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APPENDIX C - FOREST PLAN DIRECTION/DESIRED CONDITION AND GENERAL BACKGROUND AND RESOURCE INFORMATION

Appendix C includes:

- White Mountain Forest Plan direction and desired condition applicable to the Tripoli East Vegetation Management Project;
- General background information; and
- General resource and effects information.

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A. FOREST PLAN DIRECTION

By law, National Forest Lands are managed to provide multiple benefits to all Americans in a sustainable way for present and future generations. The original management emphasis was identified as watershed protection (Creative Act, 1891) and a continuous supply of wood products (Organic Act, 1897). Over the years, management for wildlife and fish, outdoor recreation, wilderness, heritage resources, grazing, wild and scenic rivers, and roads were added to the Forest Service mission. General direction, for how the White Mountain National Forest is to be managed in a sustainable way for multiple benefits, is found in the Forest Plan.

The Forest Plan divides the White Mountain National Forest into different zones or "Management Areas (MAs)". In keeping with the National Forest Management Act, which emphasizes managing fish and wildlife populations and maintaining viable populations of existing native and desired non-native species in the planning area (forest wide) (36CFR219.19), the White Mountain National Forest Land and Resource Management Plan, as amended, established a Wildlife Habitat Management Unit (HMU) Strategy. This strategy is a means of evaluating existing habitat conditions and a guide to management activities used to move an area towards the desired habitat conditions necessary to maintain viable, forest-wide wildlife populations (Forest Plan, Appendix B, VIII-B-1 through VIII-B-28). Management areas and habitat management units have particular goals or desired conditions toward which all management activities are directed.

A.1 Forest Management Goals (Forest Plan, pp. III-2 & III-3)

Forest-wide goals and objectives provide the basis for overall direction regarding the type and amount of goods and services that the White Mountain National Forest will provide. These goals are concise statements describing a desired result to be achieved over the next 10-15 years through implementation of the Forest Plan. All goals are to be achieved in the most cost-effective manner. The following Forest-wide Management goals apply to the Tripoli East project area:

a. Conduct all management activities to protect soil and water.

b. Conduct all management activities with full recognition of the appearance of the Forest, realizing the importance to society of a natural landscape distinct from man-made environments in an otherwise dominant in the east (Forest Plan, Appendix G6 – Visual Quality Objective Guide/Even-Aged Management, pp. VII-C-17 through VII-C-19).

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c. Recognize the demand for and the importance of day-use areas and driving for pleasure as part of the Forest's total recreation opportunity spectrum.
d. Use existing roads, trail, and utility corridors to the maximum extent possible. Plan and design access to serve multiple management purposes.
e. Design and build any new access, regardless of type, according to standards and criteria that focus on minimum impact.
f. Feature management for indigenous wildlife species including those using old-growth habitat, threatened and endangered, sensitive/unique species. Recognize the demand for non-consumptive uses of wildlife, including opportunities to observe.
g. Use timber management as one of the tools available to achieve the desired future condition and integrated resource objectives of certain management areas.
h. Feature northern hardwood management over softwood. Move toward the culturing of high quality hardwoods that are in demand for specialty products. Assure a stable, reliable source of this raw material to support community stability.

A.2 Management Areas

A.2.1 The Primary Purposes of MA 2.1 (Forest Plan, p. III-30) are to:

i. Protect and enhance visual quality (the visual resource will receive special consideration in the planning and application of projects in this management area, Forest Plan, Appendix G6 – Visual Quality Objective Guide/Even-Aged Management, pp. VII-C-17 through VII-C-19).
j. Broaden the range of recreation opportunities, mainly those offering roaded natural opportunities.
k. Provide moderate amounts of high-quality sawtimber and other timber products on a sustained yield basis.
l. Provide a balanced mix of habitats for all wildlife species.
m. A mix of uneven-aged and even-aged silvicultural systems will be used. Even-aged management will be prescribed for both light demanding species and for visual enhancement of landscape diversity. Even-aged management will be practiced on about 50 percent of the area. Uneven-aged management will be considered on a site-by-site basis and generally will be applied on 50% of the management area. [Distribution of even- and uneven-aged management is for MA 2.1 lands as a whole across the Forest and is not expected to be prorated equally in individual projects. The selection of even-or uneven-aged silvicultural systems is guided by the land type capability and current species composition of each stand as well as social needs.]

A.2.2 The Primary Purposes of MA 3.1 (Forest Plan, p. III-36) are to:

n. Provide large volumes of high quality hardwood sawtimber on a sustained yield basis and other timber products through intensive management practices.
o. Increase wildlife habitat diversity for the full range of wildlife species with emphasis on early successional species.
p. Broaden the range of recreation opportunities, mainly those offering semi-primitive motorized experience opportunities.
q. Grow smaller-diameter trees for fiber production.
r. Even-aged management will be the most predominant silvicultural system used; uneven-aged management will be used to meet site-specific objectives. Size of openings will depend on the visual and silvicultural requirements and generally range from 3-30 acres. Uneven-aged management will be considered on a site-by-site basis and generally will be applied on 10-20 percent of the management area. [Distribution of even- and uneven-aged management is for MA 3.1 lands as a

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whole across the Forest and is not expected to be prorated equally in individual projects. The selection of even-or uneven-aged silvicultural systems is guided by the land type capability and current species composition of each stand as well as social needs.]

A.3 Habitat Management Units (HMUs) for Lands With Active Vegetative Management (MAs 2.1 & 3.1) (Forest Plan, pp. III-11 through III- 14, VII-B-3 through VII-B-16)

s. See Forest Plan, Appendix B – Wildlife Management Strategy – White Mountain National Forest, §B.1.a, pp. VII-B-4 & -5, for a discussion of the Habitat Management Unit Strategy.

Three hundred thirty-seven thousand (337,000) acres of the White Mountain National Forest have been identified as suitable and capable of vegetative management. Effects consist of changes due to timber harvest, habitat management activities, access, and human activity as well as from natural causes. The diversity of plant and animal communities will be greater than that expected in a natural forest setting. This conforms to 36CFR219.27(g) that states that diversity must be "at least as great as that which would be expected in a natural forest." In addition, because the majority of the wildlife species in the planning area have a primary or secondary requirement for regenerating or young vegetation, management activities must be directed toward supplying these habitats throughout the 337,000 acres in a manner that strives for a controlled distribution and even supply across space and time.

A.4. Desired Conditions

A.4.1 Management Areas (Map 3, Appendix A)

MA 2.1

The forest will be a mosaic of stands of predominantly hardwood trees providing habitat for game and non-game species. The stands will very in size, shape, height and species. Two different conditions will occur among the stands; some stands will consist of trees about the same age and size; other stands will consist of a mix of tree sizes and ages, ranging from seedlings to very large mature trees. In either case, openings will be interspersed in stands with shapes and sizes compatible with the surrounding landscape.

Along major road corridors, large diameter trees with a variety of bark and foliage characteristics will predominate. These trees will represent both shade tolerant and intolerant species. Numerous views of panoramic and ephemeral landscapes will be provided through moving and stationary vista sites.

Even- and uneven-aged management will be considered on a site-by site basis and generally will be applied on 50 percent of the management area. The selection of even-or uneven-aged silvicultural systems is guided by the land type capability and current species composition of each stand as well as social needs (see §**1.4.1.2**, below, for an explanation of how this applies to Habitat Management Units).

There will be noticeable human activity in those areas resulting from many uses. Evidence will usually be in harmony with the natural-appearing environment and consistent with good resource management.

