughout these stands.

District Forester:

[Signature]

Date:

2/8/2017

Field Operations Team Leader

Or Park Supervisor:

[Signature]

Date:

Feb. 6, 2017

District Manager

~~Regional Director:~~

[Signature]

Date:

2/7/2017

Management Forestry

Program Supervisor:

[Signature]

Date:

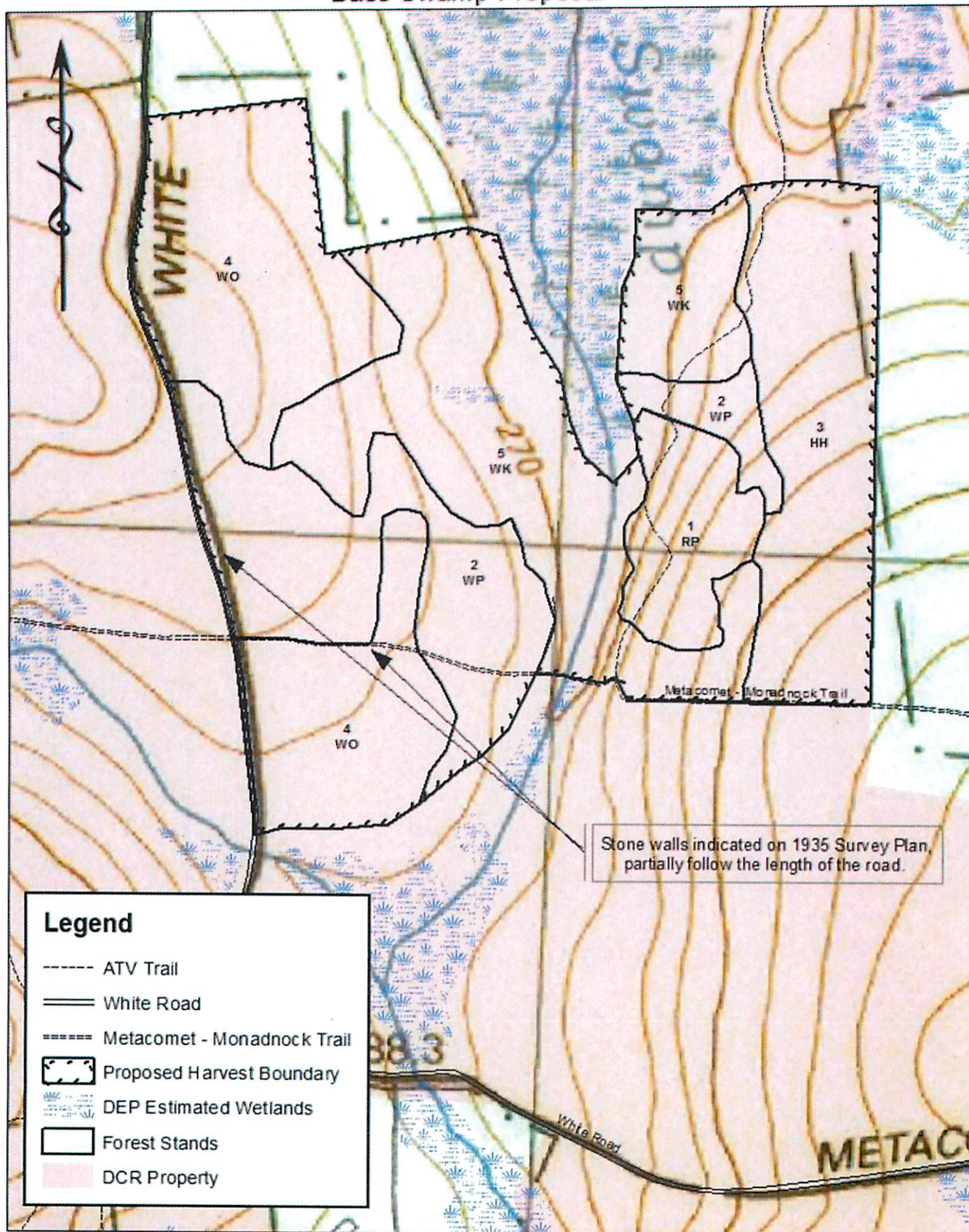
2/7/2017

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

1 inch = 500 feet

Warwick State Forest Bass Swamp Proposal

December 2016



1 inch = 6,000 feet

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December 2016

