Massachusetts Department of Conservation and Recreation

Silviculture Prescription
No Signal Lot

Massachusetts Department of Conservation and Recreation
Bureau of Forestry

Central Berkshire District
October Mountain State Forest
Washington, MA

Prepared by:

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Approved by:

Management Forestry
Program Supervisor _____ Date: June 3, 2019
William N. Hill, CF

Overview:

The No Signal Lot Forest Management project is on the central portion of October Mountain State Forest (see Locus Map) along Schermerhorn Road near the intersection with Lenox Whitney Road. It comprises approximately twenty seven acres of remnant Norway spruce plantation with small amounts of native northern hardwoods, a twelve acre stand of mixed Norway spruce and hardwoods, and another twelve acre stand of mixed native red spruce/northern hardwoods.

The conditions that led to selecting this project for forest management are:

- Due to the initial (first) shelterwood harvest in 2003, there is an acceptable regeneration density of desirable hardwood tree species such as sugar maple, yellow birch, and black cherry in a condition where it can/should be fully released.
- Delay in conducting the planned second entry would likely result in mortality of portions of the established regeneration, thus bypassing an opportunity to secure survival and succession of these desirable young trees.
- Portions of the remnant Norway spruce plantations are in decline and suffering from a root rot fungus (Armillaria spp.).
- Desire to capture monetary value of the non-native Norway spruce trees prior to mortality due to root rot and to prevent further public hazards along Schermerhorn Rd.
- The proposed harvesting in the mixed red spruce/northern hardwood stand offers an opportunity to retain and enhance native softwood stands by applying a regeneration harvest.
- This project area offers an excellent opportunity to demonstrate and fulfill objectives for DCR Woodlands including the restoration of a native forest ecosystem.

The No Signal Lot Forest Management Project proposes to:

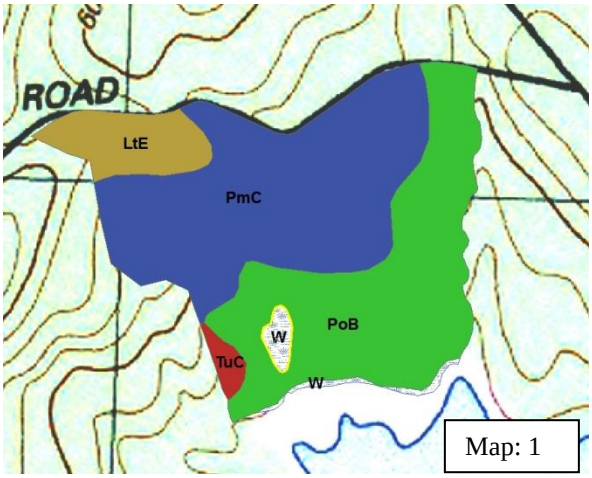
- Remove an overstory of mature non-native Norway spruce to release an existing understory dominated by regeneration of native tree species with small amounts of Norway spruce.
- Remove/reduce the costs and safety concerns of damaged or declining Norway spruce along traveled roads and trails.
- Demonstrate a shelterwood harvest of a red spruce/northern hardwood stand with an emphasis on regeneration of native red spruce and northern hardwoods.
- 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) including the restoration of a native forest ecosystem.

The No Signal Lot Forest Management Project is 59 acres in size and will result in one timber sale entry. This prescription will cover the entire project area.

Site Data:

Geology and Landforms: This site is located in the center of October Mountain State Forest just north of Washington Mountain Lake. The proposed project area is located in a portion of the forest that is generally flat, with a slight slope to the south east of less than 10%. The eastern boundary of this project is a stream with a channel that divides it physically from the rest of the forest. The northern boundary of

the project area is Schermerhorn Road and the southern boundary is the beginning of the hydrological boundary for Washington Mountain Lake. The western boundary for Stand 2 and 3 is an arbitrary delineation of change in forest type.



Map: 1

Soils: The three soil types that dominate the project area are Lyman-Tunbridge, Peru-Marlow ,and Tunbridge-Lyman. Lyman and Tunbridge soils are shallow, very well drained, and are generally located on upper slopes with steep, to less sloping areas, Peru Marlow soils are deep, moderately drained and located on the sides or crests of glacial till uplands. Both have a moderate productivity for forest growth, slight erosion hazard, and few equipment limitations. Pillsbury-Loam soils are very deep and poorly drained, and tend to be at the foot of slopes and flat. (Excerpts from "Soil Survey of Berkshire County Massachusetts", NRCS 1988).

Climate: The project location lies in an area of mild summers and moderate winters with year round precipitation possible. Winds generally come from the west. Although major weather events can happen in any given year, the chances of hurricanes, tornadoes, ice storms or other forest changing events are seldom but do occur. The figures below (Table 1) are excerpt from the National Weather Service 2012 Climatological Report for Pittsfield, MA. The climate period used to determine normal value is 1981 through 2010.