Roads will provide access to meet land management objectives. Selected areas will be accessible for off-road motorized forms of recreation activities. Roads will generally be closed to public vehicular traffic. Generally, there will be 1-3 miles of road per square mile of area.

MA 3.1

The forest on these management areas will be a mosaic of stands of American beech, sugar maple, balsam fir, hemlock, red and white pine, spruce, paper birch, red oak and aspen. These areas will provide habitat for game and non-game species. Three different conditions will occur:

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1) The majority of stands will consist of trees of about the same age and size;
2) Other stands will consist of a mix of tree sizes and ages ranging from seedlings to very large mature trees; and
3) A lesser acreage of the forest will be comprised of individual stands of northern hardwoods, softwoods, paper birch, and aspen of the same age and size grown on a shorter rotation and having a diameter of 6-16 inches.

Uneven-aged management will be considered on a site-by site basis and generally will be applied on 10-20 percent of the management area. The selection of even-or uneven-aged silvicultural systems is guided by the land type capability and current species composition of each stand as well as social needs (see §**1.4.1.2**, below, for an explanation of how this applies to Habitat Management Units).

There will be openings of different sizes interspersed with the stands of trees. These intermixed stands will be of irregular size and shape and distributed so that the overall forest will generally be natural appearing.

There will be noticeable human activity in these areas resulting from many uses. Evidence will usually be in harmony with the natural-appearing environment and consistent with good resource management.

A network of gated/blocked roads and trails will provide access for various land management activities. Selected areas will be accessible for off-road motorized forms of recreation activities. Some roads will be open occasionally to provide opportunities for activities such as firewood gathering or hunting access. Generally, there will be 1-3 miles of road per square mile of area.

A.4.2 Habitat Management Unit Desired Composition Objectives (Map 2)

The proposed Tripoli East project area is located within HMUs 416 and 417. HMUs were:

> laid out using the proper aquatic types (wetland component for moose) as centers and then drawing 4,000-acre circles around them to approximate moose home ranges. These boundaries were then adjusted so that the coincided with compartment boundaries on each Ranger District. . . . due to boundary adjustments, each HMU will contain varying amounts of land in vegetative management (Management Areas 2.1 and 3.1), but usually will contain at least 4,000 acres in this category. Many HMUs contain no management objective over and above the basic 4,000 acres. Only that portion of the HMUs in Management Areas 2.1 or 3.1 is addressed in the . . . discussion of composition objectives and indicator species selection. Lands within a given HMU that are not in Management Areas 2.1 or 3.1 are recognized as part of the mature, over-mature, and old growth habitats . . . and can be considered in the overall habitat use analysis for any given wildlife species within each HMU.
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> Since each of the HMUs is based upon diverse moose requirements, at least some of the community types required by the other wildlife species will be present. The remaining community types not represented by moose were added to the mix resulting in an "ideal" habitat mix on each HMU. The "ideal" vegetative community serves as a standard that should be repeated across the HMUs and against which each individual HMU can be measured to determine present condition and to direct management toward the desired objectives. Each HMU is composed of a varying assortment of ecological land types and, as a result, not all may be capable of reaching the "ideal" state (Forest Plan, p. VII-B-4 & 5.).

Each HMU is unique in the quantities of different ecological land types they contain. The result will be projects that may differ substantially from the "ideal" state, but when looked at from a landscape perspective more closely resemble the 'ideal" state.

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B. GENERAL BACKGROUND AND RESOURCE INFORMATION

B.1 State and White Mountain National Forest Background

New Hampshire is a primarily a forested state and has a long history of people living, working, and recreating in forested landscape. Prior to European settlement in the 1700s most of New Hampshire was forested. By the middle 1800s, the amount of forestland had decreased by about 50%, replaced by fields and pastures. Within 50 years, most of these farmlands were abandoned and replaced by forests. Mature northern hardwood, aspen/paper birch, pine, and spruce/fir forests dominate a state that is now 83% forested. The amount of existing mature forest statewide has increased by 1,000,000 acres over the past 50 years. Likewise, the amount of existing forest in the young age class has decreased by 600,000 acres as the trees get larger and taller. There has also been a statewide trend of conversion of forested land to urban developments. This has been labeled as "terminal harvesting" – productive forested ecosystems replaced by homes, housing developments, and shopping and industrial centers (USDA, 2002)

Many defining characteristics of forest cover change with age.

Young forest tends to have a uniform canopy. It is quite dense and prevents most light from penetrating its foliage. Crowns are touching. If there are any gaps in the canopy, they are quickly occupied by adventitious growth. Only a few of the most shade-tolerant plants can remain in the understory. Young forests grow rapidly. Each year, many trees die from competition with other faster-growing or better-established trees.

Mature forests continue to grow, but at a declining rate compared to young forests. Vertical diversity in the canopy begins to become pronounced, and canopy layers become defined. The fastest-growing, shade-intolerant trees occupy a dominant position in the canopy. Some, which are short-lived species, begin to decline and die. Intermediately shade-tolerant trees occupy most of the available space between the dominant and co-dominant trees. Shade-tolerant trees begin to become established in the midstory. There are gaps between trees caused by mechanical interference. This allows some light to penetrate the upper canopy. Much of this is absorbed by the midstory. However, some light reaches the ground and encourages the development of some understory vegetation.

Over-mature forests experience a reduction in overall stocking. Most individual trees continue to grow slowly while others die from a combination of factors including old age. Overall, the result is negative growth. Gaps in the canopy are created when trees die. This allows light to penetrate to and nurture trees in the midstory or encourage growth of vegetation in the understory. Vertical diversity becomes maximized as older trees die and younger trees develop in the understory or grow in the midstory.

The White Mountains region had a different history. Although most of the foothills of the White Mountains were converted to farm and pasture land, the mountains were too steep and rocky for these uses. From the 1870s until the 1940s, logging and natural regeneration shaped the landscape of this mountainous region. Today's forests are the result of regrowth following these extensive harvests.

These events have helped shape the White Mountain NF landscape we see today.

Maturing forests affect the wildlife habitats available at the White Mountain National Forest landscape-level. There is less diversity and more homogeneity of habitats. The trees become larger with fewer of them on an acre of land. Tree species that need direct sunlight to grow, such as paper birch and aspen, mature and die sooner than other species and do not regenerate under a dense cover of established trees. They are replaced by trees that survive under the shade, such as spruce, fir, and beech. There is little variation in the structure of the forest, and the canopy is even. This condition favors the ten percent of the native New England wildlife species that prefer mature, closed

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canopy forested habitat. Over ninety percent of native New England wildlife species are currently dependent upon young, 0-40 year old, forest conditions during parts of their life cycles. This uniformity of maturing forest is also showing up in the lack of seedling/sapling stands. On the White Mountain National Forest, there is only 50 percent of the seeding/sapling forested habitat desired in the Forest Plan (p. III-13).

Another part of diversity is over-mature forest. There are few remnant areas of old-growth forest on the White Mountain National Forest (forests that have never been cleared or harvested). For the most part, these areas have been identified and protected, and they often occur at steep, high elevation locations that could not be economically harvested. Although these remnant forests can never be recreated, the White Mountain National Forest Plan has developed a strategy for ensuring that there will be over-mature forests with old-growth characteristics in the future.

Approximately 55 percent of the White Mountain National Forest has been set aside for purposes other than timber management. These areas are now or will function as old-growth forest in the future. In addition, 10 percent of the managed land base is to be kept in an over-mature condition (Forest Plan, p. III-13). The White Mountain National Forest currently exceeds of the desired amount of over-mature forest in areas designated for vegetation management (MA 2.1 and 3.1 lands; Forest Plan, p. III-13).

