Massachusetts Department of Conservation and Recreation
Bureau of Forest Fire Control and Forestry
Forest Management Proposal
Name: Hadley-Aiken Lot

Date Posted: **September 4, 2013**
End of Comment Period: **October 18, 2013**

Region:	Central
Recreation District:	**Central Highlands**
Forest Management District:	**Mid State**
State Forest:	**Templeton State Forest – Hadley Aiken Lot**
Closest Road:	**Route 202**
Town	**Templeton, Massachusetts**

Contact Information: **Joelle Vautour**
355 West Boylston Street
Clinton, MA 01510
(978) 368-0126
Joelle.vautour@state.ma.us

Overview:
The Hadley Aiken lot is a 304 acre isolated parcel of the Templeton State Forest complex. It is located off of Route 202 in Templeton, Massachusetts. The parcel was acquired in several pieces in the early 1900s. The U.S. Army Corps of Engineers (ACOE) acquired by takings, 2.57 acres along the eastern boundary in the mid 1900s for flood control operations. This state forest is located 3 miles south of the Otter River State Forest complex which encompasses about 1,200 acres, plus an additional 4,000 acres which is leased by the ACOE. In 1935, Otter River housed a Civilian Conservation Corps (CCC) camp which planted thousands of trees throughout the area, including at the Hadley Aiken Lot.

There are about 185.3 acres at the Hadley Aiken Lot which consist of non-native plantation red pine. It is estimated that these trees are approaching 80 years in age. The health and vigor of this plantation is declining steadily. In addition, the state forest is being used heavily by off road vehicles (ORVs) and serious erosion and sedimentation is occurring as a result.

The project at the Hadley Aiken Lot is being proposed at this time because:

1.) The plantation offers little vegetative diversity and is declining in health and vigor.
2.) Historical access into the state forest via state-owned land is becoming increasingly eroded and inaccessible.
3.) Illegal ORV use is causing erosion and other negative ecological impacts to the state forest.

The goals and objectives of this project include:

1.) Demonstrate thinning to prepare an even aged plantation of red pine (*Pinus resinosa*), white pine (*Pinus strobus*) and scots pine (*Pinus sylvestris*) for the regeneration of a mixture of native tree species, including white pine and other deciduous hardwoods.
2.) Release advanced regeneration of native tree species present in portions of the plantation which have undergone past forest management.
3.) Increase the vegetative diversity and structural complexity within the project area to include an assortment of native plant species including native shrubs and herbaceous plants.
4.) Demonstrate harvesting techniques and best management practices that protect forest productivity, soil and water resources.
5.) Address illegal ORV use by using project revenues and contractual requirements to repair damage to roads and trails and to prevent future damage from occurring, including gate installation.
6.) Provide a small supply of timber to the sawmill at Otter River State Forest for in-kind use to repair the park buildings and other infrastructure at the Otter River State Forest and Lake Dennison campgrounds and day use areas.

Stand Description:

The Hadley Aiken Lot has a complex glacial history and therefore varied topographic characteristics. The property is underlain by an outwash plain of mostly droughty soils that are moderately well drained to excessively well drained. Soil types include the Allagash fine sandy loam, Colton gravelly loamy sand, Croghan loamy fine sand, Becket-Monadnock association and the Tunbridge-Lyman-Berkshire association. The wetlands are underlain by Searsport loamy sand and the Bucksport and Wonsqueak mucks. The project area consists of 185.3 acres of mostly red pine plantation. There are three forest stand types located within the greater plantation. Stand age is estimated to be around 80 years old.

The DCR Management Guidelines state 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 stands 1 – 3 of the Hadley-Aiken Lot site history (land use; agriculture/logging) and conditions (soil types, productivity; vegetation cover) suggests that these even-aged, lower complexity stands on poorer soils have a very low productivity and complexity which lend themselves to even-aged management.