Table 1:

	2012 Annual	2011 Annual	Normal Annual Value	Normal Winter	Normal Spring	Normal Summer	Normal Fall
Annual Maximum Temp	58.4	56.5	55.3	31.7	54.3	76.7	57.9
Annual Minimum Temp	39.2	37.4	35.4	15.4	32.9	55	38
Annual Mean Temp	50	50.2	48.3	23.6	43.6	65.8	48
Total Precipitation (in)	36.36	59.46	45.38	8.6	11.44	12.74	12.6
Days with >= .01 Precipitation	144						
Average Wind Speed	6.1						

Hydrology and Watershed: This project area is located in the Housatonic River Watershed that covers all of southern Berkshire County and continues into Connecticut. It is also located within the Upper Housatonic River Valley Area of Critical Environmental Concern (ACEC). This ACEC is especially important for containing public and private water supply, complex river ecosystems, important wetlands, and critical habitats for a wide variety of both common and rare plant and wildlife species. ACEC's provide increased protection for wetland resource areas, associated habitats and fisheries, biodiversity, public and private groundwater supplies, storm damage prevention or flood control functions, historic and archeological resources, scenic and recreational resources, and other natural resource values of the area. Therefore, in order to minimize any impacts on the site there will be no cutting within wetlands. In addition to the variable width filter strips located along each regulated stream, a 50 foot no cut buffer from wetland resources and regulated streams will provide additional protection to these valuable areas. Within the no cut buffer white ash may be removed if it is infested or imminently infested with EAB. All stream crossings within the project area will use temporary

bridges. All features will be protected as directed in the "Massachusetts Forestry Best Management Practices Manual" and "Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines".

Stand Information: Stand 1 is approximately 27 acres of Norway spruce plantation which was planted in 1925. Within this stand the dominant tree species that were observed are Norway spruce (Picea abies) with small amounts of sugar maple (Acer saccharum), red maple (Acer rubrum), black birch (Betula lenta), white birch (Betula papyrifera), white ash (Fraxinus americana), black cherry (Prunus serotina), American beech (Fagus grandifolia) and quaking aspen (Populus tremuloides). The Norway spruce present in the stand is mature and sawtimber size (≥11" diameter breast height (dbh)) and has provided the shelter under which a cohort of regeneration has become established since the overstory was thinned in 2003. The understory is comprised of Norway spruce, black cherry, and white ash, with other hardwoods and herbaceous species to a lesser degree. There is also an existing component of mature hardwoods that is the same age as the planted spruce that were left to provide a seed source throughout the stand area.

Stand 2 is about 12 acres, composed of northern hardwoods with scattered mature Norway spruce. The dominant species in this stand was also Norway spruce, with associates being black cherry, red spruce, American beech, sugar maple, yellow birch, red maple, striped maple, and white ash. The Norway spruce in this stand was also planted in 1925, in an already regenerating area of northern hardwood. The understory has heavy regeneration of striped maple, white ash, and yellow birch, with other hardwoods species to lesser degrees. There is a component of Norway spruce regeneration as well as native red spruce though it is heavily outweighed by hardwoods.

Stand 3 is a 12 acre stand of native red spruce/northern hardwoods dominated by red spruce (Picea rubens), sugar maple, red maple, white ash, black cherry and American beech. This stand was thinned and the retained red spruce was pruned in 1957. This stand was harvested in 2003 in conjunction with stand 1, resulting in varied amounts of advanced regeneration. The understory is comprised of mostly red maple, striped maple, red spruce, and yellow birch seedlings with other hardwoods and herbaceous species.

Disease and Insects: The first installment of this shelterwood project in 2003 removed all Norway spruce that were overtopped or otherwise unhealthy in vigor and the remaining trees were left due to wind fastness and healthy crown. Since 2003, there have been several major wind events including the 2008 ice storm and 2012 hurricane related storms that have resulted in many stems with broken tops and heart rot from broken branches. Portions of the remnant Norway spruce plantations are also in decline and suffering from a root rot fungus (Armillaria spp.).

Roads, Trails and Recreation: There are no recognized recreational trails within this project area, though the existing woods road will be maintained and protected so as to ensure its continual use for timber harvesting projects in this sale area. Due to the proximity of this sale to Lenox Whitney Rd and its frontage on Schermerhorn Rd, timber marking will account for the aesthetic quality of the forest as seen from these roads. All slash from the harvest will be dealt with accordingly as per the regulations of Ch. 48 of MGL, the Massachusetts Slash Law.