Mature and over-mature forests are also more susceptible to insect and disease attacks than the younger forests, especially the birches and beech. Increased tree mortality, reduced wood quality, and lost fiber production occur in these over-mature stands. (A possible concern for MA 2.1 and 3.1 lands). However, as trees mature and die, they provide standing and downed woody debris that is an important habitat component for many wildlife species.

Forests are still an important part of the lives of New Hampshire residents. Increasingly urban development is moving into the forests of New Hampshire. People are building primary or secondary homes in what had previously been large tracts of forested land. This homebuilding is decreasing the size of private land holdings and moving people closer to where forestry practices are occurring. Some residents, with no direct economic dependence on timber management, prefer the peace and solitude of the forest environment, homogeneous landscapes, and a place for recreation.

B.2 Previous Projects/Activities in the Area of the Nubble Project

The following table displays the NEPA decisions and activities that have occurred in and around the Nubble project area. The only project that actually occurred within the Nubble project area was the Hawthorn Knob Timber Sale.

Table 1: Previous NEPA Decisions and Activities in the Area of the Nubble Project

Project Name	Decision Year	Compartment(s)	Type	Vicinity	Activities
Hawthorn Knob	1984	19	Timber	Project Area HMU 110 Haystack/Little River Sub-watershed	229 ac Clearcuts 86 ac Thinning 14 ac Shelterwood 80 ac Overstory Removal 0.7 mi All Weather Road 1.0 mi Winter Road
Scarface Brook Timber Sale	1984	23	Timber	Headwaters Gale River Sub-watershed	10 ac Single Tree Selection 170 ac Clearcutting 288 ac Thinning

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Project Name	Decision Year	Compartment(s)	Type	Vicinity	Activities
					208 ac Shelterwood 1 mile all weather road 1.2 mile winter road
North Branch Timber Sale	1985	20	Timber	HMU 111 Headwaters Gale River Sub-watershed	244 ac Single Tree Selection 113 ac Thinning 132 ac Clearcutting 61 ac Shelterwood 42 ac Patch Clearcuts
Flat Top and Deerfield Timber Sale	1988	21	Timber	HMU 111 Headwaters Gale River Sub-watershed	80 ac Single Tree Selection 281 ac Group Selection 83 ac Clearcut
Heritage Trail	1989	23, 24, 26	Recreation	HMUs 111 Headwaters Gale River Sub-watershed	Utilize Snowmobile Trail by hikers in summer
Littleton Water and Light	1991	20	Special Uses	HMU 111 Headwaters Gale River Sub-watershed	Modify water pipeline
CCC	1993	24	Timber	HMU 111 Headwaters Gale River Sub-watershed	223 ac Single Tree Selection 375 ac group Selection 37 ac Thinning 5 ac Overstory Removal
Tuttle Brook Trail Bypass	1994	17	Recreation	HMU 110 Headwaters Gale River Sub-watershed	1 mile Snowmobile Bypass Trail
Twin Pups	1995	17	Timber	HMU 110 Haystack/Little river Sub-watershed	320 ac Single Tree Selection 41 ac Group Selection 30 ac Patch Clearcuts
Littleton Water and Light	1996	20	Special Uses	HMU 111 Headwaters Gale River Sub-watershed	Powerline to Water Intake
Five Corners Timber Sale	1998	24	Timber	HMU 111 Headwaters Gale River Sub-watershed	42 ac Single Tree Selection 560 ac Group Selection 36 ac Overstory Removal
Bickford Timber Sale	2002	23	Timber	Headwaters Gale River Sub-watershed	231 ac Single Tree Selection 10 ac Group Selection 16 as Overstory Removal 82 ac Seed Tree

B.3 PHYSICAL ENVIRONMENT

B.3.1 Water Resources

B.3.1.1 Watershed Features

Watershed features are important to maintaining watershed health. These features include the physical attributes of watershed such as hydrology and soil, which, in turn, influence the biological aspects of a landscape.

B.3.1.2 Streams and Riparian Areas

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Streams are important because they are pathways that transport water, sediment, and nutrients through the landscape. As such, these areas are the focal points for water with the potential to concentrate runoff and infiltration. Riparian areas in the project area are associated with the streams found in the proposed treatment areas and vary in size and character. A riparian area is a term used by the Forest Service that includes stream channels, lakes, adjacent riparian ecosystems, flood plains, and wetlands. The White Mountain National Forest uses a riparian classification system that is grouped into three associations to simplify the determination of minimum riparian widths (Forest Plan VII-E-1).

B.3.1.3 Water Quantity

Water quantity in streams in the proposed area is largely related to the amount of precipitation that occurs throughout the year. Even though each summer evapotranspiration largely leaves the soil in variable stages of water content, the rains in the fall usually completely replenish this water. At Hubbard Brook, 62% of the precipitation becomes streamflow (Likens and Bormann, 1995) and most of the rest is lost to evapotranspiration. Some water probably makes its way to deep cracks. Nonetheless, evapotranspiration has the greatest effect on streamflow from the June through September, the growing season. Changes in evapotranspiration are largely the result of changes to vegetation. Changes to vegetation result in changes to streamflow during their low flow periods, in the summer, and the magnitude depends on the extent of change to the vegetation (Hornbeck, et al 1993). Streamflow is lowest from August to September.

Hornbeck, Martin, and Eagar (1997) summarize that at least 20-30% of the basal area must be cut to generate detectable increases in annual water yield, water yield increases usually diminish within 3-10 years, and peak flows are often increased during the growing season immediately after cutting but not of an extent to cause flooding.

Water quality can be affected by the change in water chemistry that occurs after timber harvesting. After timber harvest, changes in water chemistry have been observed in studies done in the White Mountains National Forest (Hubbard Brook Experimental Forest) and elsewhere (Martin, Noel, and Federer, 1981, Davies, K., 1984, and Stafford, Leathers, and Briggs, 1996). The removal of trees increases soil and water temperature, reduces transpiration, increases soil moisture and streamflow, increases decomposition of organic matter, increases mineralization and nitrification, and increases in exchange of ions in the soil (Martin, et al 1986). The increases in water, nutrients, and temperature are reduced quickly within a few years, as vegetation regrows so that within a few years, these variables return to precutting levels (Martin, et al 1986). However, uptake by vegetative growth is, at first, less than nutrient release by accelerated mineralization, so nutrients are lost from some systems through the streamflow (Borman and Likens, 1979) for the first few years after harvest. More details on this are found in the soil report.

Of the various chemical changes, studies have shown that it is the changes to nitrate concentrations that have the potential to exceed water quality standards for short periods of time after the removal of trees. Nitrate concentrations that exceed water quality standards were associated with clearcutting entire watersheds (Pierce et al, 1971) where subsequent treatment with herbicide was used to keep vegetation from growing back. In contrast, watersheds that were treated with more conventional methods did not exceed water quality standards for nitrate (Hornbeck, et al, 1973). Stream water from watersheds with uncut portions tends to dilute this effect of increased nitrate concentrations from clearcut areas within a watershed. Martin and Pierce (1980) recommended use of buffer strips, less cutting in the upper portions of watersheds, and staggered harvest to reduce this effect.

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Project layout would utilize buffer strips, cut less in the upper portions, and leave large portions of uncut area. These practices all would work to reduce the possible elevated nitrate concentrations that could occur after timber harvest. In this way, effects are limited to the short term and unlikely to exceed water quality standards as a result of proposed project activities.