Stand 1 is a 98.2 acre red pine plantation in two distinct areas. The overstory consists mostly of mature red pine trees with inclusions of native white pine and other deciduous hardwoods. Advanced regeneration of mixed deciduous hardwoods and white pine is present and ranges from adequate to very dense as a result of past silvicultural treatments (described below) and overstory mortality. Stand condition and tree vigor is declining at this time. The mature overstory trees have reached their maximum productive economic age and have stagnated in growth. Since these trees are no longer growing vigorously, they are more susceptible to infestation and mortality from insects and disease. Red pine scale and diplodia tip blight have caused widespread mortality in nearby red pine stands that are in similar condition to the plantation at the Hadley-Aiken Lot. Mortality is present in sections, including patches of dead standing red pine. The stocking level, or tree density, is moderate to high. Approximately 20 acres in the southwestern portion of this stand underwent a timber harvest in 1984. The remainder of the stand was also treated in 1988 similarly.

These treatments were a part of the shelterwood regeneration method aimed at harvesting portions of the overstory to create optimal conditions for the establishment of regeneration in the understory.

Stand 2 is a 66.8 acre red pine plantation. The overstory consists mostly of mature red pine trees with inclusions of scots pine, white pine and minimal deciduous hardwoods. This stand underwent treatment in 1988 along with stand 1, although it seems that treatment was not as heavy in this stand. The understory contains little to no regeneration. Overstory tree size is generally smaller than in stand 1. Similarly to stand 1, stand condition and vigor is declining rapidly, with patches of dead standing trees as well as sections of blow down from past storms. The stocking level is very high currently. The lack of management in this stand has lead to stagnation in growth and also a higher susceptibility of infestation from insects and disease. Mortality concerns in this stand from red pine scale and diplodia blight is greatest due to its high stocking level.

Stand 3 is a 20.3 acre red pine – white pine plantation. The overstory consists mostly of mature red pine trees with a dominant presence of overstory white pine. This stand underwent treatment in 1988 along with stands 1 and 2. Advanced regeneration is dense in most places with a mixture of hardwoods and white pine. The stocking level is moderate. As with stands 1 and 2, growth has stagnated due to declining tree vigor. Mortality is evident with dead standing trees present.

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

Aesthetic:

The Hadley-Aiken Lot is not located on any paved roadways. All aesthetic considerations will be made to legal recreational users of the state forest. Slash over 1" in diameter will be lopped to under 2 feet in height above the ground. Larger trees along the edges of trails will be retained. As mentioned in the DCR Management Guidelines for roads and trails, hazard trees will be harvested along the truck roads and skid trails. Harvester operation will be limited to times when ground conditions are stable. Directional felling to protect residual trees, wetlands, woods roads and trails will also be implemented.

Recreation:

Hiking, mountain biking, skiing, snowshoeing and hunting are potential uses of this state forest. Illegal ORV use has seriously degraded woods roads and trails located in the state forest. Woods roads and trails with serious erosion will be re-graded or closed for further use if necessary. The project area will be closed to the public during active harvesting hours. A snowmobile trail that is permitted for use and maintained by the Coldbrook Snowmobile Club is located at the Hadley-Aiken Lot and within the project area. This trail will be utilized as a truck road (see Project Map). In addition, per conversation with DCR park operations staff, there are no other conditions which will prove to negatively impact recreational user groups from this project.

Wetlands:

There are three wetlands on the edge of the project area, one mixed species wooded swamp, a coniferous wooded swamp and a hardwood wooded swamp. There is a coniferous wooded swamp, one perennial stream and one intermittent stream within the project area. The perennial stream will have a crossing, which is to be temporarily bridged. There are no wetlands crossings. All wetlands and streams will have a 50-foot no cut buffer. Trees adjacent to these buffers will be double striped.

This will aid in directional felling away from these resource areas. No equipment will operate in wetlands or wetland buffers except on pre-existing woods roads and trails.