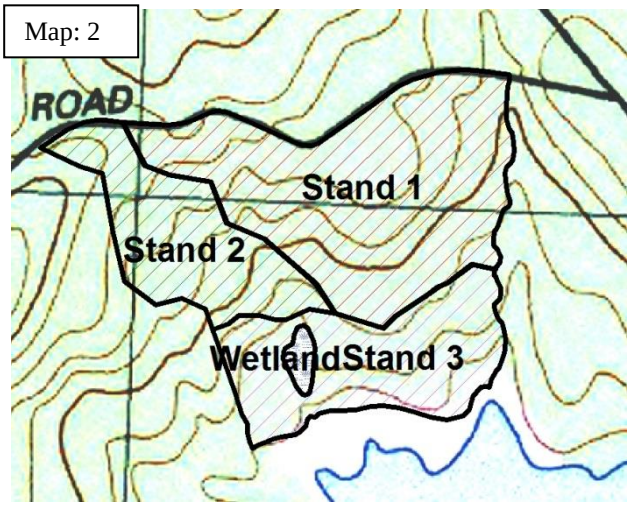
The October Mountain Marsh Trail is located approximately 1000 feet to the south of the project boundary. There are no anticipated concerns associated with the trail.

Cultural and Archeological Feature: No known or documented significant pre-Contact archaeological resources within the proposed project area. An archaeological survey report for the Washington Mountain Brook Watershed was conducted and submitted by Dr. John Pretola in 1975 (listed as MHC Report # 25-4). Historical resources were abundant and it was recommended that two middle 19th century cellar holes be subject to a Phase III survey. Multiple cellar holes were inventoried during this survey and identified as Historical Archaeological Sites. At least one site is within the proposed forestry management proposal. The DCR will obtain a copy of the report and set up a site visit with the forester. Any cultural resource features located before or during the forestry project will be protected according to guidelines set forth in the *Bureau of Forestry Cultural Resource Management Protection Standards and Guidelines* and indicated on harvest maps accordingly. All cultural resources will be staked and flagged prior to harvesting. There is an existing stone wall that circles the southern contour of the stand boundary. Care will be taken not to damage it or cross it outside of existing bar-ways. The CCC era fire pond will also be staked and flagged to be protected from damage during the harvest operation.

Stand Data:

Forest Stand Attributes: This prescription will describe the conditions and treatments within the 59 acre project area. This project area will be broken up into three stands for silvicultural treatment based on forest type. These stands will be Norway spruce (Stand 1), mixed hardwoods with remnant Norway spruce (Stand 2) and mixed hardwoods with red spruce (Stand 3).

Map: 2



Disturbance History: Stands 1 and 3 were treated in 2003 as part of a two stage shelterwood cut, with a ten year interval in between treatments to allow for adequate regeneration under the remaining canopy. The initial harvest focused on removing spruce that were suppressed or intermediate crown class and/or unacceptable in vigor and stature. This removed about 100 sq./ft. of basal area per acre and retained roughly 90 sq./ft.per acre of dominant, wind-firm spruce to shelter the developing regeneration. In areas where there was existing black cherry stems, an additional 20-30 sq./ft. of basal area was removed to allow space and sunlight to regenerate that shade-intolerant species (black cherry is highly preferred both for its substantial timber value, and for the wildlife food value of the soft fruit). In all, roughly 299 thousand board feet (MBF) of Norway spruce sawtimber, 253 tons of softwood pulp and 5 cords of firewood were harvested from the stand.

In 1957 there was a partial harvest in Stand 3 that removed small logs to release potential red spruce sawtimber trees and foster competition with the native hardwoods. Many of the retained red spruce were pruned to increase saw log quality.

Stand Structure: The three stands in this sale are all unique in structure and growth patterns. Stand 1 has the remnants of a plantation that was previously harvested so there are now two distinct age classes growing throughout the stand as it has regenerated naturally with a diverse mix of hardwoods and spruce. Due to root rot, there is some mortality among the remaining stems which has led to lots

of blowdowns and dead snags, which have diversified the vertical structure across the stand. Stand 2 has planted Norway spruce but a large mixture of native northern hardwoods as well. This area was not harvested with Stand 1 so there is a more complete canopy and even structure, which has resulted in regeneration that is more tolerant, such as red maple and striped maple. Stand 3 is two storied stand with a mixture of native red spruce and northern hardwoods in both the overstory and regenerating understory. All three of these stands are roughly 80-100 years old and are considered to be fully stocked.

Stand 1: Remnant Norway Spruce Plantation: This stand currently has a relative density of 65%, which is a result of the previous harvest removing 100 sq. ft. of basal area. This measurement represents the percent of trees present of the potential maximum density, when this number exceeds 65% the competition of trees within the stand leads to higher rates of mortality. It has an average basal area/ acre of 124 and an average of 79 trees per acre. Norway spruce makes up 61% of the total basal area, with black cherry, sugar maple, white ash, red maple, and hemlock making up the remaining 38%. The overstory quadratic mean diameter is 17 with measured trees reaching 28" dbh. Acceptable growing stock, trees free of mechanical and biological defects, accounts for 68 percent of all stems in this stand.

The understory of the stand is dominated by Norway spruce regeneration with an average of 319 stems/acre, with most stems in the <12" height class. Northern hardwood species were also plentiful, with striped maple and black cherry as a heavy component as well as a host of other species as illustrated in Table 3. Shrub and understory species found in the stand were raspberry, ferns, grasses, and maple leaf viburnum. There was a small component of oriental bittersweet in this stand, which will need to be treated.

