

**Massachusetts Department of Conservation and Recreation
Bureau of Forest Fire Control and Forestry
Forest Management Proposal
Name: J. Harry Rich**

Date Posted: February 9, 2018
End of Comment Period: March 26, 2018

Region: Central
Recreation District: Central Highlands
Forest Management District: Northeast
State Forest: J. Harry Rich State Forest
Closest Road: Nod Road and Common Street
Town: Groton, MA

Contact Information: Mike Waterman
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Overview:

J. Harry Rich State Forest was selected for a forest management project in order to build upon previous forestry projects conducted in years past by University of Massachusetts Professor J. Harry Rich, Rich Tree Farms and Forestry Corporation, and the Commonwealth of Massachusetts Bureau of Forestry. Through intensive forest management Professor Rich et al. established a large forest composed mainly of Eastern White Pine (*Pinus strobus*). These forest stands have been actively managed as a demonstration forest for over 90 years using various silvicultural techniques.

J Harry Rich State Forest was selected as a proposed forestry project at this time because:

- Forest stands across the entire State Forest are generally even-aged with few areas of vigorous regeneration present. Forest stands will benefit by having a new age classes of native tree species established to increase forest structure and resilience.
- Demonstrate Best Management Practices (BMP's) that protect water and soil resources, and rare plant and animal communities.
- Invasive plants are found throughout the forest threatening the diversity of the current and future forest. If left unchecked these invasive plants will overtake native plant communities found within the forest.
- 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.
 - Sequester carbon through the production of solid wood products, retention of woody material of all sizes, retention of large legacy trees in reserve areas, and the regeneration of native forest species. Creation of diverse habitats that benefit native wildlife and build forest resilience to stressors.

The major objectives for this project are:

- Remove invasive plants from stands in project areas using in kind services to benefit native plant and wildlife communities.
- Remove hazard trees along main forest roads within project areas to protect public safety.
- Use multiple age (expanding gap irregular shelterwood) and even age (uniform shelterwood) forest management techniques to increase species and age diversity within project areas.
- Increase forest structure and food sources for the benefit of native wildlife.
- Begin the process of converting the red pine (*Pinus resinosa*) plantation susceptible to the fungal pathogen diplodia blight (*Diplodia pinea*), and red pine scale (*Matsucoccus resinosa*), to white pine and native hardwood species.

Project Area Description:

Between the years 1923 and 1952 Professor Rich purchased approximately 507 acres of land, (approximately 140 acres of the land area is beneath the Nashua River.). In 1956 Professor Rich certified the property as a Tree Farm under the American Tree Farm System. After Professor Rich's passing in 1967 the property was transferred to the Rich Tree Farms and Forestry Corporation until 1981 when the Commonwealth acquired the property. The Commonwealth has retained the Tree Farm status since acquisition. J. Harry Rich State Forest is the only State Forest with that certification in the Commonwealth.


The proposed ±45 acre project area is comprised of 3 stands that are even aged with trees ranging from small sawlog (11" to 14" diameter at breast height (DBH)), medium (15" to 19" DBH), with scattered >20" DBH specimens found throughout the stands (topographical detail map 1). The white pine overstory trees in Stands 1 and 2 are generally 80- 90 years old. The red pine trees found in Stand 3 are approximately 60-70 years old. These forest stands are a result of the forest that grew up either through direct planting under Professor Rich or naturally seeded trees that have been cultivated over the years.

