



United States  
Department of  
Agriculture  
Forest  
Service

April 2003



# IRON MAPLE 2 VEGETATION MANAGEMENT PROJECT

Towns of Bartlett and Jackson  
Carroll County, New Hampshire

## Environmental Assessment

Prepared By  
Saco Ranger District,  
White Mountain National Forest



For Information Contact: Rod Wilson

Saco Ranger District  
White Mountain National Forest  
33 Kancamagus Highway  
Conway, NH 03813  
603-447-5448  
[www.fs.fed.us/r9/white](http://www.fs.fed.us/r9/white)

# Iron Maple 2 Project EA

## Cover Sheet

**Management Action:** Timber harvest to implement timber and wildlife habitat management goals in the Iron Maple 2 Project Area, HMUs (Habitat Management Units) 506 and 509.

**Agency:** United States Department of Agriculture, White Mountain National Forest, Saco Ranger District.

**Cooperating Agency:** New Hampshire Department of Fish and Game

**For Further Information:** Saco Ranger District  
Attn.: Rod Wilson  
33 Kancamagus Hwy, Conway, NH 03818  
Phone: (603) 447-5448 (ext 120)  
Fax: (603) 447-8405  
e mail: rmwilson@fs.fed.us

**Responsible Official:** District Ranger Terry Miller

### Abstract

The Iron Maple Project area is in the Towns of Bartlett and Jackson, Carroll County, New Hampshire and is about 8,750 acres within the Rocky Branch River watershed. Lands in the project are allocated to MAs (Management Areas) 2.1, 3.1, 6.1, and 6.2 under the White Mountain National Forest Land and Resource Management Plan.

"**No Action**", **Alternative 1**, does not propose active management within the project area.

**The Proposed Action, Alternative 2**, would diversify wildlife habitat in terms of successional communities and softwood development, harvesting approximately 2.8 MMBF (million board feet) of timber from approximately 482 acres of National Forest lands. Harvest Methods include 40 acres of clear cutting, a 15 acre seed tree, 243 acres of commercial thinning, and 184 acres of single-tree selection. Harvest operating seasons would be in the summer, fall, and winter. Access to the project area would include reconstruction of about 2,250 feet of existing road, and construction of 1250 feet of new road, and 2.1 miles of pre-haul maintenance on Forest Road 27. The Proposed Action would achieve management goals of diversifying wildlife habitat and producing timber products. Four units totaling 55 acres could be harvested in summer.

**Alternative 3** would harvest approximately 2.7 MMBF of timber from 482 acres of National Forest lands. Harvest methods would include about 15 acres of shelterwood, 243 acres of commercial thinning, 184 acres of single-tree selection and 40 acres of clearcut. This alternative has an additional 1850 feet of existing road reconstruction as compared to the Proposed Action and would construct a temporary bridge over Otis Brook, although it avoids any new road construction. Operating seasons would also be summer, fall and winter. Four units totaling 55 acres could be harvested in summer.

**Alternative 4** would harvest approximately 1.9 MMBF of timber from 388 acres of National Forest lands. Using only uneven-aged harvest methods, this alternative includes 333 acres of single-tree selection, 55 acres of group selection and would have the same road work and operating seasons as Alternative 3.

**Alternative 5** would harvest approximately 0.9 MMBF of timber from 137 acres of National Forest lands. Harvest Methods include 40 acres of clearcut, 15 acres seed tree, 39 acres of commercial thinning, and 43 acres of single-tree selection. Operating seasons would be summer, fall, and winter. This alternative would reconstruct 1000 feet of existing road and does not cross Otis Brook.

# **IRON MAPLE 2 VEGETATION Management EA**

## **Document Summary**

The Saco Ranger District of the White Mountain National Forest is proposing the following management activities under the Proposed Action in the Iron Maple 2 Project:

- Even-aged and uneven-aged timber management on 482 stand acres
- Road Reconstruction on 2,250 feet of existing road
- Road construction on 1,250 feet of new road
- Pre-haul road maintenance on 2.1 miles of Forest Road 27

The Proposed Action would achieve management goals of diversifying wildlife habitat and producing timber products. The EA refers to this project as Iron Maple, or Iron Maple Project.

The Iron Maple project is located in the towns of Bartlett and Jackson, Carroll County, New Hampshire, on the Saco Ranger District of the White Mountain National Forest. The Iron Maple project area consists of approximately 8,750 acres, and includes actions within Management Area 3.1 lands in Habitat Management Units 506 and 509.

The following list describes the “need for change” and opportunities identified for the Iron Maple project area that would implement the White Mountain National Forest Plan.

1. There is a need to increase the acres of early successional habitat.
2. There is a need to increase the softwood component in some stands.
3. There is a need to create a more desirable stocking of species, size, and quality hardwood trees, while providing forest products to the local economy.
4. Maintain red oak and oak-pine communities.

The proposed action may result in the following effects:

- Minor reduction in soil calcium within treated areas
- Short-term minor sedimentation may occur at temporary stream crossings
- Temporary openings where clearcutting and group selection harvests occur
- Establishment of new tree seedlings in partial cut units and within openings
- These openings, a maximum of 55 acres in units, would reduce mature forest by those 55 acres, and yet create an over-all increase in age-class diversity and the associated benefits to wildlife species dependent on this habitat
- Road reconstruction would maintain the existing access opportunities
- Road reconstruction and skid trails may result in very minor, localized, and short-term direct and indirect effects to wildlife and fish habitat as related to sediment, turbidity, and/or travel impediments and displacement
- Timber Sale offer may provide 2,800 MBF of timber for harvesting, manufacturing, and marketing jobs and may provide gross receipts of \$170,800 to the US Treasury and \$164,640 to the Towns of Bartlett and Jackson for the 10% Timber Yield Tax and the 25% fund.