Throughout the stand there was an average of 20 Norway spruce snags per acre. There was an average of 2 sugar maple snags per acre throughout the stand, and there were some other hardwood snags measured to a lesser degree. On average there was 3110 cu ft. /acre of coarse woody debris (CWD). Most of this CWD was a result of the previous harvest leaving low quality stems on the ground as well as mortality from wind events and root rot. This figure is well above the recommended minimum of 256 cubic feet of CWD as required in the Landscape Designation Guidelines, however this amount is expected to increase post-harvest.

Table 2: Stand 1 (Live trees greater than 5"dbh)

	All species	Norway spruce	Black Cherry	Sugar Maple	White Ash	Red Maple	Eastern Hemlock
Basal area (square feet/ac)	124	84.0	14.0	12.0	8.0	4.0	2.0
percentage of stand	100	68	11	10	6	3	2
Stems per unit area (stems per acre)	79	48.1	8.4	10.2	5.6	5.1	1.4
Quadric Mean Diameter	17.0	17.9	17.5	14.7	16.2	12.0	16.0
Relative Density	65	43	5	11	3	2	1
Sawlog Gross Total (bf/ac)	18488.5	14085.6	2010.9	971.6	977.1	237.7	205.5
Cords Gross Total (cds/ac)	42.8	29.3	5.1	3.8	2.7	1.2	0.6

Table 3: Stand 1 (Live trees less than 5”dbh) Total stems/acre

SIZE CLASS					
SPECIES	**1**	**2**	**3**	**4**	**TOTAL**
Norway Spruce	153.00	121.50	31.50	13.50	319.50
Red Maple	72.00	13.50	18.00	4.50	108.00
Stripe Maple	13.50	22.50	49.50	108.00	193.50
White Ash	76.50	9.00	13.50	0.00	99.00
Paper Birch	0.00	0.00	0.00	4.50	4.50
Black Cherry	81.00	27.00	36.00	18.00	162.00
Yellow Birch	54.00	13.50	9.00	9.00	85.50
Sugar Maple	13.50	4.50	4.50	0.00	22.50
Beech	0.00	9.00	9.00	4.50	22.50
TOTAL	468.00	220.50	171.00	162.00	1021.50

Stand 2: Northern hardwoods with mixed Norway spruce: This stand currently has a relative stand density of 60%. It has a basal area of 96 sq. ft. /acre and an average of 112 trees per acre. Norway spruce comprises 21% of the basal area and black cherry and red spruce amount to 17% each, with American beech, sugar maple and other northern hardwoods making up the remaining 45%. The quadratic mean diameter for this stand is 12.5 with the largest measured diameter being 30”. Acceptable growing stock accounts for 50 percent of all stems in this stand.

The understory of this stand is composed of mostly northern hardwoods with some softwoods, with the main species being striped maple, white ash, yellow birch, and mountain maple, as illustrated in table 5. There was some regeneration of Norway spruce, but it only averaged 63 stems/acre. The main understory shrub species tallied were ferns, raspberry, and bind weed with assorted other herbaceous plants such as starflower, Canada mayflower and trillium.

Throughout this stand there was an average of 3.8 dead trees per acre, mostly black cherry and red spruce. On average there was 1091.9 cu ft. /acre of CWD. This figure is well above the recommended minimum of 256 cubic feet of CWD as required in the Landscape Designation Guidelines, and this amount is expected to increase post-harvest.

Table 4: Stand 2 (all measured trees greater than 5”dbh)

	All species	**Norway spruce**	**Black cherry**	**Red spruce**	**American Beech**	**Sugar maple**	**Yellow Birch**	**Red Maple**	**Striped maple**	**White ash**
Basal area (square feet)	96	20	16	16	12	12	8	4	4	4
Percentage of stand	100	21	17	17	13	13	8	4	4	4
stems per acre	112	19.8	5.7	14.6	35	3	8.8	1.1	20.4	3.7
Quadric Mean Diameter	12.5	13.6	22.7	14.2	7.9	27	12.9	26	6	14
Relative Density	60	11	5	9	12	11	5	2	4	2
Sawlog Gross Total (bd/ac)	8965	1839	2588	1541	0	1645	323	582	0	444
Cords Gross Total (cds/ac)	30.7	6.5	6.2	5.3	2.6	4.2	2.4	1.5	0.7	1.3