The tree species present in the project area include: white pine and red pine, along with hardwood trees consisting of red oak (*Quercus rubra*), black oak (*Quercus velutina*), white oak (*Quercus alba*), black birch (*Betula lenta*), white birch (*Betula papyrifera*), black cherry (*Prunus serotina*), and red maple (*Acer rubrum*). Occasionally observed trees found in and around the project areas consist of species such as pitch pine (*Pinus rigida*), black tupelo (*Nyssa sylvatica*), swamp white oak (*Quercus bicolor*), white ash (*Fraxinus americana*), yellow birch (*Betula alleghaniensis*), American elm (*Ulmus americana*), hornbeam (*Carpinus caroliniana*), hop hornbeam (*Ostrya virginiana*), and eastern hemlock (*Tsuga canadensis*). Some American chestnut (*Castanea dentata*) sprouts and saplings were noted in project area

The understory of all stands consist of: witch-hazel (*Hamamelis virginiana*), low bush blueberry (*Vaccinium angustifolium*), sheep laurel (*Kalmia angustifolia*), high bush blueberry (*Vaccinium corymbosum*), partridge berry (*Mitchella repens*), Canada mayflower (*Maianthemum canadense*), dewberry (*Rubus flagellaris*), along with various ferns, shrubs, and grasses. Some green briar (*Smilax spp.*) plants were noted in and around the project area.

Populations of invasive species were noted in and around the project area consisting of glossy buckthorn (*Frangula alnus*), honeysuckle (*Lonicera sp.*), oriental bittersweet (*Celastrus orbiculatus*), Japanese barberry (*Berberis thunbergii*). Populations vary in size and location depending on forest canopy cover and in relation to wetland complexes.

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 geographic information system (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 imply medium productivity of these forest



stands. Forests with this type of productivity levels lend themselves to both even aged and uneven aged silvicultural systems.

Topography:

J Harry Rich State Forest is located along an outwash plain along the Nashua River. The topography can best be described as gently sloping from east to west with elevations from approximately 250 feet along the Nashua River Rail Trail to approximately 200 feet at the Nashua River.

Soils:

The soils associated with the project area are; Scarboro mucky fine sandy loam, Pootatuck fine sandy loam, Suncook loamy sand, Windsor loamy sand, and Deerfield loamy sand. These soil types are typical of those found on an outwash plain with a fine sandy texture with layers of gravel present.

Previous Silvicultural Treatments:

Records that date back to 1954 note that this area had silvicultural practices implemented including pruning of crop trees, and weeding of undesirable trees. Commercial thinning in Stands 1 and 2 was conducted in 1974. Stand 1 and part of Stand 2 were again thinned in 1997-98 removing low quality trees and sawlogs. Stand 3 has received no silvicultural treatments since planting.

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 feet of trails and roads 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. All slash will be treated to comply with current Massachusetts Slash Law regulations. Landing areas will be seeded at the cessation of operations to rapidly re-vegetate disturbed areas.

Nod Road, Sand Hill Road, and Common Street are designated scenic roads by the Town of Groton and no harvesting will occur within 50 feet of those roads.

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. Trails in the forest follow old cart roads and paths along the shoreline of the Nashua River. The Nashua River Rail Trail abuts J. Harry Rich State Forest and no harvesting will occur within 100 feet of the Rail Trail. 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 are 3 wetlands and 3 small intermittent streams (see detail map). There are no potential or certified vernal pools in the project area according the Natural Heritage and Endangered Species Program (NHESP) GIS data layer.

The project area is located within the Petapawag 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 and intermittent streams will provide additional protection to these valuable areas. All stream crossings within the project area are existing culverts, and all wetland crossings are located along existing forest roads.

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 two old homesteads and the remains of a charcoal pit. These can be seen near and along the main forest road (see detail map). No harvesting activities will occur within 50 feet of the old cellar hole or charcoal pit within stands 1 and 3 respectively, other than the use of the existing forest road. The other cellar hole mentioned above is not within the project area, but is near the main forest road leading to stands 2 and 3. All cultural 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 that portions of the project areas are in/near Priority Habitats for rare and endangered species, therefore this project will be subject to review by the Natural Heritage Program prior to project implementation. Specific recommendations for protection of rare species will be included in a written silvicultural prescription for the project. These specific recommendations will also be required as part of the Forest Cutting Plan.

Wildlife:

There is evidence of deer feeding and traveling within the project area. Other animal species that have been noted in the area are; coyote, otter, opossum, turkey, chipmunks, squirrel, 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 to provide food to native species. Fine and course woody material will be retained in forest stands to provide habitat and cover to wildlife.

