

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

Date Posted: November 27, 2012
End of Comment Period: January 11, 2013

Region: West
Recreation District: Mountain
Forest Management District: Western CT Valley
State Forest: Leyden State Forest
Closest Road: North County Road
Town: Leyden

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Overview:

The Breezy Knoll Forest Management Project in Leyden State Forest is located in a very rural section of northern Franklin County (see Locus Map). The Leyden State Forest is an isolated “reforestation lot” plantation of mostly Norway spruce and eastern white pine that is surrounded by a working dairy farm. It was chosen as a forest management project at this time because:

- There has been observed ongoing mortality of the overstory plantation Norway spruce and white pine
- The plantation is at risk for significant loss due to its age and recent abiotic (ice) damage.
- It offers an excellent opportunity to demonstrate and fulfill objectives for DCR Woodlands.

The Breezy Knoll Forest Management Project will:

- Demonstrate uneven age silvicultural techniques to regenerate native species within a currently even age Norway spruce plantation.
- Demonstrate harvesting techniques and best management practices that protect forest productivity, soil and water resources.
- Fulfill management approaches for Woodlands as directed by the Forest Futures Visioning Process (2010) and subsequent Management Guidelines (2012).
- Follow general guidelines of the Western CT Valley Forest Resource Management Plan.

Stand Description:

This 61 acre State Forest is composed primarily of Norway spruce (*Picea abies*) and eastern white pine (*Pinus strobus*) plantations. There are also two small stands of Sugar maple (*Acer saccharum*) present which are the result of past silvicultural treatments. Associate species of black cherry (*Prunus serotina*), white ash (*Fraxinus americana*), black birch (*Betula lenta*) and American beech (*Fagus grandifolia*) and eastern hemlock (*Tsuga canadensis*) are found with the sugar maple and on the edges of the spruce stands. The plantations were established around 1920 under the Commonwealth of Massachusetts Reforestation Act. This would make the average stand age approximately 100 years old with an average diameter of 16". The stocking levels in the plantations are generally high with severe overstocking in many areas. Much of the white pine has multiple stems and large, coarse branches. There has been heavy mortality in the overstory due to overcrowding and as a result there is a substantial amount of dead stems on the ground. Crown development is somewhat stunted due to both overstocking and growing site limitations. The two small northern hardwood stands have benefited from previous thinnings and are well stocked with high quality crop trees.

Nearly an acre of forest in the north west section was burned in a fire that spread from an abutter on North County Road approximately ten to fifteen years ago. Most of the overstory white pine and spruce was either heavily damaged or killed. This forest was also damaged in the 2008 ice storm which resulted in broken tops in the white pine and toppled trees among white pine, spruce and an occasional deciduous tree. Damage was limited in scope and located along ridges with shallow soil towards the north east portion of the property.

The DCR Management Guidelines of 2012 stated that forest stands will be "classed . . . and considered for silvicultural treatments that generally fit their productivity, structural complexity (or potential thereof) and diversity". An analysis of site history (land use; agriculture/logging) and conditions (soil types, productivity; vegetation cover) suggests lower soil and forest complexity. Even-aged forest management methods of regeneration may be appropriate in this project but uneven age methods are being considered.

Topography: This proposed timber sale is located on a gently rolling hilltop with several sections of exposed bedrock ledges and a southerly aspect. There is a drainage that runs north to south and bisects the forest forming a well-defined riparian area.

Soils: These are classified as WrD, which is a Westminster extremely rocky loam on slopes ranging from 3 to 25%. These tend to be well-drained shallow loams which are formed in a layer of glacial material derived from gray mica schist with some impure limestone content. They are found in gently sloping to very steep foothills of the western highlands. Rock outcrops are less than 50 feet apart in some parts of the forest. Historical usage of this area has been for unimproved pasture as the soils are too thin and rocky for cultivation. Roads and trails used for timber harvesting activities will need to be located in such a manner to prevent erosion and stabilized during and after use.