Table 5: Stand 2 (measured trees less than 5"dbh) Total stems/acre

SIZE CLASS					
SPECIES	**1**	**2**	**3**	**4**	**TOTAL**
White Ash	153.00	63.00	18.00	0.00	234.00
Striped Maple	387.00	45.00	18.00	0.00	450.00
Black Birch	9.00	0.00	27.00	0.00	36.00
Red Maple	135.00	9.00	9.00	9.00	162.00
Yellow Birch	18.00	45.00	72.00	9.00	144.00
Norway Spruce	45.00	0.00	0.00	18.00	63.00
Sugar maple	18.00	0.00	0.00	27.00	45.00
Beech	0.00	27.00	54.00	36.00	117.00
Paper Birch	9.00	0.00	0.00	0.00	9.00
Black Cherry	63.00	0.00	0.00	0.00	63.00
Red Spruce	0.00	0.00	0.00	9.00	9.00
Red Oak	9.00	0.00	0.00	0.00	9.00
TOTAL	846.00	189.00	198.00	108.00	1341.00

Stand 3: Northern Hardwoods with native red spruce: This stand has a relative stand density of 74%. It has a basal area of 132sq/ft/acre and an average of 178 trees per acre. It is dominated by yellow birch, which takes up 56% of the total basal area, with black cherry taking up 21%, and red spruce at 18%. Red maple, Norway spruce and paper birch made up the remaining 18%. The quadratic mean diameter of this stand was 11.7, with the largest measured tree being 26" at dbh. Acceptable growing stock trees account for 82% of stems in this stand.

The understory of this stand was comprised of mostly red maple, striped maple and red spruce, as illustrated in table 7. Red maple was the most prolific with an average of 576 stems per acre and they were mostly less than 12" in height. Red spruce regeneration is the second most prominent species in this stand with 495 stems per acre. The most common understory shrub species found were ferns, licopodium spp., starflower and sarsaparilla.

Throughout this stand there were an average of 20.4 snags per acre, all of which were paper birch of pole and small sawtimber size. On average there was 985 cu/ft/acre of coarse woody debris, which is well above the recommended minimum of 256 cubic feet of CWD as required in the Landscape Designation Guidelines, however this amount is expected to increase post-harvest.

Table 6: Stand 3 (all measured trees greater than 5"dbh)

	All species	**Yellow Birch**	**Black Cherry**	**Red Spruce**	**Red Maple**	**Norway Spruce**	**Paper Birch**
Basal area (square feet)	132	56	28	24	12	8	4
percentage of stand	100.0	42	21	18	9	6	3
Stems per acre)	178	120.2	19.3	16.8	10.2	6.2	5.1
Quadric Mean Diameter	12.7	9.2	16.3	16.2	14.7	15.4	12
Relative Density	74	38	10	13	7	4	2
Sawlog Gross Total (bd/ac)	11164	1868.1	3233.9	3778.1	1045	953.3	285.9
Cords Gross Total (cds/ac)	39.7	13.8	9.9	8.1	4	2.7	1.2

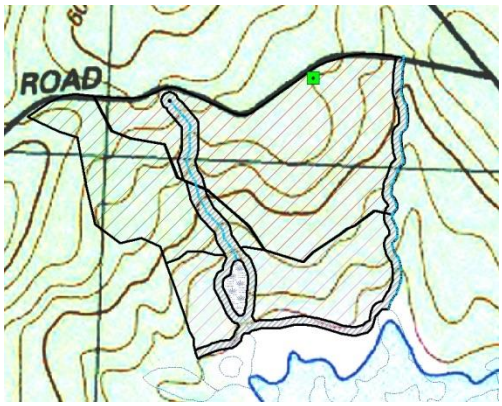
Table 7: Stand 3 (measured trees less than 5"dbh) Total stems/acre

SIZE CLASS					
SPECIES	**1**	**2**	**3**	**4**	**TOTAL**
White Ash	9.00	0.00	0.00	9.00	18.00
Striped Maple	369.00	45.00	18.00	0.00	432.00
Yellow Birch	27.00	9.00	0.00	27.00	63.00
Red Maple	558.00	0.00	18.00	0.00	576.00
Red Oak	27.00	0.00	0.00	0.00	27.00
Red Spruce	225.00	198.00	18.00	54.00	495.00
Beech	9.00	9.00	9.00	0.00	27.00
Sugar Maple	9.00	0.00	0.00	0.00	9.00
TOTAL	1233.00	261.00	63.00	99.00	1656.00

Wildlife Habitat Conditions: There was not an abundance of wildlife evident in Stand 1 prior to the 2003 harvest due to the uniformity (low structural and species diversity) of the plantation. There is now evidence of browsing from large herbivores such as moose and deer along the old skid roads, but the damage was not inhibiting to the next crop of trees in the rest of the sale area. Some of the remaining hardwoods that weren't harvested in 2003 have developed into good wildlife trees due to their vertical structure above the even-aged regeneration and developed cavities and poor form due to weather and exposure. Stand 3 also had lots of sign of herbivory and habitation due to its abundance of herbaceous plant life in the small forested wetland located in the center of the stand.

The proposed overstory removal in the Norway spruce plantation (Stand 1) should provide high quality habitat for young forest State Wildlife Action Plan SWAP species. The initial shelterwood entry into Stands 2 & 3 will result in increased browse, mast, and age class enhancement.