Another effect is the changed concentrations of nutrients and their depletion. The Nubble project proposes to use harvesting practices, including mitigations, that are usual for the White Mountain National Forest. These practices have not been shown to result in large nutrient losses or to pose a long-term risk to water quality (Brown, 1983). Because of this, water quality standards are unlikely to be exceeded and nutrients are retained at the levels needed for vegetative growth.

When forest harvesting reduces canopy shading along streams, the potential exists to increase stream water temperatures. In one study, cutting all trees in a watershed at Hubbard Brook in the White Mountain National Forest resulted in a 6 degrees Celsius increase in stream temperature (Pierce, R.S., and J.W. Hornbeck, and G.E. Likens, and F.H. Bormann, 1970). Such large increases in stream temperature can be prevented or greatly reduced through the use of buffers with uncut trees along the edges of streams (Davies, 1984 and Staffard, et al 1996). The mitigations for stream and perennial riparian areas provide for an uncut buffer on all perennial streams adjacent to the project area.

Another water quality parameter that has the potential to be of concern in the project area is sediment. Direct effects can occur where roads and skid trails cross stream channels, because, at these locations, sediment can be delivered directly into the channel. Indirect effects can occur from sediment transport on skid trails, roads, landings, dispersed sites, and ground disturbed by the dragging of trees.

As stated in the soil section of the EA, it is anticipated that, after mitigation, small amounts of onsite soil erosion may occur as a result of reopening roads to truck traffic. The FEIS for the 1986 LRMP further states that sediment production and its impacts can be reduced to a negligible amount with the use of mitigations such as careful layout and construction, caution in wet and muddy conditions, and road closure. Skid roads may also result in onsite soil erosion, but this impact is small when mitigations are used, particularly the use of winter operations. Minimizing the area of disturbed forest floor is a big step in controlling erosion and sediment movement into streams. This can be accomplished during the layout of skid trails by employing such methods as locating skid trails on the contour where possible, minimizing the number of skid trails, and avoiding steep slopes. Other mitigations include the use of water bars, avoiding operations during saturated and muddy periods, avoiding disturbance to stream channels, and winter harvest for many stands. Maintenance of BMPs during harvest activities is also expected to be effective at minimizing this effect.

Most effects related to reopening roads and reusing skid trails can be limited to the short term through the use of the BMPs and the 1986 LRMP standards and guidelines. However, the effect of elevated turbidity during storm events would probably remain. Turbidity related to skid roads would decrease to near zero as the skid trails revegetated and stabilized after operations are completed. Turbidity related to permanent roads would probably continue to occur as long as the roads are in place. However, this effect would be mostly the same as what is occurring presently, since no new roads are proposed for construction in any of the Alternatives. Maintenance and restoration of some roads could contribute to this effect since disturbance and use of the roadbed allows sediment to mobilize and be removed in subsequent rainfall events. However, since the increases in turbidity occur only during storm events when turbidities are naturally elevated, it is not likely these increases will have an effect on aquatic life, stream morphologies, or overall water quality in the watershed.

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Stream crossings are another location in a harvest area where sediment can be mobilized into a stream. Many of these stream crossings will occur in the winter season when the banks are frozen. Winter harvest is an effective mitigation to reduce disturbance at smaller stream crossings because disturbance occurs when the channel is mostly covered in snow and ice and is frozen. Designated crossings will have drainage control where needed to prevent runoff directly into the stream. Silt fence may be used to prevent sediment from running off disturbed sites into streams. All stream crossing sites will be reshaped if needed and stabilized after use. In this way, impacts related to stream crossing sites will be minimized and stabilized after use. Most studies show that best management practices (BMPs) are very effective at reducing or eliminating the transport of sediments into watercourses (as summarized by Stafford, et al, 1996).

Less use of water by trees changes the water balance in the project area. Based on a study at Hubbard Brook, in the White Mountains (Hornbeck, et al 1997), this process can result in increased base flows during the summer depending on the amount of basal area removed. However, these increases become undetectable 7-9 years after timber harvest and decreased water yield was observed for years 8-25 after strip cutting. This is attributed to the species of tree regenerating the forest. The first trees to grow after harvest tend to be trees (cherry and birch) that use more water than the harvested trees (maple and beech) (Hornbeck, et al 1997).

The magnitude of the evapotranspiration increase is generally proportional to the percentage reduction in stand basal area. However, measurable responses in annual water yield are not realized until the reduction in basal area of the watershed of interest is greater than 25 percent (Hornbeck, et al 1997). This increase in water yield is generally a result of increased low flow levels, or as augmented base flow or delayed flow, and not an increase in peak or flood flows (Hornbeck et al., 1993). This increase in water yield can be considered a benefit of timber harvest but can also result in channel adjustment, sedimentation, and increased flood risk and can be offset in later years by reductions in water yield as early successional trees revegetate the harvested area.

B.3.2. Air Quality

B.3.2.1 Airshed Characteristics

There are air quality monitors operated by a variety of agencies, institutions, and groups near the White Mountain National Forest. The Forest Service monitors air quality at the Class I wilderness areas at the IMPROVE (Interagency Monitoring of Protected Visual Environments) site at Camp Dodge. AMC (Appalachian Mountain Club) operates ozone monitors at the summit of Mount Washington and at Camp Dodge. In addition, there are various types of air quality monitoring sites at Conway and Hubbard Brook.

There are six major federally regulated air pollutants called National Ambient Air Quality Standards (NAAQSs). They are ozone, carbon monoxide, nitrogen dioxide, particulate matter, sulfur dioxide and lead, along with several toxic air pollutants regulated by Department of Environmental Services (DES).

The closest non-attainment area is for ozone and is located in the southern counties of New Hampshire, Merrimack, Cheshire, Hillsborough, Rockingham, and Strafford Counties. For the White Mountain National Forest, the closest non-attainment area for any of the National Ambient Air Quality Standards (NAAQSs) is Merrimack County for ozone. It can be seen from occurrence maps, that ozone appears to originate around large urban centers and migrates northward to the White Mountain region during times of high temperature and air stagnation. The project area is about 45 miles from the closet point of Merrimack County.

The following table summarizes the status of air quality in New Hampshire as discussed in the 2000 Annual Air Quality

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Report (EPA, 2001). Each of the parameters listed is one of the national ambient air quality standards (NAAQs) that are used to quantify components in air pollution. The data used in this table was generated across the state and is used as an indicator of existing air quality in New Hampshire.

Table 2: EPA Summary of NH Air Quality (2000 Annual Report on Air Quality, EPA, 2001).

Parameter	Status in NH
Carbon Monoxide (CO)	In 2000, there were no exceedances or violations of the 8-hour or 1-hour NAAQSs at either of the two carbon monoxide monitoring (CO) sites in the state. The ten-year graphs of CO levels show significant year-to-year fluctuations.
Lead (Pb)	In 1996 New Hampshire discontinued lead (Pb) monitoring, because air quality levels were well below the NAAQS and approaching minimum detection levels.
Nitrogen Dioxide (NO_2)	In 2000, nitrogen dioxide (NO_2) monitoring was conducted at three sites. The Manchester site measured the maximum NO_2 annual average of 11 ppb or 22%of the NAAQS. There have been no significant trends for NO_2 in the last ten years.
Ozone (O_3)	None of the thirteen ozone (O_3) sites operating in New Hampshire reported violations of the 1-hour NAAQS in 2000. For the 8-hour ozone standard in 2000, none of the thirteen O_3 sites reported a fourth high day of at least 85 ppb.
Particulate Matter (PM10)	None of the thirteen Particulate Matter (with a mass mean diameters of less than 10 microns) (PM10) sites in New Hampshire had any exceedances or violations of the annual or 24-hour NAAQS for PM10 in 2000,1999,1998 or 1997. The highest 24 hour values were reported at Berlin with a highest second maximum value of 72 ug/m3 or 48%of the daily standard. The maximum annual average was also recorded in Berlin with a reported concentration of 28 ug/m3 or 56%of the NAAQS. Over the past ten years, all the New Hampshire PM10 monitoring sites have recorded particulate matter concentrations below the annual and the 24-hour NAAQS. Yearly variability in the data is common, in part determined by meteorology, transport of particulate matter from distant sources, and changes in the emission strength of local sources.
Sulfur Dioxide (SO_2)	There were no exceedances or violations reported at any of the ten sulfur dioxide (SO_2) sites in 2000. Statewide, the SO_2 ten-year data showed no significant trends."