Previous Silvicultural Treatments: In 1968 and 1969 there were treatments that included a small hardwood harvest in the southern portion of the forest; a thinning operation on the northern portion of the forest and non-commercial timber stand improvement work throughout the entire forest. The

timber stand improvement consisted of axe or hatchet girdling of poorly formed trees in order to release crop trees. The results of this work are still visible on some of the standing dead trees. Thinning operations in the northern part of the forest were used to provide increased growing space for residual Norway spruce. This operation consisted of removing one or more rows of trees and retaining a row of residual trees. These operations maintained an open appearance and allowed sufficient sunlight to reach the forest floor and initiate regeneration.

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

Aesthetic: The Leyden State Forest is not located within or near any designated scenic by-ways. There are no authorized roads or trails within this State Forest, and additionally there is no public road frontage, so utilizing tree marking techniques to minimize aesthetic impacts will not be needed. Trees will be felled so as to not impact wetland and stream buffers, stonewalls or a power line that bisects the property. All slash will be dealt with in a way that meets or exceeds the regulations of Chapter 48 of MGL, the Massachusetts Slash Law.

Recreation: Recreation opportunities are limited due to access limitations. The forest is surrounded by private property and access is by right-of-way over private land, which in this case is a working dairy farm. There are no authorized trails or developed recreational facilities. Recreational use tends to be by local hikers and hunters.

Wetlands: There is one wetland complex and one stream within the sale area, and each will have a fifty foot no cut buffer along it. These will be painted so as to be very visible to the operator. One crossing will be needed for each, which will consist of a portable bridge. There is also one stream that will need to be crossed on private property in order to gain access to the State Forest. This will also have a portable bridge in place. There will be a requirement that this sale only be cut during frozen ground conditions, which will further protect the water resources.

Cultural Resources: There are no known historical or archeological sites with the Leyden SF. There are also no known cellar holes or wells. There is a stone wall network located with the sale area, and where possible, pre-existing bar-ways will be used to cross through them. If a portion of a stonewall needs to be dismantled, it will be rebuilt at the conclusion of the sale to presale conditions. Trees will also be felled away from stonewalls in order to prevent damage. The timber sale will be reviewed by DCR's archeological/cultural resource expert.

Rare and Endangered Species: According to the Natural Heritage Endangered Species Program atlas, there are no known endangered species (animals or plants) in the Leyden SF or surrounding area.

Wildlife: This project area does not fall within any NHESP delineation. However, the streams and wet areas mentioned above will be protected for both water quality and wildlife corridor reasons. The gradual removal of the monoculture of Norway spruce will provide a mixed hardwood and softwood stand adding to both the diversity of trees and wildlife. No deer or moose browse has been detected at this point in time on the regeneration already present in the state forest. Within the project area a minimum of 1-2 trees per acre at least 18 inches in diameter will be left that show

characteristics favorable to wildlife such as large holes and dead branches. Large snags that do not pose a danger to the operator will be retained.

Sale Layout and Harvesting Limitations:

Project Access: Primary access will cross an adjacent landowner to North County Road.

Landings: A single landing will be located on the property of Warren Facey adjacent to North County Road and west of the timber sale. This landing will be in an area currently being used as cow pasture.

Forwarder Roads and Trails: A main forwarder road will be used to access the timber sale from the landing and a temporary bridge will be used to cross a small stream between the landing and Leyden State Forest.

Wetland and Stream Crossings: There is one stream and one wetland crossing located on the sale and these will utilize temporary bridges in order to minimize environmental impacts.

Road and Trail Buffers: There are no recreational trails to buffer and the forest is not adjacent to any town roads. The landing is in an open pasture.

Equipment Limitations: Roads will be planned in advance of the sale in order to facilitate access of harvesting equipment. Timber harvesting equipment will be restricted to a mechanized cut-to-length system with the wood products being transported to the landing by forwarder. No ground skidding will be permitted. Hand –falling of larger trees will be permitted provided that proper directional-falling techniques are used to protect residual trees and any cultural resources.