Water Resources: There are several small water features within the project area that will be protected. There is a fire hole constructed by the CCC's located on Schermerhorn Rd. with an intermittent stream draining out of it through Stand 1 to a small <1 acre wetland in Stand 3. There is also a small intermittent stream/seep on the eastern edge of Stands 1 and 3 that comprises the stand boundaries. In total there will be about 7 acres of filter strips put in to protect all of these water features throughout the harvest area. There are no mapped certified vernal pools by NHESP located in this project area. All features will be protected as directed in the "Massachusetts Forestry Best Management Practices Manual" and "Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines".



Recreation & Aesthetic: There are no recognized trails within this project area, though the existing woods road will be maintained and protected so as to ensure its continual use for timber harvesting projects in this sale area. Due to the proximity of this sale to Lenox Whitney Rd and its frontage on Schermerhorn Rd, timber marking will be minimal to account for the aesthetic quality of the forest as

seen from these roads. All slash from the harvest will be dealt with accordingly as per the regulations of Ch. 48 of MGL, the Massachusetts Slash Law.

The October Mountain Marsh Trail is located approximately 1000 feet to the south of the project boundary. There are no anticipated concerns associated with the trail.

Evaluation of Data, Silviculture and Projected Results:

Primary/Secondary goals: The primary goal of treatment in these stands will be to ensure future diversity of age, size and species mixture by demonstrating several types of silviculture. These practices will help in ensuring diverse and resilient forests as directed in the goals of the "Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines". This is being accomplished by creating a well-planned and balanced science based forestry plan.

Secondary goals of this project are to capture value of damaged and/or diseased trees and to provide raw materials to the forest products industry. This project will also assist the community by repairing the forest roads / trails and provide income to the town from the Forest Product Trust Fund.

Silviculture Systems: Due to the previous management, species composition, susceptibility to root rot and wind throw, even-aged silviculture will be utilized in all three stands during this project. Management of Stand 1 will take steps to continue the conversion of the Norway spruce plantation to a northern hardwood stand, and Stands 2 will be treated to promote a diverse mix of native red spruce and northern hardwoods. Allowing the exotic Norway spruce trees to die "on the stump" will create a public safety issue for people using the state forest for recreation, and result in the agency having to spend public funds to remove standing dead hazard trees. Proactively harvesting the planted trees while they still have market value will reduce costs for the Commonwealth, provide greater economic stimulus from higher value wood products (timber vs. chipwood), and foster better control of regeneration (active harvesting will put variable amounts of sunlight on the forest floor, which will in turn favor regeneration of a diversity of native trees species including both shade-intolerant species like cherry, birch, aspen, and oak in the more heavily cut portions of the treatment area, and sugar maple and hemlock in the less heavily cut portions of the treatment area).

Stand 1: An overstory removal with reserves will be the final step in the two-step shelterwood treatment prescribed and begun in 2003. Adequate desired regeneration has since grown up in the 14 years since the stand was treated. This treatment will remove the remaining 90 sq/ft of Norway spruce in the overstory to allow for a full release of the current regeneration. Native hardwood trees within the plantation canopy will be retained. The understory regeneration will be protected by restricting logging equipment and techniques to control disturbance. This will create a fully stocked seedling/sapling layer of 1-5 inch dbh native northern hardwoods with an interspersion of Norway spruce.

Stand 2: The first step of a two stage shelterwood cut will be conducted in this stand. This partial overstory harvest will be designed to promote the regeneration of northern hardwoods while removing the non-native Norway spruce. The overstory will be reduced by approximately 1/3-1/2 by removing lower quality hardwood trees and spruce stems. Advanced regeneration will be protected throughout the harvest.

Stand 3: The original proposal called for a harvest within this Stand. After completing stand exam and further field reconnaissance of the stand no further harvest will be conducted. Results from the previous harvest have left this stand with an acceptable amount and composition of regeneration. The

density of the existing overstory is at an acceptable level to allow the desired light to reach the understory. No further treatment is recommended at this time.

Desired Future Conditions: By fully releasing the understory present in Stand 1, the resulting stand will grow up and continue its development into a mature, sawtimber size northern hardwood stand with small amounts of Norway spruce. This mix will hopefully be comprised of shade tolerant and intolerant species as the post-harvest conditions will favor species that regenerate best with lots of light and disturbance. This will result in a more heterogeneous forest which will by definition be more resistant to disease and disturbance than the previous plantation. A successful harvest in Stand 2 will result in a two story stand of healthy northern hardwoods with the advanced regeneration present growing into new crop trees for the next cutting cycle. Stand 3 will continue as a two story stand with a heavy component of yellow birch, black cherry and red spruce in the overstory with an understory dominated by red maple and red spruce.

Anticipated Future Treatments: Both stands should be examined in approximately 5 years to ensure the advanced regeneration has survived and there has been additional regeneration of desired species. Within Stand 1 no further treatment is expected until this stands reaches 40-50 years old, at which time commercial thinning may be conducted. Within Stand 2 and 3 a second shelterwood entry should be conducted in approximately 7-10 years to release regeneration secured through the current planned operation.