B3.2.2 General White Mountain National Forest Air Quality Cumulative Effects

Many of the cumulative effects to air quality occurring in the White Mountain National Forest come from downwind, thousands miles away in the Midwest. Some large sources within the state also contribute to these effects. Large coal burning plants and other industrial emission sources contribute oxides of sulfur and nitrogen that have resulted in acid rain. This in turn has led to the acidification of ponds and streams across the forest where the buffering capacity is low. In addition, effects to soil have occurred. These are discussed in the soil report under soil productivity. Effects to water quality are also evident on the White Mountain National Forest. There are advisory across the entire state of New Hampshire for the consumption of fish due to a risk of mercury levels. Aluminum and nitrogen compounds are found in the surfaces water across the forest at elevated amounts as the result of leaching of the soil from acid rain. Trends of the emissions that cause these effects have been reduced in recent years (EPA, 1999). However, this trend may be reversed in the future. The current administration has called for more coal burning plants in the future to assist in meeting the nation's energy needs. Ninety-four such plants are proposed in areas that would continue to contribute to air quality and atmospheric deposition in the White Mountains (DOE, 2002) through long-range transport of pollutants and atmospheric deposition.

Another pollutant of concern for cumulative effects is ground level ozone. Ozone has its origin in automobile and industrial emissions. Strong sunlight and hot weather cause ground-level ozone to form in harmful concentrations in the air.

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Ozone concentrations can vary from year to year. Changing weather patterns (especially the number of hot, sunny days), air stagnation, and other factors that contribute to ozone formation make long-term predictions difficult.

The Forest Service monitors ozone at two locations within the White Mountain National Forest. Forest Service screening criteria used for the Prevention of Significant Deterioration (PSD) program developed by Adams, et al, 1991, uses the second highest hourly ozone concentration as a measure. A 'green line' indicates the level at which no significant change is expect in an ecosystem if ozone is below the green line, although some leaf damage may occur. The 'red line' value is set a 120 ppb where concentration above this values are expect to cause reduced plant growth and competitive availability of many species. The 'red line' values have been exceeded twice within a 14-year period at Mount Washington. At Camp Dodge, the green line values have been exceeded every year except for 1989, 1995, 1996, and 2000. According to this data, some leaf damage is expected to occur at all of the sites and the most prominent impact is expected to occur at or near the summit of Mt Washington. In addition, the 1999 White Mountain National Forest Monitoring Report states that 'this monitoring effort shows that ambient ozone continues to be a pervasive air pollutant during the growing season at concentrations high enough to cause foliar plant injury'.

B.4 Biological Environment

B.4.1 Vegetation

B.4.1.1 Vegetative History of the Nubble Project Area

The project area was first settled and influenced by western culture in the early 1800s. New England pioneers cut roads and farmsteads out of the original vegetation in the lower elevations. There little evidence that any substantial portion of the project area was used for cultivation. It is likely that forest products, including lumber and maple sugar, were harvested from the area by early settlers.

Logging on an industrial scale did not occur until 1893 when the ownership of the Eastern portion of the area was acquired by George Van Dyke. He constructed a logging railroad along the Little River and harvested most of the timber by 1897. Other operations continued toward the western portion of the project area with many stands not being harvested until the 1920s.

Some of these stands may have been first cut at the beginning of the railroad-logging era. Harvesting then progressed up the slopes. The higher elevations were cut last when there was nothing else left. There are exceptions where stands were not completely cut. The older, residual trees are now the dominant trees in the present stands. Many of the more mature stands were regenerated in previous decades.

Some succession of cover types has occurred as tree cover became established. When the current vegetation in the project area was young, there would have been a higher percentage of shade-intolerant, short-lived species such as aspen, pin cherry, and paper birch. Over time, and due to competition between trees, the composition has changed to favor more shade-tolerant and longer-lived species such as sugar maple, beech, and yellow birch.

Some of the stands are classed as low quality. This is largely due to beech content. American beech is highly susceptible to an introduced insect known as Beech Scale. This insect creates a feeding hole the bark. Later the hole provides an entryway for the naturally occurring Necteria fungus. Scale alone can kill larger trees. In combination with Necteria, it will often kill moderate-sized trees. The wood in most other trees is degraded by wounds and lesions in the bark created by Necteria. In addition, many of the paper birch trees are beginning to decline as a result of aging.

Paper Birch and Aspen are relatively short-lived trees. After age 40 in aspen and 60 in paper birch they become

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subject to stresses associated with altitude, thin soils, weather events or drought. Mortality and branch dieback are commonly observed in the project area.

Composition and stand age have also been influenced by management activities in the recent past. The first significant Forest Service management began in the 1960s, 55 acres of poor quality trees were regenerated and 160 acres of the better-stocked, younger stands were thinned. Often these treatments featured the harvesting of faster growing, short-lived species and the salvage of the most severely affected beech. Reduced competition allowed better quality trees to grow faster. Then, in the 1970s, 292 acres of the most mature and lowest quality stands were regenerated. During the 80s, 497 acres were regenerated, 199 acres were thinned, and 244 acres were treated using uneven-aged management In some cases these treatments have overlapped but in total, 1,348 acres, or 35% of the project area, has received one or more management treatments since the 1960s. Of those treated acres, 905 acres, or 23% of the project area, was successfully regenerated. Currently, 75 acres are in the regenerating age class (0-10 years).

B.4.1.2 General Effects of Timber Management

Timber stands that are regenerated using even-aged management systems progress through vegetative cycles. When stands are young, they contain a substantial amount of herbaceous vegetation that requires direct sunlight to grow. Young stands originate, only after significant disturbance, from dormant seed stored in the ground. As woody vegetation and trees develop and grow, they expand over the herbaceous vegetation and intercept sunlight. Eventually tree and shrub regeneration becomes so dense that there is not enough sunlight available to support shade-intolerant, herbaceous vegetation. As the stand matures, the individual trees grow at different rates. This creates variations in crown closure and density and increases the amount of sunlight available for the development of ground vegetation. When theses stands reach and exceed maturity, additional light, at the forest floor is created through natural tree mortality. The additional light stimulates the development of new, shade-tolerant vegetation. Intermediate treatments such as thinning can produce similar results.

The project area would develop a variety of understory conditions over time. Various compositions of herbaceous vegetation, shrubs, and trees would be present at any time. There would be representations of all development phases associated with disturbance. The majority of the area would be similar to immature or mature stands without disturbance.

Timber stands that are managed using uneven-aged, single-tree selection also supply more light to the forest floor and to herbaceous vegetation after the first cut. Over time, a mix of herbaceous and woody growth occupies the understory. Additional treatments over time tend to maintain a supply of light to the forest floor, and the woody portion of the understory tends to become dominant. That is, species such as beech, striped maple, and hobblebush tend to dominate the understory that was composed of ferns and herbaceous plants.