This environmental assessment will provide the deciding officer (Saco District Ranger) with information to make informed decisions on the Iron Maple 2 Vegetation Management Project and provides the basis for determining:

- Which alternative best meets the purpose and need to move the Iron Maple project area towards the desired condition in accordance with Forest Plan direction, addresses the need for change, and responds to issues identified for this project?
- Is the information in this analysis sufficient to implement the proposed action?
- Does the proposed project have a significant impact on the human environment that would trigger a need to prepare an Environmental Impact Statement?
- Are the proposed mitigation measures and monitoring requirements sufficient to meet Forest Plan standards and guidelines for all resources?
- Does the decision and alternatives considered meet applicable federal, state, and local laws and policies, including consistency with the Forest Plan?
- Is a Forest Plan amendment required prior to implementation of this project?

## **This document is available in large print.**

**Contact the White Mountain National Forest Supervisor's Office 1-603-528-8721  
TTY 1-603-528-8722**

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# IRON MAPLE 2 VEGETATION Management EA

## Document Structure

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four chapters:

- **Chapter 1 – Purpose and Need:** Chapter 1 includes information on the history of the project area, Forest Plan direction, the purpose and need for the project, and the agency’s proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal (Scoping), and lists the unresolved (40CFR1501.7) issues for the proposed action.
- **Chapter 2 - Alternatives:** Chapter 2 details the Proposed Action and alternatives to the proposed action that were considered to meet the purpose and need for the project. Included are a list of Alternatives Eliminated from Detailed Consideration, Mitigation Measures to be applied, and a table comparing the alternatives.
- **Chapter 3 – Affected Environment and Environmental Consequences:** This chapter describes the environmental effects of implementing the proposed action and other alternatives and is organized by resource area. Each section details:
  1. The affected environment
  2. Issues related to that resource
  3. Direct and indirect effects of the No Action and the action alternatives
  4. Cumulative effect of the alternatives with past, present and future actions.
- **Chapter 4 – List of Preparers and Agencies Consulted:** This section provides a list of people involved in the analysis and preparation of the environmental assessment including internal and external contacts.

*Appendices* of additional information including:

- Appendix A Biological Evaluation
- Appendix B Habitat Management Unit (HMU) Summary Tables
- Appendix C Management Indicator Species Table
- Appendix D Management Systems and Harvest Methods
- Appendix E Acronyms and Abbreviations
- Appendix F References and Literature Citations
- Appendix G Glossary

Additional documentation may be found in the project planning record located at the Saco Ranger District Office in Conway, NH.

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# Environmental Assessment

## Iron Maple 2 Project

### CHAPTER I. PURPOSE AND NEED FOR ACTION

#### A. Introduction and Document Structure

The Forest Service has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into five parts:

- Purpose and Need for Action: This section includes information on the history of the project proposal, the purpose and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- Alternatives including the Proposed Action: This section provides a more detailed description of the agency's proposed action and alternatives for achieving the stated purpose. These alternatives were developed based on issues raised by the public and other agencies. The discussion also includes identification of mitigation measures and a summary table of the environmental consequences associated with each alternative.
- Environmental Consequences: This section describes the environmental effects of implementing the proposed action and other alternatives. Each resource area is first described, followed by the effects of the No Action Alternative, which provides a baseline for evaluation and comparison of the other alternatives that follow.
- Agencies and Persons Consulted: This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- Appendices: The appendices provide more detailed information to support the analysis presented in the environmental assessment.

Additional documentation including detailed analyses of project area resources may be found in the project planning record located at the Saco Ranger District Office in Conway, New Hampshire.

#### B. Background

“Iron Maple 2” is a revision of the original Iron Maple Project which began with the public release for comments of a proposed action in 1998. This eventually resulted in two EAs released to the public, one in June 1999 and a revised one in February 2001. The revised 2001 EA was needed to incorporate data that resulted from formal Endangered Species Act consultation with the Fish & Wildlife Service in 2000. A Decision Notice and Finding of No Significant Impact was issued District Ranger Terry Miller in October 2001. However, it was subsequently litigated and withdrawn in July 2002 to “allow for incorporation and analysis of additional available information relative to the environmental effects

from the project” (see section G, below). This revised Environmental Assessment represents the culmination of efforts to incorporate important new information.

The Iron Maple 3 project is located in the towns of Bartlett and Jackson in Carroll County, New Hampshire (see Figure 1, Iron Maple Project Area Location Map). Iron Mountain, Maple Mountain and Mt. Parker are on the perimeter of Habitat Management Unit (HMU) 506. The adjacent Habitat Management Unit to the south, HMU 509, extends to the Forest Boundary in the vicinity of Mt. Pickering and Highway 302 (see Figure 2, Iron Maple Project Area Vicinity Map and Figure 3, Iron Maple Project Area Roads and Trails Map).

The **Iron Maple project area** contains approximately **8,750 acres** in these two Hmus. Rocky Branch River flows through the middle of the analysis area and is the primary drainage for the project area. The proposed action and alternatives lie east of Rocky Branch River in the vicinity of Otis Brook, a perennial tributary that flows into Rocky Branch. Three intermittent tributaries lie near proposed harvest units.