Logging System Requirements:
The harvesting of these stands will be primarily accomplished with a cut-to-length harvester and forwarder to ensure protection of all advanced regeneration present in the stand. A conventional felling system of a chainsaw and skidder will be allowed as needed in areas inaccessible to the mechanized equipment provided this equipment has a ground pressure of 6psi or below. The Forester and harvester will cooperatively decide which section to begin with. Whole tree harvesting and skidding lengths greater than 33 feet will not be allowed in this prescription area, and all trees felled will be processed or limbed within the stand leaving slash dispersed in the felled location except where needed for skid trail use. Harvesting in this manner will increase amounts of CWD by leaving more material in the woods and create habitat and greater structural diversity for small wildlife species such as rabbits and other rodents.

Project Access and Landings: Access to the proposed project area will be from County Rd. in Becket or West Branch Rd. in Washington. This project is anticipated to utilize existing roadside landing areas from the previous harvest for both forwarder and truck landings. It is possible due to an intermittent stream crossing south through Stand 1 that there will have to be two separate landings, and a stream crossing as shown on the stand map. Landings off the road may be established based on operational needs. Cleared portions that are not graveled will be seeded with “Berkshire Conservation Mix” grass seed and mulched with straw. Where possible, boulders will block access to the forwarder / skid trails from illegal vehicles.

Forwarder Road and Skid Trails: Throughout the project area forwarder / skid trails will be laid out to avoid all water features and to avoid slopes. Any existing segments will be evaluated and connected as needed. Primary skid trails will be laid out and marked prior to the project being advertised. Any unavoidable stream or wetland crossing will be designed at or above the standards of the “Massachusetts Forestry Best Management Practices”.

Upon completion of all harvesting activity all forwarder / skid road will be left in a stable state and water bars will be installed according the "Massachusetts Forestry Best Management Practices". All stream/wetland crossing will be stabilized and entrances will be blocked to prevent illegal access.

Wildlife Resources: Current snags will be retained to provide structural diverstiy; however operators have the right to remove any snag that poses a safety hazard to themselves or equipment. Operators will not be required to utilize cull trees, if left behind they will add to the amount of large diameter CWD. Limbs and tops (slash) will also be left in place to augment existing CWD and add soil nutrients through decomposition. All streams, seeps, wetlands and other water features will be avoided, crossing will be avoided where possible.

In-kind Services:

- Road and Trail repair within October Mt. State Forest.
- Invasive control

Prescription Documentation:

Project Marking Guidelines: Follow the directions below for marking instructions of sale and stand level features.

Sale Level:

1. Locate, flag (pink wetlands) and paint with red diagonal stripes the buffers and filter strips along all wetland and associated streams.
2. Locate, flag and paint with red diagonal stripes the remaining wooded project boundary line. This will not be done where the project boundary is a road.
3. Flag temporary layout of the primary skid trail network with orange flagging. Using orange paint mark small noncommercial stems or stems already marked for removal located along adjusted skid trails upon completion of marking (Orange).
4. Flag temporary layout of any unavoidable wetland and stream crossing with labeled orange flagging. Using Red paint mark and label each crossing upon completion of marking and any final adjustment to location.
5. Locate and mark perimeter of landing and group openings with one red diagonal stripes.
6. General tree marking guide:

Marking type	Type of Tree	Tally Method	Mark Type
Leave Tree	Leave Tree	As needed	Red Horizontal Line
Cut Tree	Cut Saw Log	Individual tally DBH & height	Blue Horizontal Line
Cut Tree	Cut Pulp/Cord Wood	Individual tally DBH	Blue Dot
Cut Tree	Cut Live Cull Tree	No tally	Blue X
Cut Tree	Dead Tree Warning	No tally	Blue X

Stand 1: Overstory Removal with Hardwood Standards: Remove all live standing Norway spruce within the stand. In areas where residual stand exceeds $40^{sq/ft}$ reduce stand by following the prioritized guide below. Road buffer may be reduced below the 50% basal area restriction for removal of Norway spruce only, hardwood should be retained to ensure adequate stocking.

1. All Norway spruce
2. Unacceptable \ Diseased White Ash
3. Any Diseased Hardwood

4. Unacceptable Red Maple, American Beech, Poplar or Birch
5. Unacceptable Red Oak
6. Unacceptable Black Cherry
7. Other Acceptable Hardwood

All acceptable hardwoods will be retained. Advanced regeneration of all species will avoided and protected as much as possible to ensure adequate seedling density for the next generation. Retention of mature seed producing red oak, small diameter white ash, red spruce and hemlock within the stand is desirable.

Stand 2: Shelterwood harvest: Remove 1/3- 1/2 of the basal area reducing the stand to approximately 60-80$^{sq/ft}$ by following the prioritized guide below. Remove no more than 50% of the basal area within the road buffer.