Cultural Resources:
The Hadley-Aiken Lot is a reforestation lot, a lot that was reforested by plantings on abandoned agricultural fields. Significant cultural resources were not identified in the project area during the field work in preparation for this proposal. Many of the roads located in this state forest are old farm roads. Two western boundary lines are composed of stone walls (see Project Map). There are no cellar holes or wells within the project area noted at this time.

Rare and Endangered Species
A review of the Natural Heritage and Endangered Species Program (NHESP) atlas shows that a priority habitat area for wood turtle encompasses a portion along the eastern boundary of the state forest over Trout Brook and its associated wetlands. Further inquiry to the NHESP will be required for further planning in this portion of the project area.

Wildlife
There are signs of deer, moose and turkey using this area. Moose and deer browse are not problematic for the regeneration at this time. Pileated woodpecker sign was observed throughout the project area. Large and small mammals and numerous bird species are assumed to utilize the project area. As outlined in the DCR Management Guidelines, selected large trees will be reserved as wildlife trees. Snags, dead trees and coarse woody debris (CWD) will be retained for habitat also. Browse for wildlife will be enhanced during the harvest and for many years after the harvest as regeneration becomes established. Mast producing trees such as black cherry and oak will be retained whenever possible. Beaver activity has impacted the eastern portion of the property surrounding the large wetland. As the water level rises due to flooding, trees upslope have faced mortality and will continue to do so if beavers remain active in the area.

According to the Massachusetts Division of Fisheries and Wildlife, the gradual regeneration of these plantations through the series of partial harvests described below is unlikely to have any substantial impacts on wildlife in the short run. As harvesting proceeds over time, the forest will become increasingly dominated by younger trees, but will remain structurally diverse through retention of wildlife trees and woody material. Toward the end of the series of regeneration harvests planned for this site, adequate patches of young forest habitat should provide excellent temporary habitat for declining shrubland and young forest birds.

Sale Layout and Harvesting Limitations:

This project will generally treat the 185.3 acre plantation in one single harvest using multiple timber sale units to control harvest operations. The timber sale contract implemented for this project area may extend longer than the standard two years.

There will be two landing options available to the harvester. One will be located centrally within the project area and is pre-existing and the other landing will be created in the southwestern portion of the project area. The landings will be level with adjacent woods roads and will not be limited in

use. Providing multiple options to the harvester will allow for better access and resource protection at the state forest.

Three truck road options will be sought for utilization to access the landings. Two will connect Route 202 to the Hadley-Aiken Lot. The first is located on the northern side of the property and the other road is located on the southwestern end of the property and connects Route 202 to the Hadley-Aiken Lot through Templeton Developmental Center (TDC) land (see Project Map). The TDC is owned in fee by the Commonwealth's Department of Developmental Services and its forestlands are managed by the Department of Conservation and Recreation. This is the historical access to the Hadley-Aiken Lot. Road repairs will need to be done on portions of this road in order for tractor trailer trucks to use it. Permission will be sought from private landowners for use of woods roads and the truck road in the north. The third road is subject to a right-of-way and connects the state forest to Route 2A. This access option will involve another stream crossing.

Most of the pre-existing trails will be utilized as primary skid roads during the harvest. Secondary skid trails will be created when necessary to access parts of the project area that do not already have access. It is likely that a herring-bone like pattern will be used in these areas. Trees will be cut up to the edges of roads and trails to lessen hazardous tree presence where necessary.

Wetland resource areas will be delineated with flagging and subsequently with double striping in paint. All wetlands will be buffered with a 50-foot no cut area. All wetland resource areas as well as no-cut areas will be buffered by double striping. This will indicate that machinery should not operate within the buffer and trees should be felled away from the buffered area. Conservation Management Practices will be implemented as required by the NHESP for the priority habitat area for wood turtle along the eastern portion of the property. There are no wetlands crossings located within the project area. There will be one stream crossing which will be bridged with a temporary bridge.