Rocky Branch trail parallels the river on the opposite side from Forest Road 27. This is a moderately used trail, in summer, and lightly used trail in winter. Cross-country skiers, and others on snowshoes and snowmobiles use these roads and trails.

This area has had a long history of vegetation and wildlife habitat management. Wildlife viewing, hiking, fishing and hunting remain popular activities in the area. Timber management activities have occurred in this area since the late 1800’s. Evidence of old logging roads and a railroad grade that served early 1900 era logging are present. Several logging roads constructed during the nineteen-fifties and sixties extend into and beyond the units proposed for treatment in this project.

Jericho Road, also known as Forest Road 27, parallels Rocky Branch River and is the primary access to the project area. Jericho Road, up to the National Forest boundary, is owned and maintained by the town of Bartlett. From this point on, it is a National Forest system road. Jericho Road has historically been used for forest management activities. Prior to its existence as a road, a railroad corridor and associated logging roads extended into and beyond the project area.

### **C. White Mountain Land and Resource Management Plan - Final Environmental Impact Statement and Record of Decision, as Amended (USDA, 1986, FEIS)**

The White Mountain National Forest (WMNF) has prepared this Environmental Assessment (EA) in accordance with the White Mountain National Forest Land and Resource Management Plan Final Environmental Impact Statement and Record of Decision, as Amended (USDA, 1986 FEIS).

The Forest Plan is a programmatic document required by law that implements the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA). The purpose of the Forest Plan is to provide direction for multiple use management and sustained yield of goods and services from National Forest lands in an environmentally sound manner.

The Forest Plan sets management direction for the White Mountain National Forest through the establishment of short term (10-15 years) and long-range goals and objectives throughout the year 2036. It prescribes the standards, practices, and the approximate timing and vicinity necessary to achieve goals and objectives. The Forest Plan prescribes monitoring and evaluation needs necessary to ensure that direction is carried out, measures quality and quantity of actual operations against predicted outputs and effects, and forms the basis for implementing revisions.

NFMA states that forest plans “shall be revised from time to time when the Secretary finds conditions in a unit have significantly changed, but at least every 15 years.... (16 U.S.C. 1604(f)(5))”. However, Congress did not intend management to cease if the 15-year target date for plan revision was not met. NFMA, Section 1604 (c) illustrates this point. In the development of the original forest plans, Congress specifically allowed management of the forests to continue under existing resource plans pending approval of the first NFMA forest plan for each administrative unit. Section 321 of the Fiscal year 2003 interior Appropriations Act included language that allowed National Forests to continue managing. The language states “Prior to October 1, 2003, the Secretary of Agriculture shall not be considered to be in violation of subparagraph 6(f)(5)(A) of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1604(f)(5)(A) solely because more than 15 years have passed without revision of the plan for a unit of the National Forest System.”

A Notice of Intent to revise the Forest Plan was published February 14, 2000, and the revision process is underway. The Final Environmental Impact Statement is expected in December 2004.

The Forest Plan revision process includes a detailed assessment of roadless inventory on the White Mountain National Forest. Forest Plan Revision Teams have completed a new Roadless Area Inventory proposal. The new Roadless Area Inventory was released to the public as part of Forest Plan revision process. The Iron Maple project area does not meet the criteria for, and is not included in any of the options for proposed Roadless Area Inventory to be adopted in the revised Forest Plan.

## **D. Purpose and Need**

The Proposed Action is intended to meet objectives outlined in the White Mountain National Forest Land and Resource Management Plan (Forest Plan) for Management Areas 2.1 and 3.1.

### **1. Management Areas – Iron Maple**

The Forest Plan classifies National Forest land into Management Area (MA) designations. Each Management Area is designed to provide a specific mix of public and resource benefits. Iron Maple Project area contains MAs 2.1, 3.1, 6.1, and 6.2 (see Figure 4: Iron Maple Project Management Area Map).

MA 2.1 goals applicable to this proposed action are:

- Protect and enhance visual quality
- Maintain water quality
- Maintain existing recreation opportunities
- Provide moderate amounts of high quality hardwood sawtimber and other timber products on a sustained yield basis
- *Provide a balanced mix of habitats for all wildlife species*

MA 3.1 goals applicable to this proposed action are:

- Provide large volumes of high quality hardwood sawtimber on a sustained yield basis and other timber products through intensive timber management practices
- *Increase wildlife habitat diversity for the full range of wildlife species with emphasis on early-successional species*
- Maintain the range of recreation options
- Grow small diameter trees for fiber production

This proposal does not include any harvest activities in MAs 6.1 and 6.2.

## 2. Purpose – Wildlife Habitat Diversity

As mentioned, a primary objective common to both Management Areas 2.1 and 3.1 is to provide for wildlife habitat diversity.

The wildlife management strategy employed on the White Mountain NF uses Habitat Management Units (or **HMUs**) as logical land areas to measure and manage wildlife habitat diversity. An HMU is a land area large enough to contain a variety of vegetation, water, and other habitat features required by a range of wildlife species indigenous to the White Mountain National Forest. Desired vegetative conditions for HMUs are described in the Forest Plan. HMUs not meeting these conditions are tabbed for possible management actions. HMUs 506 and 509 do not meet these desired HMU conditions. The proposed actions in this Environmental Assessment are designed to improve the vegetative conditions for these HMUs to better match the desired future condition described in the Forest Plan.