1. All Norway Spruce
2. Unacceptable \ Diseased White Ash
3. Any Diseased Hardwood
4. Unacceptable Red Maple, American Beech, Poplar or Birch
5. Unacceptable Red Oak
6. Unacceptable Black Cherry
7. Unacceptable Red Spruce
8. Other Acceptable Hardwood

Advanced regeneration of all species will avoided and protected as much as possible to ensure a healthy new forest stand. Retention of mature seed producing red oak, small diameter white ash, red spruce and hemlock within the stand is desirable.

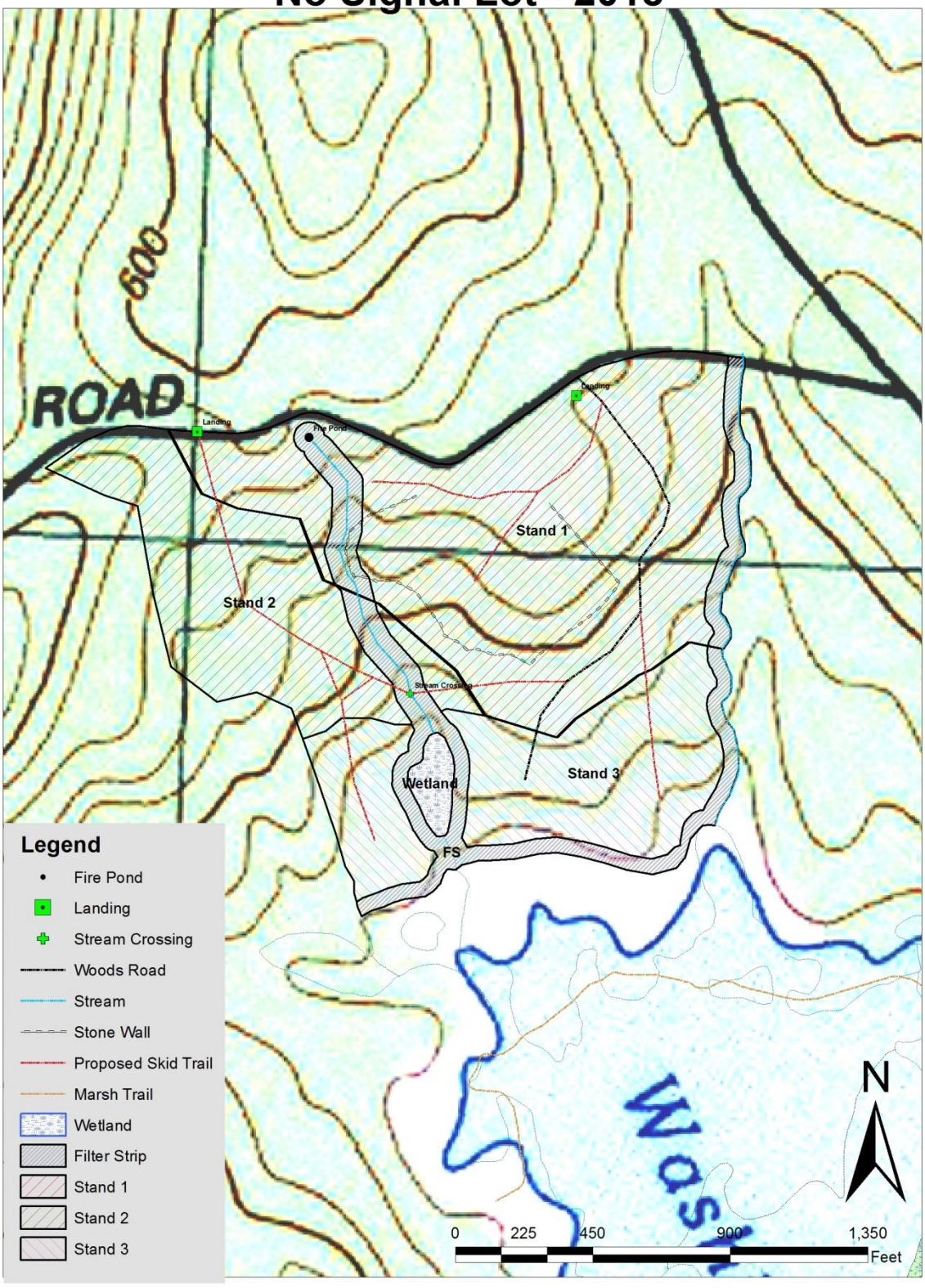
Stand 3: No Management

Advanced regeneration of all species will avoided and protected as much as possible to ensure a healthy new forest stand. Retention of mature seed producing red oak, small diameter white ash, red spruce and hemlock within the stand is desirable.

Attached:

- Stand Map
- Locust Map

October Mountain State Forest
No Signal Lot - 2018



KMM 11/14/2017

No Signlal Lot 2018 - Locus Map
October Mountain State Forest