Excluded Areas: Timber harvesting will be excluded within the wetland and stream filter strips. Riparian zones will be left intact unless there is a need to remove a hazard tree that would affect the safety of harvesting operations and remain in compliance with Chapter 132.

Erosion and Sedimentation and Site Restoration: All forwarder roads and trails and the landing will be stabilized with water bars, and seeded and mulched according to the recommendations found in the “Massachusetts Forestry Best Management Practices Manual”.

In Kind Services: Successful regeneration of species such as white ash and black cherry will depend on controlling very competitive species such as beech and striped maple. In-kind services for this sale will consist of application of herbicide by a Massachusetts licensed applicator in areas that have a large number of beech sprouts and seedlings. These areas will be determined by the forester prior to any harvesting activity.

Silviculture:

Primary and Secondary Goals and Objectives: The primary silvicultural goal is to begin the process of converting the spruce and pine plantations to a northern hardwood stand with a softwood

component. A secondary goal is to promote tree species that are deep-rooted in order to provide a forest that is resistant to wind damage. A third goal is to modify the structural diversity of the forest.

Methods Used To Accomplish These Goals: The hardwood stands will be thinned as needed to remove poor quality stems and release crop trees. Even though site and stand complexity is relatively low and even age methods could be used, the plantations will be regenerated using group selection and improvement cuttings. The focal point for these groups will be existing patches of existing northern hardwood regeneration and high quality northern hardwood crop trees. Patches of advanced spruce regeneration will also be released when they occur on areas with good site quality. Areas of the stand along the westerly and northern boundaries will be treated in a manner to reduce windthrow. This may consist of smaller openings or buffers if needed. A series of forwarder roads will be marked in advance in order to gain access to the groups and prevent any damage to either the crop trees or desirable regeneration. A mechanized cut-to-length harvester will be used to reach into these groups and areas of regeneration to remove trees designated for harvest. Also, portions of these plantations adjacent to the roads will be thinned from below in order to remove small diameter overtopped trees. A follow up herbicide treatment may be used to control beech from overtaking the northern hardwood and spruce regeneration.

Short and Long Term Desired Conditions: The immediate desired condition is to release existing patches of regeneration and establish a series of forwarder roads to gain access to the plantations. Long term desired conditions include creation of small group openings throughout the plantations filled with a mix of northern hardwood and spruce regeneration and eventual conversion to an all-aged northern hardwood stand with a component of spruce and white pine. A long term desired condition would also be the creation of both vertical structural diversity and diversity among age classes represented in the stand. This would be present in the form of retained large trees, living and dead snags and a wide variety of age classes represented though out the forest.

Future Silvicultural Treatments: The process of converting even-aged plantations to an all-aged forest will both lengthy and continuously ongoing. It is highly probable that a series of harvests carried out at 10 to 15 year intervals will be needed to generate the required age classes needed to classify as all-aged. Once this structure becomes established then the entries at the stand can spread out to longer intervals. This will be based on periodical monitoring of the forest and adjusting the cutting cycle to accommodate rotation lengths and biological or environmental issues.

District Forester: [Signature]

Date: 11/1/12

Field Operations Team Leader
Or Park Supervisor: [Signature]