Interdisciplinary teams (IDT) of specialists consider many factors when monitoring forest conditions. Forest vegetative conditions change over time as trees mature, and thereby present opportunities in some areas to enhance overall conditions within individual HMUs. The Iron Maple interdisciplinary team evaluated current conditions for HMUs 506 and 509. In addition to vegetative conditions (disease, stand structure and age, species diversity, mortality and growth), field observations include evidence of wildlife presence, recent surveys of sensitive plant and animal populations, cultural and historic resources, water quality concerns, soil type and stability, recreation uses, access via roads and trails, and visual characteristics. The culmination of these observations, extensive public involvement, and the application of Forest Plan guidance is a demonstrated need for change specifically regarding vegetation within these two HMUs (the project area).

Forest stand data for HMUs 506 and 509 provide evidence that these HMUs do not currently meet Forest Plan goals and objectives for diversity of vegetation age classes. Specifically lacking are: (a) areas of early-successional habitat (hardwood regeneration areas), (b) even-aged and uneven-aged stands with moderate to high softwood component, and (c) red oak and oak-pine communities in this area of the forest.

### a. Early-Successional Habitat

As forest stands mature (age), they continually move into older age classes. An absence of young age classes can occur if not periodically harvested. Forest management projects are proposed to maintain a consistent ratio of age classes within an HMU to meet Forest Plan desired conditions. The Iron Maple project area currently includes ample acreages of young (10-59 years) and mature (60-119 years) hardwood forest, but contains less than the desirable acreage of young regenerating hardwood stands (0-9 years). This results in a decreased vegetative diversity within these HMUs (see **Appendix B - HMU Summary Tables**).

Based on soil capabilities the desired amount of even-aged northern hardwood regeneration stands in these HMUs is about 287 acres. HMUs 506 and 509 currently contain 61 acres of regenerating northern hardwood forest stands 0-9 years old, a shortage of 226 acres from the desired condition. In addition, 48 acres of paper birch, 34 acres of aspen, and 46 acres of oak/pine are needed to meet the total desired regeneration-age condition for these HMUs.

Regenerating forest stands provide open seedling/shrub habitat for plants and animals associated with or reliant on this open condition. Open conditions allow shade intolerant species such as paper birch, aspen, and pin cherry to become established and eventually develop into mature stands of these forest types. Wildlife species such as ruffed grouse, white-tailed deer, and several species of neotropical migrant songbirds are associated with or reliant upon these early-successional habitats for food, protection, and reproduction during critical phases of their life cycles.

**b. Stands with a moderate to high softwood (conifer) component**

As described in this EA, the project area is predominantly made up of northern hardwood forest, with a small component of softwoods scattered within hardwood stands. Some of these are on soils indicating natural processes would lead towards a purer softwood stand. Several stands have scattered dominant hardwoods with a heavy softwood understory. Others are on soils that will always have a large percentage of hardwoods. Pure softwood stands are typically found in the highest elevations where soils are thin and conditions are harsh. Softwoods are often present in drainages. Spruce, fir and white pine are the primary softwoods with small pockets of hemlock.

Softwoods are generally under-represented in the project area, and an increase in the softwood component of the ecosystem would be desirable. This can be accomplished or accelerated through a variety of cutting practices, including thinning, seed tree, and uneven-aged harvest. Uneven-aged management favors late successional, shade tolerant species such as sugar maple, ash, hemlock, spruce, and fir, distributed in multiple age classes. Many wildlife species, including broad-winged hawk, some neotropical migrant birds, snowshoe hare, and white-tailed deer use this kind of habitat during much of their life cycles.

**c. Red oak and oak-pine communities.**

Red oak is another species that is found in the Iron Maple area in HMU 509 as part of the oak-pine community type. Mature northern hardwood stands that include a high percentage of red oak are relatively rare within the project area. These stands produce an acorn crop that a number of wildlife species use. However, few red oak seedlings are surviving to maintain the oak component in the stand. Beech seedlings are establishing themselves, and would eventually dominate the stand. Losing the red oak component from these stands would reduce availability and production of mast for many species of wildlife. Therefore, it is desirable to increase the oak and oak-pine communities where possible.

**3. Purpose - High quality hardwood sawtimber on a sustained yield basis and other timber products**

In addition to wildlife habitat needs, analysis and field reconnaissance revealed some overcrowded hardwood stands that could benefit from a thinning or single-tree selection prescription. These treatments would increase residual stand growth and vigor, produce forest products, and improve future sawtimber quality (see Forest Plan Appendices C1 and C3).

Silvicultural treatments are prescribed in the proposed action and alternatives to create a more desirable stocking of species, size, and quality hardwood trees, while providing forest products to the local economy.

## E. Proposed Action

The Saco Ranger District of the White Mountain National Forest proposes to manage forest vegetation and increase wildlife habitat diversity within the Iron Maple Project area through use of a commercial timber harvest.

The Proposed Action is designed to fulfill the Purpose and Need for Action in the project area, as described above, and to achieve the desired vegetative condition described in the Forest Plan. These goals include creating regeneration age habitat, increasing softwood development, increasing red oak reproduction, and providing high quality hardwood sawtimber and other forest products on a sustained yield basis.