Stands managed using group selection cuts, uneven-aged management, develop through vegetative cycles similar to even-aged stands, only on much smaller areas. In addition, there is more shade effect around the small group openings both inside and outside of the cut area. The group effect provides a variety of herbaceous, shrub, and tree regeneration conditions within the larger stand.

The following table provides details of the stands proposed for treatment in Alternatives 2 and 3. Treatment acres represent the actual acres of vegetation management occurring within a stand, e.g., five acres of groups actually being harvested on a 20-acre stand. Stand acres represent the total acres in a stand. Impacts from a particular treatment may occur across a larger portion of a stand

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even if the whole stand is not being harvested. For example, the effects of skidding in a group selection treatment would impact more of the stand than the actual treated acres, because trees need to be taken to a landing. In some cases, reserve areas are left in a stand, e.g. a 20-acre stand is clearcut, but only 18 acres are treated, leaving a 2-acre reserve area. For a more detailed discussion of individual stand prescriptions see the Vegetation Report in the project file.

Table 3: Nubble Vegetation Management Project Comparison of Alternatives by Individual Stand Treatments

Comp/ Stand	Stand Acres	Treatment Acres	Forest Type	Alt 2 Proposed Action	Alt 3	Season
19/70	11	11	Northern Hardwood	Clearcut	Clearcut	Summer/Fall/Winter
19/77	17	15	Balsam Fir, Aspen, Paper Birch	Defer	Clearcut	Winter
19/71	14	14	Red Maple	Clearcut	Clearcut	Summer/Fall/Winter
19/73	15	15	Red Maple	Clearcut	Clearcut	Summer/Winter
19/74	34	8	Northern Hardwood	Group Sel.1/4-1/2ac	Group Sel.1/4-1/2ac	Winter
19/80	37	8	Red Maple	Group Sel.1-1 1/2ac	Group Sel.1-1 1/2ac	Fall/Winter
19/39	25	4	Northern Hardwood	Group Sel.1/4-1/2ac	Group Sel.1/4-1/2ac	Winter
19/26	36	6	Northern Hardwood	Group Sel.1/4-1/2ac	Group Sel.1/4-1/2ac	Winter
19/96	17	12	Northern Hardwood	Clearcut	----------	Winter
		17	Northern Hardwood	----------	Clearcut	Winter
19/18	48	30	Northern Hardwood	Group Sel.1/4-1/2ac	Clearcut	Winter
		18	Northern Hardwood	Defer	Thin	Winter
19/46	17	12	Paper Birch	Clearcut	----------	Winter
		17	Paper Birch	----------	Clearcut	Winter
19/45	66	66	Northern Hardwood	Thin	Thin	Winter
19/44	18	18	Paper Birch	Clearcut	Clearcut	Winter
19/99	27	12	Paper Birch	Defer	Clearcut	Winter
19/57	20	16	Northern Hardwood	Clearcut	----------	Winter
		20	Northern Hardwood	----------	Clearcut	Winter
19/50	10	8	Northern Hardwood	Single-tree Selection	----------	Winter
		8	Northern Hardwood	----------	Clearcut	Winter
19/63	20	18	Northern Hardwood	Clearcut	Clearcut	Winter

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Comp/ Stand	Stand Acres	Treatment Acres	Forest Type	Alt 2 Proposed Action	Alt 3	Season
19/54	78	78	Northern Hardwood	Single-tree Selection	Single-tree Selection	Fall
19/62	81	81	Northern Hardwood	Single-tree Selection	Single-tree Selection	Fall/Winter
19/42	26	7	Northern Hardwood	Group Sel.1-1 1/2ac	Group Sel.1-1 1/2ac	Summer/Fall/Winter
19/58	60	12	Northern Hardwood	Group Sel.1/4-1/2ac	Group Sel.1/4-1/2ac	Summer/Fall/Winter
19/66	31	5	Red Spruce, Balsam Fir	Group Sel. 1/6	Group Sel. 1/6	Summer/Fall/Winter
19/8	20	20	Paper Birch	Defer	Clearcut	Winter
20/24, 67,75	54	6	Paper Birch & Northern Hardwoods	Group Sel.1/2-1ac Group Sel.1/4-1/2ac	Group Sel.1/2-1ac Group Sel.1/4-1/2ac	Summer
20/26	20	20	Northern Hardwood	Single-tree Selection	Single-tree Selection	Fall
20/15,& 23	52	7 45	Paper Birch	Group Sel.1/4-1/2ac Single-tree Selection	Group Sel.1/4-1/2ac Single-tree Selection	Winter
20/16	13	6	Paper Birch	Defer	Patch Clearcut	Winter
20/21	74	8 66	Northern Hardwood	Group Sel.1/4-1/2ac Single-tree Selection	Group Sel.1/4-1/2ac Single-tree Selection	Groups – Sum./Fall STS - Fall
20/20	94	12 82	Northern Hardwood	Group Sel.1/4-1/2ac Single-tree Selection	Group Sel.1/4-1/2ac Single-tree Selection	Groups – Sum./Fall STS - Fall
20/35	26	26	Northern Hardwood	Group Sel.1/10ac Single-tree Selection	----------	Fall/Winter
		18	Northern Hardwood	----------	Clearcut	Fall/Winter
20/32	26	8	Paper Birch	Patch Clearcut	Patch Clearcut	Summer/Fall
20/41	45	8	Northern Hardwood	Patch Clearcut	Patch Clearcut	Winter
20/44	44	5	Northern Hardwood	Group Sel.1/10ac Single-tree Selection	Group Sel.1/4-1/2ac Single-tree Selection	Winter
20/49	52	10 42	Northern Hardwood	Patch Clearcut Thin	----------	Winter
		30 22	Northern Hardwood	----------	Patch Clearcut Thin	Winter
20/66	43	5	Red Maple	Group Sel.1/2-1 1/2ac	Group Sel.1/2-1 1/2ac	Winter
20/12	26	21	Northern Hardwood	Single-tree Selection	Single-tree Selection	Fall
20/18	37	37	Northern Hardwood	Single-tree Selection	Single-tree Selection	Fall
20/11	33	2	Red Maple	Group Selection 1ac	Group Selection 1ac	Winter
20/2	27	3	Red Spruce, Balsam Fir	Group Sel. 1/6ac	Group Sel. 1/6ac	Winter
20/19	15	15	Northern Hardwood	Defer	Clearcut	Fall

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Comp/ Stand	Stand Acres	Treatment Acres	Forest Type	Alt 2 Proposed Action	Alt 3	Season
20/86	36	22	Paper Birch	Defer	Clearcut	Winter
20/52	7	7	Northern Hardwood	Defer	Clearcut	Winter

B.4.1.3 Desired/Existing Composition for HMUs 110 and 111 Condition

See Appendices C and E for data on HMUs 110 and 111.

B.4.1.4 General Cumulative Effects of Timber Management

Overall, a combination of even- and uneven-aged treatments creates cycles of understory effects. While management activities combined with natural disturbances tend to increase both herbaceous and woody vegetation, past treatment effects are diminishing. The trees in older cuts grow, and the expanding crowns intercept light causing the understory vegetation to become sparser. In total, herbaceous and woody vegetation increases with successive activities but also reaches a balance in which additional effects are equaled by the re-growth of stocking.

The practice of even- and uneven-aged management over time can also effect species composition. Even aged practices tend to favor shade intolerant vegetation. Therefore the clearcutting from past management and those proposed in this project will tend to have more aspen, paper birch, pin cherry, white ash and black cherry and less hemlock, sugar maple and beech. This effect accumulates with successive treatments over time.