Date: 11-1-12

Regional Director: Robert S. Mellace

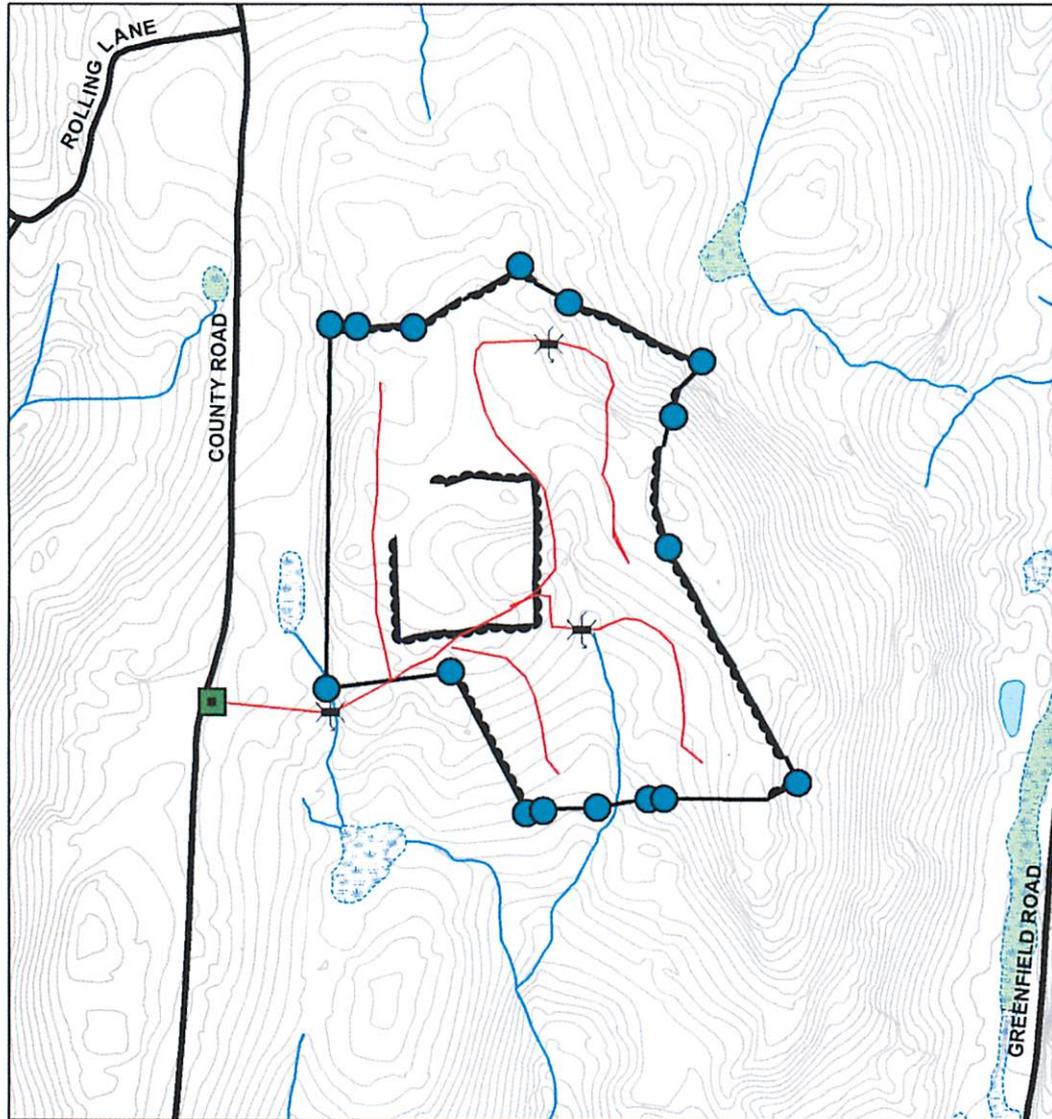
Date: 11/1/12

Management Forestry
Program Supervisor: Nicholas Anzani

Date: 11/1/12

Attached: Topographic map and Locus Map showing location of Forest Products Sale Area

Leyden State Forest Breezy Knoll Timber Sale



0 250 500 1,000 1,500 2,000 Feet



Prepared by NMA 7/2012

Legend

- Boundary point
- ✕ Stream crossing
- Landing_
- Skid trail
- Stone wall
- Boundary line

Breezy Knoll Timber Sale, Leyden State Forest - Locus Map