The Proposed Action would treat 482 acres of hardwood and mixedwood stands using commercial harvest methods to accomplish these objectives. The proposed action would produce an estimated 2.8 million board feet of timber, 55 acres of regeneration age habitat, 184 acres of softwood development, and provides for quality hardwood development on approximately 243 acres proposed for thinning. To achieve the objective of regenerating red oak in unit 10, a seed tree harvest, and one to three subsequent prescribed burns are proposed to prepare a seed bed and reduce competition for red oak seedlings. An adequate number of red oak trees would be retained in this unit to assure continued mast production for wildlife and for a seed source. An explanation of harvest methods is described in Appendix D, Management Systems and Harvest Methods.

This project would utilize about 2.1 miles of Forest Road (FR) 27 which has been historically used for timber hauling. Under the proposed action, approximately 1250 feet of existing unclassified road would be reconstructed, and approximately 1,250 feet of new road would be constructed. These two roads would remain closed following completion of the sale. No proposed road or stand treatment activities are planned within identified RARE II land adjacent to the Presidential Range – Dry River Wilderness.



# **Figure 1: Iron Maple Project Location Map**

## **Figure 2: Iron Maple Project Vicinity Map**

**Figure 3: Iron Maple Project  
Roads and Trails Map**

**Figure 4: Iron Maple Project  
Management Area Map**

## F. Decision Framework

Considering the purpose and need for action, the deciding official, Saco District Ranger Terry Miller reviews the proposed action and alternatives, and environmental effects in order to make decisions based on the following questions:

- Which alternative best meets the Purpose and Need and whether to implement that action?
- Is the information presented in this analysis sufficient to provide a basis for implementing those actions?
- Do the proposed actions pose significant impacts on the human environment and would an Environmental Impact Statement be required prior to implementation?
- Is a Forest Plan amendment required to prior to implementation of this project?
- Does the decision and alternatives considered meet applicable federal, state, and local laws and policies, including consistency with the Forest Plan?
- Are the proposed mitigation measures and monitoring requirements sufficient to meet Forest Plan standards and guidelines for all resources?

## G. Public Involvement

Public involvement efforts for the Iron Maple Project began in February 1998. A public involvement letter for the Iron Maple Project was sent to interested publics on April 20, 1998. This letter described the initial Proposed Action and requested comments from interested and affected people. It was sent to 164 individuals, organizations, and government agencies who had notified the Saco district of their interest in all timber related projects and to landowners in the vicinity of the project area.

The initial Proposed Action was also advertised in the Manchester Union Leader and the Conway Daily Sun in April 22, 1998, and the Mountain Ear on April 23, 1998. During the ensuing 30 day public review period, 17 people or organizations responded to the public involvement letter. Public comments are listed in section *I. Issues Used to Formulate Alternatives* and section *J. Other Issues Brought Forward During Public Involvement*.

A notice of availability of the Iron Maple EA for public review was published in the Manchester Union Leader, the Conway Daily Sun, and the Mountain Ear, on February 12, 2001. Copies of the Iron Maple EA were mailed to 34 individuals and organizations who had expressed interest in the project and who had commented on the Proposed Action. In addition, all others on the Iron Maple Project mailing list were notified that the EA was available for review.

On October 5, 2001 a decision to implement Alternative 5 of the Iron Maple EA was made by the Deciding Official. This decision was withdrawn after it was appealed and challenged in court. The reasons for the withdrawal were to allow for incorporation and analysis of additional available information relative to the environmental effects of the project. The court accepted the withdrawal on December 18, 2002 and dismissed the lawsuit.

The additional time since October 2001 has provided the planning team the opportunity to collect and analyze additional information relative to wildlife population trends, to further evaluate the proposed

road access to a landing for units 1-5 across Otis Brook, and to complete a fresh analysis of the environmental effects of the project.

Public issues brought forward in response to the April 20, 1998 letter and the February 12, 2001 EA comment period are brought forth and included in this EA. The information provided in the appeal and litigation report are also considered in this EA and are part of the record.

The purpose and need for the Iron Maple Vegetation Management Project and the proposed action have not changed. New information has allowed for some modifications and improved design for the other alternatives.

The IDT (interdisciplinary team) studied public issues brought forward in relation to their potential effects, including (where possible) mitigating effects with project design features such as location (*where*), season of harvest (*when*), and silvicultural prescription and road work design (*what*). These issues were used to formulate alternatives and mitigations. Following CEQ § 1500.4(c-f), Chapter 3 analyzes the environmental effects of the proposed action and alternatives in relation to these issues. Chapter 3 also provides pertinent background information on the existing condition relative to a given resource or issue.

## **H. Applicable Management Direction**

The Forest Service administers National Forest Lands under authority of the Organic Administration Act, the Forest and Rangeland Renewable Resources Planning Act and the National Forest Management Act. Other laws governing National Forest management that are applicable to this project include the National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act.

This document is *tiered to* the White Mountain National Forest Land and Resource Management Plan, (WMNF-LRMP), 1986. The Forest Plan designated Management Areas (MA) to all land within the White Mountain National Forest. The Forest Plan specifies management goals and objectives, as well as standards and guides for each Management Area. Iron Maple Project proposes management activities under the authority and direction of the Forest Plan.