Single-tree selection cutting, as practiced, tends to favor shade tolerant species like hemlock, sugar maple, and beech. Successive applications of this prescription will tend to increase the populations of those species and reduce the population of shade intolerants like aspen, pin cherry, paper birch, white ash, and black cherry.

Group selection produces the widest variety of results. Shade intolerants are favored in the centers of larger groups. Intermediates such as yellow birch, red maple, black birch, and red spruce may be favored in smaller groups or in the middle zone of larger groups. Shade tolerants could be favored around the margins of openings. Additional variation resulting from the viability of stored seed or germination characteristics of each species.

The following figures display the distribution of age classes that exist in on 2.1 and 3.1 lands in HMU 110 and 111 at present, and the distribution that would exist in the foreseeable future (2012) for each alternative. The percentages displayed account for the ten years of growth that will occur in each age class, resulting in a loss for some age classes and an increase in others. For Alternative 1 there will be no regenerating age class in the foreseeable future unless it is created from natural causes, which cannot be predicted. Alternatives 2 and 3 will create a regenerating age class by harvesting stands that are currently in the mature or over-mature age class.

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Figure 5: HMUs 110 & 111, MAs 2.1 & 3.1 Even-Aged Management Age Class Distribution, Existing & Alternatives 1-3

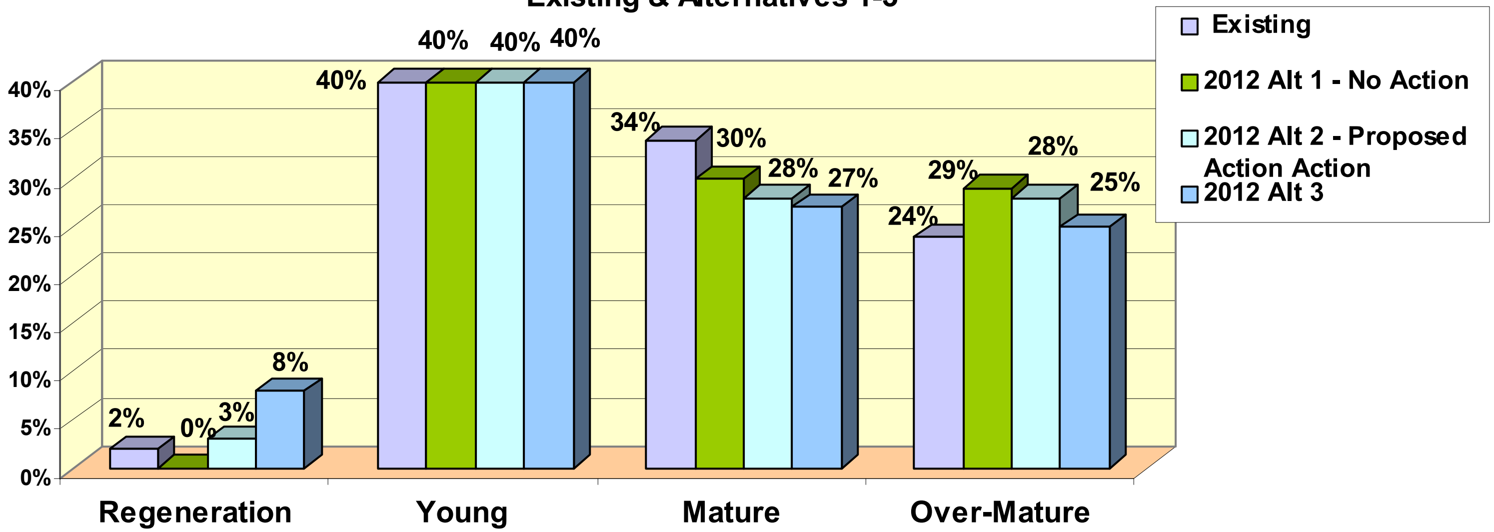
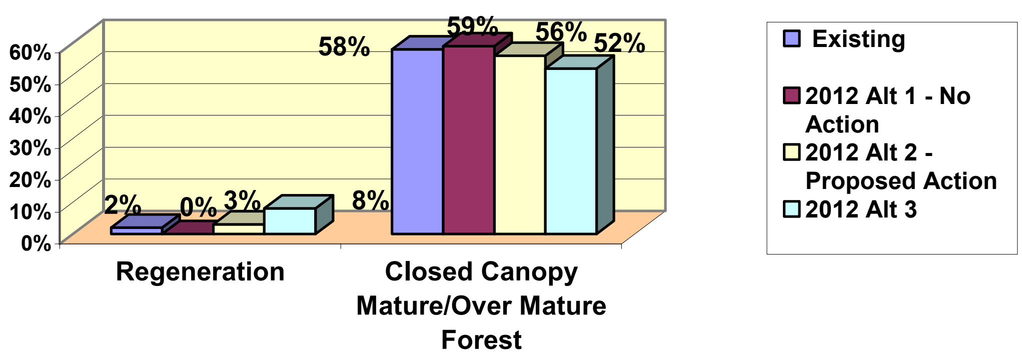


Figure 6: Existing Regenerating and Closed Canopy Forest Compared to the Forseeable Conditions Resulting From Alternatives 1-3



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B. 5 Socio-Economic Environment

B.5.1 Recreation

The following table displays the recreation trails found in the Nubble project area.

Table 4: Trails within the Nubble Project Area

Trail	Type	Miles Within the Nubble Project Area	Other
Gale River	Hiking	3.7 miles	Trailhead located west of the junction of FR 92 and the Gale River Road (FR 25). Access trail to the Appalachian Trail (AT) and Appalachian Mountain Club's (AMC) Galehead Hut; receives heavy use during the summer (weekends, average 60-70 people; weekdays average 20-25[a]).
North Twin I	Hiking	4.3 miles	Trailhead located at the southern end of the Haystack Road (FR 304). Trail use is light (weekends, average 10-12 people; weekdays, average 4-5 [a]). Accesses the AT. This northern portion of the trail is the southwestern boundary of the project area (also the MA 2.1/6.2 boundary).
Beaver Brook	Cross-Country Ski, Mountain Biking	7.4 miles	Beaver Brook Wayside Picnic area, located on State Route 3, serves as the trailhead in winter. Trail system consists of three concentric loop trails, Beaver Brook, Badger, and Moose Watch. Trails are heavily used on weekends when snow cover is good (average 70+ people [a]). Many people ski several hours in the morning or afternoon on easier portions on the trail. The hillier, more twisting sections of the trail are used by experienced skiiers. Some sections of trail are wet and require a lot of snow and cold weather to be good for skiing.
Haystack Connecter Snowmobile Trail (FR 25 - State Corridor Route 11)	Snowmobile, Mountain Biking	6.6 miles	A trail that people use to snowmobile betewwn Littleton and Franconia, NH. Average weekend use is 80-100 machines, weekday use averages 20-25 [a, b]. If it is a low snow year use can be very heavy (600 on a busy holiday weekend [b]). During good snow years, use is spread out across other trails [b].

B.5.2 Visual

B.5.2.1 Viewpoints/Use Areas

The following tables display the viewpoints and use areas used to assess the visual effects of proposed treatments in the Nubble project.