A cut to length logging system will be the primary logging method utilized but whole tree harvesting may need to be used on a minor portion of the sale due to topographical conditions. There are isolated portions within the project area which will be too steep for operation, particularly along the eastern edge of the project area. Skid trails will be properly stabilized to prevent erosion and sedimentation with the use of water bars where necessary. Woods roads and skid trails that need restoration from destructive illegal ORV use will be addressed. Roads and trails which are within the project area will be regraded and stabilized. Access by ORVs will be restricted by additional gate installation and access blockages.

To prevent conflict with snowmobile users, this project will take place during the non-winter months only. The well drained soil conditions of this site will prove to be very stable compared with other more moderate to poorly drained soil types. Winter harvesting would prove problematic for several reasons including access to landings with tractor trailer trucks, skidding distance for the harvester and truck road and skid trail improvement work, among others. The scale of this project will address several important resource concerns at once at the Hadley-Aiken Lot. This harvest is meant to address the declining state of the mature trees at this state forest while decreasing the access of illegal ORV uses and creating a better access to the state forest for passive recreational users and emergency personnel including forest fire control.

Silviculture:

The overall goal of this harvest is to regenerate a mature non-native plantation of red pine that is losing vigor and in some cases succumbing to a combination of insect, disease and competition induced mortality to a forest that is dominated by a diversity of species which are vigorous in growth.

The primary goal of this project is to thin the overstory to allow sunlight to reach the forest floor to regenerate stands that contain no regeneration, to partially release advanced regeneration and to thin the declining overstory of red pine. Secondary goals and objectives include to, over time, convert the red pine plantations to native stands comprised of native tree species that would naturally have occurred on this site. White pine, pitch pine and other hardwoods, particularly Northern red oak (*Quercus rubra)*, that are well adapted to droughty conditions are preferred. Creating and diversifying the structural and vegetative diversity of these stands is also a secondary goal of this project.

The regeneration process in these stands began in 1984 by means of the shelterwood system. The shelterwood system gradually reduces the overstory stand density in a series of thinnings in order to fully regenerate the stand over time. Advanced regeneration present in stands 1 and 3 is adequate, growing vigorously and ready to be partially released at this time. An estimated 30% of the overstory will be harvested, or enough of the overstory to reduce the stocking level from high to medium-low. This will allow adequate sunlight and moisture to reach advanced regeneration.

Mostly red pine trees will be harvested. Stand 2 will see a heavier thinning than stands 1 and 3. It will be important to maintain an intermediate level of shade on the forest floor. The overstory of this stand will be reduced to a medium-low stocking density, in which an estimated 50% of the stocking is to be removed. This will also consist mostly of red pine trees. The gradual reduction of the overstory that began in 1984 is essential in the establishment of regeneration. White pine exhibits intermediate shade intolerance whereas red pine is shade intolerant. Shade control to the understory will prevent desiccation of seedlings within these already droughty soils. Stands 1, 2 and 3 will require another treatment in about 10-20 years. This treatment will be consistent with the management approach that has already begun for these stands. Another portion of the overstory will be removed to continue the regenerative process of the red pine plantations to a more native forest stand type.

Methods used to accomplish these goals include the use of a cut to length harvesting system that will ensure that adequate CWD requirements can be met to replenish nutrients within the forest ecosystem. This harvesting system minimizes soil disturbance and debris at the landing because trees are cut to length and limbed in the woods. Tree tops, branches, needles and leaves, including some larger tree boles, will be dispersed within the harvest area.