This document *incorporates by reference* the following:

- ★ Iron Maple Project BE (Biological Evaluation) 1998; BE Amendment, 2000 and 2003
- ★ US Fish and Wildlife Service Concurrence, September 15, 2000.
- ★ Cultural Resource Report for Iron Maple Project Area, 1998.
- ★ Annual Forest Monitoring Reports (1993 through 2000)
- ★ Habitat Trend Analysis and other literature citing listed in Appendix C
- ★ USFS Management Indicator Species - Monitoring Report (2001)

## **I. Issues Used to Formulate Alternatives**

The Forest Service separated the issues into two groups: “Issues Used to Formulate Alternatives” and “Other Issues Brought Forward During Public Involvement.” Issues Used to Formulate Alternatives are defined as those directly or indirectly caused by implementing the proposed action and for which an alternative action was developed.

Other Issues Brought Forward During Public Involvement are either 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council for Environmental Quality NEPA regulations requires this delineation in Sec 1501.7, "... identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)". Other Issues Brought Forward During Public Involvement are listed in section J below and are incorporated into the discussions in Chapter 3.

The IDT (interdisciplinary team) studied all the issues brought forward and identified four Issues Used to Formulate Alternatives. For each issue listed the IDT identified indicators that are used to compare alternatives relative to these issues. Discussions for issues 1 and 2 are combined in Chapter 3 because these two issues (forest vegetation and wildlife effects) are so closely linked.

### ***1. Effects on forest vegetation in relation to the wildlife habitat management strategy and goals***

The Saco Ranger District proposes even-age and uneven-age timber management systems to move toward the desired future condition described in the Forest Plan for timber and wildlife habitat within Iron Maple Project area. Proposed management systems are described in detail in Appendix D.

Several respondents commented that timber harvest and road building is inappropriate and causes unnecessary disturbance on National Forest lands. The No Action alternative addresses this concern because it represents the status quo and analyzes the effects of deferring management actions proposed in this project. Some people feel that even-aged management, especially clearcutting, is unnecessary to achieve the desired future condition for wildlife habitat and timber management goals as described in the Forest Plan. These individuals are concerned about the wildlife effects of removing all the trees in an area, and prefer that only uneven-age management be used. Alternative 4 responds to this concern.

#### Measurement Indicators:

- Acres of thinning
- Acres of clearcutting, shelterwood, seed tree, and group selection
- Acres of single tree selection
- Percent of MA 2.1 and 3.1 within the HMU to be treated now and cumulatively

### ***2. Effects on wildlife habitat diversity, management indicator species, and species viability***

One of the primary objectives of the Iron Maple Project is to move towards achieving wildlife habitat management objectives established in the Forest Plan. One of these objectives is to create regeneration aged stands to provide conditions for early-successional species and wildlife dependent on this habitat. Some individuals expressed doubt that the proposed harvesting (especially clearcutting) would benefit wildlife and wildlife habitat diversity, while others including the New Hampshire Department of Fish and Game, encouraged clearcuts to provide several wildlife species the needed regeneration-age stand structure and to provide forage for deer using softwood stands along Otis Brook and Rocky Branch.

#### Measurement Indicators:

- Acres of softwood community type developed
- Acres of regeneration created
- Effects on Management Indicator Species (MIS) common to the area
- Viability of these MIS species

### **3. *Effects on water quality***

Harvest and road (re)construction activities may cause changes in runoff, and temporary localized soil erosion leading to sedimentation in Rocky Branch. This issue is effected by all action alternatives.

#### Measurement Indicators:

- Distance of proposed road construction and reconstruction, including temporary bridges
- Acres disturbed in roads, skid trails and landings for each alternative and cumulatively

### **4. *Effects on forest visitors hiking Rocky Branch trail or participating in dispersed recreation opportunities, visual quality, and adjacent landowners.***

Forest visitors enjoy using Rocky Branch trail and old logging roads open to foot traffic within the project area. Some individuals enjoy hiking old logging roads and asked that these roads not be obstructed whereas others prefer allowing these roads to return to a natural condition. Evidence of human presence is gradually diminishing on the old roads. Reconstruction (of less than a mile) of two logging roads, and use of old skid roads within units would temporarily change the character of those areas.

A landowner near units 6, 7, and 8 is concerned that noise from proposed summer logging operations would be a disturbance to them if audible. Residents on Jericho Road are concerned that log trucks could present a safety hazard, and that noise from logging trucks and road maintenance equipment could be a disturbance.

Landscape views of the project area would include three or four small openings as viewed from adjacent peaks. These openings may be visually distracting to some visitors. Of specific concern are views from Stairs Mountain, Iron Mountain, and from Rocky Branch Trail. In addition, foreground views from Forest Road 27 may show evidence of logging activities for several years. This would alter the natural appearances of these foreground views.

#### Measurement Indicators:

- Acres to be treated
- Distance of road construction and reconstruction proposed
- Volume to be removed from units 6-8, and for the sale on Jericho Road, as a means of measuring duration and intensity of noise disturbance

## **J. Other Issues Brought Forward During Public Involvement**

Following CEQ § 1500.4(c)(d) the following issues are incorporated into discussions in Chapter 3 under the related resource. The issues listed in this section are limited in extent, duration, and intensity and were not used to generate an alternative. The alternatives respond differently to some of these issues, but not to all of the issues.

#### **Wildlife:**

- The respondent urged that effects to non-game wildlife species and plants not be over looked in the efforts to manage game species and rare or endangered species.

- Two beaver ponds and are located between unit 3 and Otis brook. Even though these wetlands would be buffered to meet Forest Plan standards, would there be any effects on the ponds or beaver?
- Soil disturbance and harvesting near Rocky Branch may affect the fishery.
- Proposed harvesting may effect eagles, hawks, raccoons, fisher, coyote, bears, fox, deer, and moose.