Table 5: Viewpoints, Distance Zone, and Visual Quality objectives for the Nubble Vegetation Management Project

Viewpoint Number	Location Description	Sensitivity Level	View Sector Azimuth	Visual Quality Objective (VQO)
30	Twin Mountain Motels	1	50-170	Partial Retention
31	Jct. Route 3 and 302	1	30-230	Partial Retention
32	Middle Sugarloaf	2	0-360	Partial Retention

Table 6: Use Area Visual Quality Objectives

Use Area	Observation Criteria	Sensitivity Level	Variety Class	Distance Zone	Visual Quality Objective
Route 3	Vehicle	1	B and C	FG	R and PR
Beaver Brook XC Ski Trails	Stationary	2	B	FG	R and PR
Snowmobile Trail System	Vehicle	2	B and C	FG	R and PR

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Beaver Brook Picnic Area	Stationary	1	C	FG	PR

Appendix C6 of the Forest Plan lists the types of management activities that meet various visual quality objectives. The following table displays the VQO for individual stand treatments proposed in the Nubble project

Table 7: Visual Quality Objective by Stand

Comp/ Stand	Distance Zone	Sensitivity Level	Variety Class	VQO	Alt 2	Alt 3
19/70	MG	1	B	PR	Y	Y
19/77	MG	1	C	PR	Y	Y
19/71	MG	1	B	PR	Y	Y
19/73	MG	1	B	PR	Y	Y
19/74	MG	1	C	PR	Y	Y
19/80	MG	1	C	PR	Y	Y
19/39	MG	1	B	PR	Y	Y
19/26	MG	1	B	PR	Y	Y
19/96	MG	1	B	PR	Y	Y
19/18	MG	1	B	PR	Y	N
19/46	MG	1	B	PR	Y	Y
19/45	MG	1	B	PR	Y	Y
19/44	MG	1	B	PR	Y	Y
19/99	MG	1	B	PR	----	Y
19/57	MG	1	B	PR	Y	Y
19/50	MG	1	B	PR	Y	Y
19/63	MG	1	B	PR	Y	Y
19/54	MG	1	B	PR	Y	Y
19/62	MG	1	B	PR	Y	Y
19/42	MG	1	C	PR	Y	Y
19/58	FG	1	B	R	Y	Y
19/66	FG	1	B	R	Y	Y
19/8	MG	2	B	M		Y
20/24,67,75	FG	1	B	R	Y	Y
20/26	FG	1	B	R	Y	Y
20/15,& 23	FG	1	B	R	Y	Y
20/16	FG	1	B	R	Y	Y
20/21	NS	3	B	M	Y	Y
20/20	FG	2	B	PR	Y	Y
20/35	FG	2	B	PR	Y	N
20/32	NS	3	B	M	Y	Y
20/41	FG	2	B	PR	Y	Y
20/44	MG	1	B	PR	Y	Y

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Comp/ Stand	Distance Zone	Sensitivity Level	Variety Class	VQO	Alt 2	Alt 3
20/49	MG	1	B	PR	Y	Y
20/66	FG	1	C	PR	Y	Y
20/12	FG	2	C	M	Y	Y
20/18	FG	2	C	M	Y	Y
20/11	FG	2	C	M	Y	Y
20/2	FG	1	C	PR	Y	Y
20/19	FG	2	B	PR	----	Y

Comp/ Stand	Distance Zone	Sensitivity Level	Variety Class	VQO	Alt 2	Alt 3
20/86	NS	3	B	M	----	Y
20/52	MG	1	B	PR	Y	Y

Y: Yes Meets VQO

No: Does not meet VQO

NS: Not Seen and as such does not fit into Foreground, Middleground,, or Background.

B.5.2.2 Visual Effects of Silvicultural Treatments.

Different silvicultural treatments produce different visual effects.

Clearcutting harvests and removes most trees in a stand and range in size from 10-30 acres. Residual groups of trees and scattered individual wildlife trees, left to provide habitat diversity and structure, also mitigate some of the visual effects. From a distance, where there is a superior view, these residuals and groups tend to fill in what would otherwise be a void in the crown line. After the stand regenerates and re-growth is occurring, these residuals and groups provide diversity in the crown line. Reserve groups and individuals left along the clearcut edge tend to soften the effect of the visual transition between the treated and untreated area. Clearcuting is described in the Forest Plan on page VII-M-8 and 9.

Alternative 2 proposes to clearcut 8 stands totaling 114 treated acres with an average size of 14 acres. The clearcut units meet the Forest Plan Standards and Guidelines for maximum observable acres of openings. The shape and size of units, the remaining residual individual trees and tree islands, would allow clearcut units to blend well with the topography and not be visually apparent from any of the viewpoints, roads, trails, or other use areas.

Thinning is an even-aged technique used primarily in northern hardwood stands. Thinning removes surplus tree in an immature stand and encourages growth on a limited number of desirable trees. This treatment is only visually apparent immediately after it is applied. For a short time, slash and stumps are visually apparent when viewed form close range. Slash disposal measures can mitigate this effect. Thinnings are not visually noticeable from a distance. Alternative 2 proposes thinning 66 acres in 3 stands.

Group Selection is an uneven-aged management technique that harvests all trees in a small group, ranging from 1/10 acre to 2 acres. This practice is used to increase the percentage of mid-tolerant species such as ash and yellow birch and is also used to harvest softwood stands. The intensity of harvest ranges from 10% to 25% of a given stand. The visual effect depends on the surroundings and the viewing distance. At close range, and where the view shed is relatively uniform, group selection can add variety to the landscape. When viewed from above and from a distance, group selection may be evident when the groups are uniformly placed and shaped. Alternative 2 proposes to harvest in 621 acres of which 124 acres would be treated in 19 stands.

Single Tree Selection is an uneven-aged management technique where individual trees are selected and cut while maintaining a desired residual number of trees in each diameter class. The visual effects are nearly the same as thinning. Single-tree selection cuts can also affect the visual quality of the forest by allowing sunlight to penetrate the forest canopy, allowing more visibility below and improving the growth of the shrub layer. Alternative 2 proposes to harvest 478 acres in 11 stands including some stands that will include group

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selection.

Alternative 2 proposes to treat 720 acres, affecting a total area of 1265 stand acres. Even-aged treatments constitute 180 acres or 25% of the total treated acres. This alternative meets the VQO for all stands as viewed from the listed viewpoints and travelways. Visual effects of proposed harvesting varies in relation to the intensity of harvesting method. The clearcut stands would have the longest-term effects while single-tree selection the shortest. Pattern and texture change in the project area would be considered moderate for Alternative 2 and high for Alternative 3.

B.5.3 Community, Environmental Justice, & Economics

B.5.3.1 New Hampshire Timber Tax

The state of New Hampshire has a tax on the value of harvested timber. The tax is paid by the timber purchaser to the towns in which timber is harvested. The percent paid is based on the species cut. However, the tax averages ten percent (10%) of the value harvested. If the timber harvested is cut on lands in an unincorporated town such as Livermore, the timber tax is paid to the county (in this case, Grafton County).

B.5.3.2 25% Fund

Jobs and income in Coos, Carroll, and Grafton Counties in New Hampshire and Oxford County in Maine are affected by activities on the White Mountain National Forest through direct employment as well as through products and services that are generated from activities on National Forest system lands. Priced commodities (revenues) from the Tripoli East project would be timber sale receipts and revenues from the dispersed recreation permit on the Tripoli Road area. Twenty-five percent (25%) of the actual revenues generated forest-wide on National Forest system lands are returned through the four counties to their towns to be used to support roads and schools.

B.5.3.3 Payment in Lieu of Taxes (PILT)

The Forest Service pays no taxes on the lands it administers. Instead, the PILT Fund makes payments to the local counties based on the acres of county lands within the National Forest.

Counties receive PILT Funds annually regardless of whether or not revenue-generating projects occur on federal lands. Therefore, under all alternatives, Grafton County would receive annual PILT Fund payments