District Forester: Joelle Vautour _____ **Date:** 8-27-13

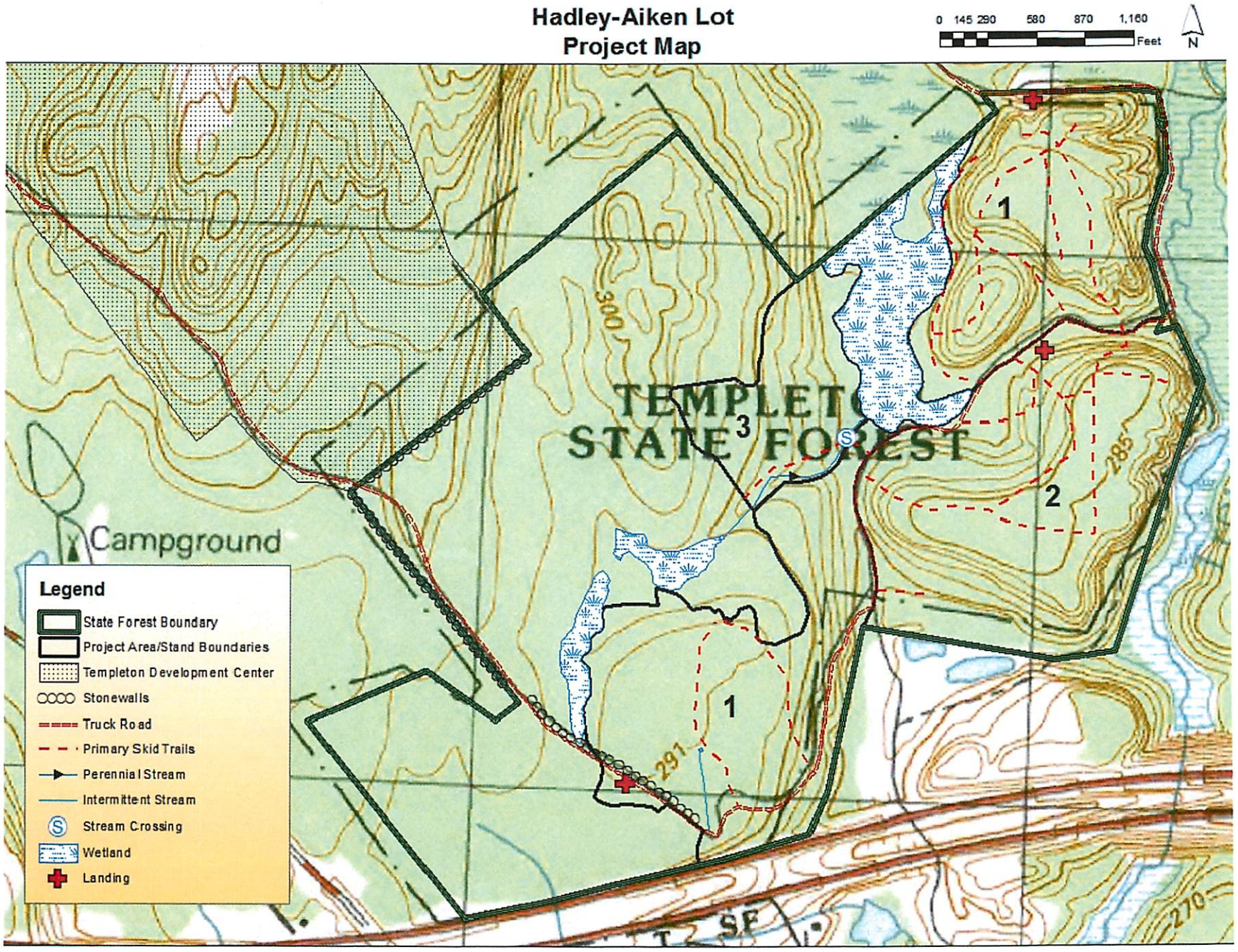
Field Operations Team Leader
Or Park Supervisor: _____ **Date:** 8-26-13

Regional Director: _____ **Date:** 8/26/13

Management Forestry Program Supervisor: _____ **Date:** 8/30/2013

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

Hadley-Aiken Lot
Project Map



Hadley-Aiken Lot
Locus Map