### **Soils**

- Some people are concerned that logging on steep slopes may cause erosion of soils or mudslides.

### **Recreation**

- Improved access roads may lead to increased risk to private residences.
- One resident has a water source on the ridge above harvest unit 9 and is concerned about effects to it.
- Harvest in Unit 11 may effect the quality of experience for visitors traveling Forest Road 27.
- Harvest activities may occur near heritage sites.

## **K. Applicable Regulatory Requirements and Required Coordination**

### NFMA (National Forest Management Act)

NFMA gives direction to manage wildlife habitat within National Forests for all existing native and desirable non-native species. The wildlife strategy adopted in the Forest Plan provides the framework for projects to address developing wildlife habitat diversity on the Forest. In addition NFMA also gives direction for managing timber resources on a sustainable basis.

### NEPA (National Environmental Policy Act)

NEPA gives direction to analyze and assess environmental conditions and consequences of planned and proposed actions. CEQ (Council on Environmental Quality) Regulations and the Forest Service Manual and Handbooks give direction and guidelines for conducting the analysis.

### New Hampshire SHPO (State Historic Preservation Officer) Review

Before a decision is made for a project, State Historic Preservation Office (SHPO) reviews the cultural resource report for the project. SHPO concurrence with the cultural resource report, and approval to implement the proposed action with mitigations has been received.

### USDI (United States Department of the Interior) Fish and Wildlife Service Concurrence

US Fish and Wildlife Service has reviewed the project biological evaluation for federally listed threatened and endangered species. US Fish and Wildlife Service “concurrence” with the Biological Determination for this project has been received.

## **Chapter 2. Alternatives Including the Proposed Action**

### **A. Introduction**

This chapter describes alternatives considered in detail and lists alternatives considered but eliminated from detailed study. It concludes with a summary of proposed mitigation measures and a comparison of the alternatives considered in detail.

It examines a total of five alternative proposals for management of the Iron Maple area, including the No Action alternative and the original Proposed Action.

Due to controversy surrounding management activities on National Forest land and additional analysis required subsequent to the publication of an environmental assessment in February 2001, the Iron Maple 2 Project Environmental Assessment is again presented to the public.

All projects on National Forest lands must comply with the respective Land and Resource Management Plan (Forest Plan) and with other applicable laws and policies. This EA is prepared in conjunction with all applicable laws, regulations and policies.

### **B. Process Used to Formulate the Alternatives**

This section describes how the Forest Service utilized a systematic, interdisciplinary approach to insure integrated use of natural and social sciences and environmental considerations in planning for this project (NEPA, Sec. 102 (A)).

The IDT (interdisciplinary team) for this project was established in October 1997 by the Saco District Ranger. It consists of a project coordinator, wildlife biologist, silviculturist, hydrologist, recreation specialist, cultural resource para-professional, soil scientist, landscape architect, and a forest engineering technician. The IDT reviewed compartment data and records, aerial photographs, and maps of the project area, and conducted extensive field reconnaissance to identify the current condition and opportunities to meet Forest Plan objectives in the project area. A Proposed Action was designed and public involvement began.

Issues brought forth by the public were used to develop the range of alternatives and actions considered in the EA. This range is intended to: a) provide clear choices for the decision maker, b) respond to public comments, c) respond to management direction, including the White Mountain Forest Plan, and d) respond to the Purpose and Need for the Proposed Action. The No-Action Alternative is a viable alternative and provides a benchmark against which to evaluate the other alternatives. The Purpose and Need section provided in Chapter 1 shows the desired outcome that each action alternative would need to respond to. Briefly, these are to move toward attaining the timber and wildlife habitat management goals for Management Area 2.1 and 3.1 as described in the Forest Plan.

Public input resulted in identification of four issues “used to formulate alternatives” and several “other issues brought forward during public involvement” as documented in Chapter 1.

In addition to the applicable regulatory requirements and required coordination listed in Chapter 1 section K, alternatives considered would need to comply with the environmental standards listed below.

- ⇒ Forest-wide Standards and Guidelines from the Forest Plan
- ⇒ Forest Plan standards and guidelines specific to Management Areas 2.1, 3.1, 6.1 and 6.2
- ⇒ New Hampshire Department of Environmental Services, State of New Hampshire Surface Water Quality Regulations, Env-Ws. September 30, 1996
- ⇒ Endangered Species Act requirements
- ⇒ Clean Water Act and Clean Air Act requirements

### C. Alternatives Considered but Eliminated From Detailed Study

- ***The IDT looked at restricting harvest activities to the winter months to eliminate possible conflict with the Indiana Bat.***  
This alternative was not carried forward because the Biological Evaluation for this project and for other projects on the Forest proposing similar activities, have consistently documented that these proposed actions would not have a significant effect on Indiana bat.
- ***The IDT considered analyzing an alternative that would defer proposed harvesting in areas more than ½ mile from existing open roads.***  
As shown in the Purpose and Need section of Chapter 1, the proposed action would move these HMUs toward multiple-use management goals for timber and wildlife habitat as described in the Forest Plan for the WMNF. This alternative would limit opportunities to meet these Forest Plan objectives, and would not meet the purpose and need for this project.
- ***Finally, an Alternative (Alternative 3, originally) considered shelterwood prescriptions in units 7, 8 and 9.*** These prescriptions were determined to not meet the purpose and need for action in HMU 506. Shelterwood prescriptions for these units would not meet the purpose and need for action because the size of openings created would not regenerate an aspen and birch stand type as desired. Instead, stand development would likely be red maple, sugar maple, beech, yellow birch and other species moderately tolerant of shade. HMU 506 is deficient in regeneration aged habitat as identified in the Forest Plan.