The proposed project will 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, hickory, and cherry) will benefit numerous bird and mammal species that utilize these sources of food as part of their diet as canopies of these species expand and produce more mast. The proposed project will have positive benefits to wildlife, however, the planned silviculture treatments will provide little habitat to species that require substantial patches of early successional habitat.

Sale Layout and Harvesting Limitations:

Project Access:

Access to the project area will be off of Nod Road. Existing woods roads will be used to haul forest products out of the project area.

Skid Roads and Trails:

Within project stands existing skid trails will be reused wherever possible taking care to avoid sensitive areas and minimize aesthetic impacts. Equipment skid trails will be laid out prior to harvesting operations with flagging and paint.

Landings:

Two potential landing areas have been identified (see detail map). Both have been used during previous projects. At project completion landing areas will be seeded and straw mulched to rapidly establish vegetation to mitigate aesthetic impacts.

Equipment Limitations:

A cut-to-length harvesting system will be utilized to carry out this project. There will be no whole tree harvesting within the project areas. Hand felling will be allowed if necessary providing sawyers are trained in proper directional felling techniques to protect residual stand and cultural features from collateral damage.

Excluded Areas:

No harvesting will be allowed in filter strips or wetlands, with the exception of trees that may need to be removed at approved stream and wetland crossings for truck and equipment access along existing forest roads.

Erosion and Sedimentation:

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.

In Kind Services:

It is anticipated that in kind services will be used to treat invasive species found within the project stands. This may take the form of mechanical and chemical treatments (applied by licensed, supervised applicators, according to label directions, and with proper permitting and insurance requirements fulfilled).

Silviculture:

Primary and Secondary Goals for all Stands:

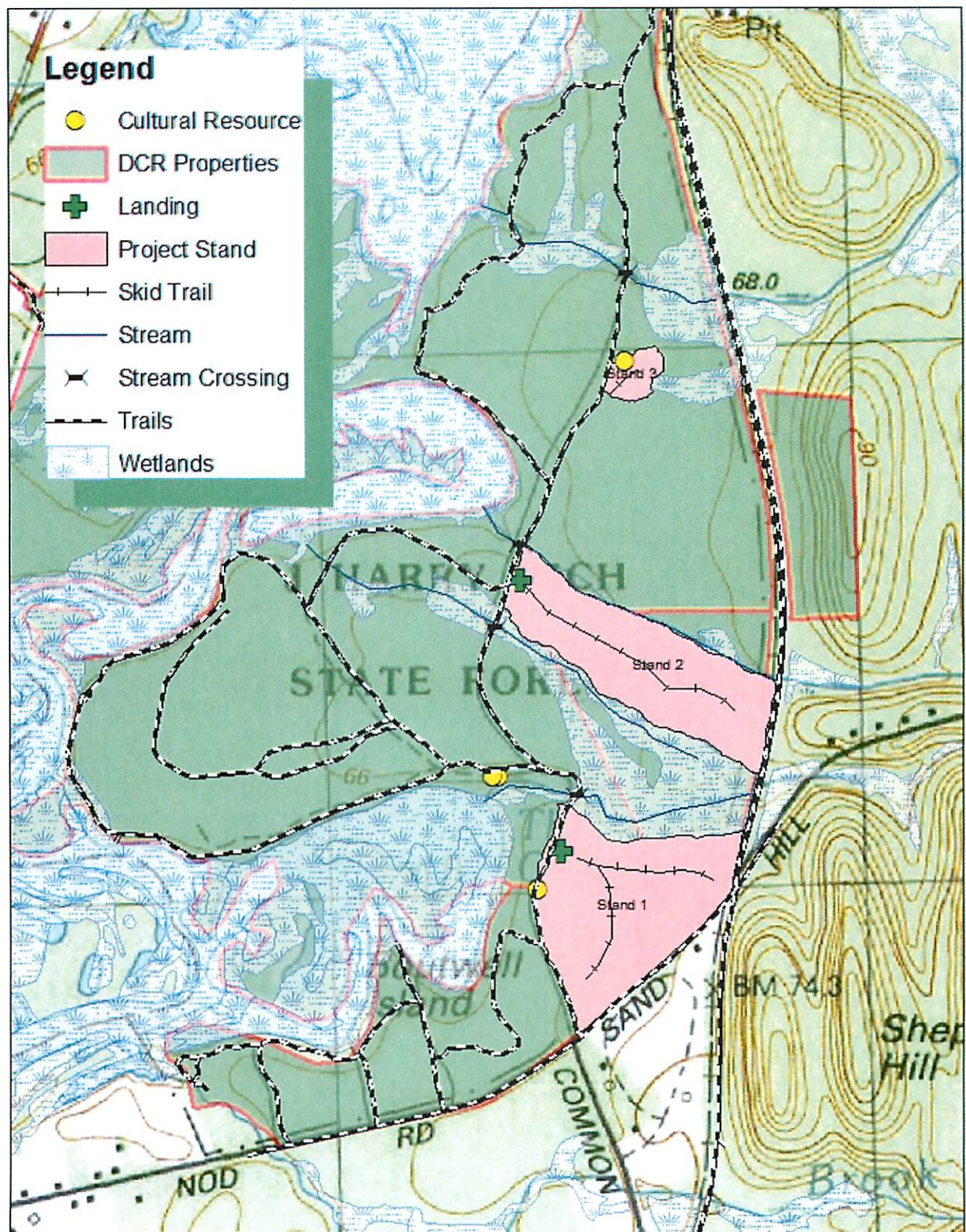
The primary goals for stands within the project areas are to reduce populations of invasive species and establish vigorous regeneration of native white pine and hardwood species. Secondary goals are to provide habitat and food for native wildlife species. A third goal is to remove hazard trees along trail corridors in project area to protect public safety and reduce the number of red pine trees that are subject to biotic complications.

Silvicultural Methods:

Stands 1 and 2 (white pine) will be treated using an expanding gap irregular shelterwood silvicultural system. This type of system is one that has a long regeneration period with a continuous cover of trees. Small, randomly spaced, irregularly shaped gaps (not exceeding 1/3 acre in size) 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 and low quality trees promoting growth of the residual forest.

Stand 3 (red pine) will be treated using a uniform shelterwood system. This type of silvicultural treatment establishes a new forest of trees under the cover (shelter) of the existing overstory which is removed over time allowing established regeneration to grow freely and vigorously. This will be the establishment cut of a 2 cut shelterwood system with the purpose of allowing sufficient sunlight to penetrate the forest canopy to encourage seedling establishment. Monitoring regeneration response to this establishment cut will determine the appropriate time frame to conduct the second (overstory removal) cut in this stand (anticipated in 7 to 10 years).

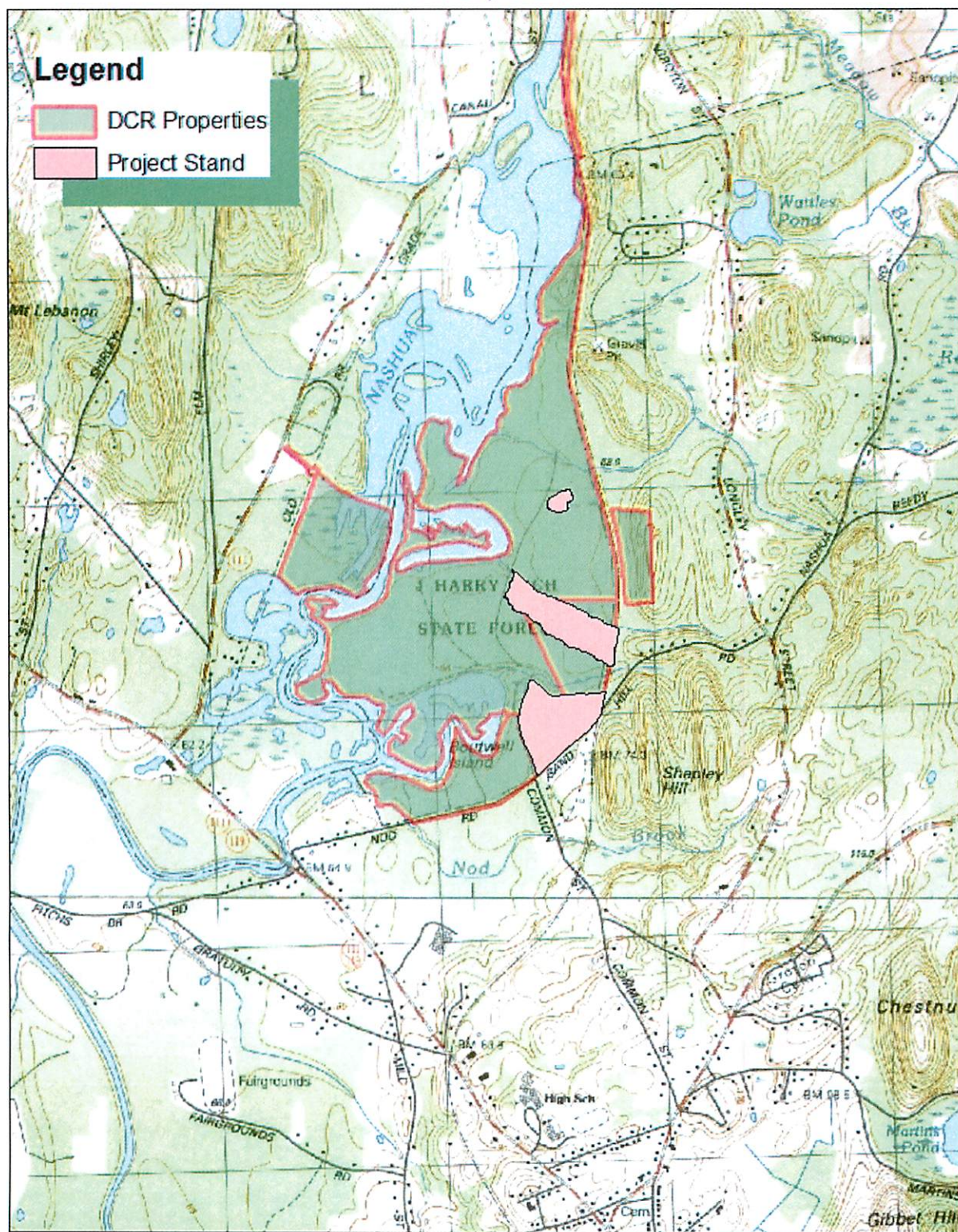
J. Harry Rich State Forest Proposed Forestry Project - Detail Map Groton, MA



MJW 11/9/17

0 210 420 840 1,260 1,680
Feet

J. Harry Rich State Forest Proposed Forestry Project - Locus Map Groton, MA



MJW 11/9/17

0 500 1,000 2,000 3,000 4,000
Feet

Desired Future Conditions:

The desired future condition from these forest stands is to encourage vigorous regeneration of white pine and native hardwood species, reduce the number of red pine trees susceptible to pathogens, and to increase species diversity. A healthy forest of native tree and shrub species that provides habitat and food for native wildlife is also a highly desirable future condition. A reduction of invasive plants found within these stands is highly desirable to meet these conditions.

Anticipated Future Treatments:

Long term monitoring of invasive plants will be necessary to ensure successful establishment of native species. Follow up treatments will be necessary as time and resources permit to reduce invasive populations. Using the silvicultural techniques described above will allow for flexibility in meeting the desired conditions of future forest stands.

District Forester: 

Date: 2/8/18

Field Operations Team Leader
Or Park Supervisor: 

Date: 2-6-18

~~District Manager~~
~~Regional Director:~~ 

Date: 2/6/2018

Management Forestry
Program Supervisor: 

Date: 2/9/2018

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