## **D. Description of the Alternatives**

### **Alternative 1 (No Action)**

#### *Issues Influencing Development of the Alternative*

Alternative 1 does not propose active management within the project area. Alternative 1 has no potential adverse effect from road construction or logging on National Forest land. Alternative 1 would not generate public issues raised about effects to riparian areas, water quality, and recreation opportunities.

#### *General Harvest Prescription*

Under this alternative the actions of harvesting, harvest-related road use and harvest-related road development would not take place. Alternative 1 describes the baseline conditions of the physical, biological, and social environments within the project area. The term “No-Action” means no management caused change from present conditions at this time.

#### *Estimated Outputs*

Alternative 1 would not provide any harvest outputs or create young regenerating stands for wildlife habitat in the project area at this time. Only through infrequent and unpredictable natural disturbances would creation of early-successional regeneration habitat occur. Slower, natural development of softwoods within mixedwood stands would occur where softwood is present.

#### *Connected Actions for the No Action Alternative*

No connected actions or associated activities would occur as a result of this alternative. Routine road maintenance on Forest Road 27 would continue in the project area.

### **Alternative 2 (Proposed Action)**

#### *Issues Influencing Development of the Alternative*

The proposed action is developed to address the Purpose and Need as stated in Chapter 1. The proposed action is to move toward attaining timber harvest and wildlife habitat diversity goals for the project area. These goals include creating early-successional stands, creating early-successional habitat, increasing softwood development, and providing sustained timber production.

#### *General Harvest Prescription*

The Proposed Action would treat 482 acres of hardwood and mixedwood stands using commercial harvest methods. The proposal includes 243 acres of commercial thin, a 15 acre seed tree, and 40 acres of clearcut, all even-aged management. The proposal also includes 184 acres of uneven-age management using single-tree selection. See Appendix D, Management Systems and Harvest Methods for a description of silvicultural prescriptions.

To increase the percentage of early-successional habitat (forest stands 0-9 years old), Units 7-9 are identified for clearcut. Natural regeneration with species such as pin cherry, paper birch and aspen would occur in these areas.

Unit 10 prescription is designed for a seed tree cut to continue a presence of red oak in this older stand. The current oak stand has reached maturity, and due to canopy density, oak regeneration is limited. Since this site is well suited for red oak, maintaining this species and its ability to produce mast (acorns) in the future is an important objective. The seed tree prescription is a regeneration harvest with one to three subsequent prescribed burns for site preparation and competition reduction to foster red oak regeneration.

Units 1-3 and 12 were selected for commercial thinning to reduce stand densities and to allow for development of high quality timber on the remaining trees within these stands.

Single-tree selection units 4 - 6 and 11 are mixedwood and hardwood stands chosen to promote softwood development within the stands. In addition to developing softwood, unit 11 would utilize single-tree selection to emphasize large tree development along FR 27 and Rocky Branch.

#### *Estimated Outputs*

An output of the proposed action is an estimated 2.8 million board feet of timber. The Proposed Action produces 55 acres of regeneration age habitat, promotes softwood development on approximately 184 acres, and provides for quality hardwood in the future on approximately 243 acres proposed for thinning. An explanation of the harvest methods proposed are described in Appendix D, Management Systems and Harvest Methods.

#### *Connected Actions to the Proposed Action*

This project would utilize about 2.1 miles of Forest Road (FR) 27 which has been historically used for timber hauling. Forest Road 27 would receive pre-haul maintenance as needed prior to hauling. Pre-haul maintenance includes grading roadways, cleaning culverts, and removing downed trees and limbs.

Under this alternative, nine hundred feet of new road would be constructed at the end of the maintained portion of FR 27. The location of this new construction begins between the existing Rocky Branch Bridge and Otis Brook Bridge. This new road would tie in with the existing road proposed for use on the other side of Otis Brook. This new construction eliminates the need for a temporary bridge over Otis Brook, by using the existing bridge over Otis Brook. Between the two segments of new construction, approximately 1250 feet of existing non-system road would be reconstructed. The landing for units 1-5 under this alternative is located within unit 5, at the end of the new construction.

In addition, an estimated 1000 feet on a separate non-system road leading to a landing just north of unit 11 would also be reconstructed. Both of these reconstructed roads would be designed for use on dry ground and frozen ground conditions. When harvest operations are completed on these roads, drainage structures would be removed, the road seeded, and access again closed to vehicular traffic.

**Table 2-2: Iron Maple Project Proposed Action**

Unit	HMU	C-Std	Drainage	Approx. Acres	Forest Type	MA	Cutting Method	Operating Season
1	506	12-10	Rocky Branch	98	Hardwood	3.1	Commercial Thin	Fall/Winter
2	506	11-10	Rocky Branch	30	Hardwood	3.1	Commercial Thin	Fall/Winter
3	506	11-7	Rocky Branch	76	Hardwood	3.1	Commercial Thin	Fall/Winter
4	506	11-8	Rocky Branch	32	Mixedwood	3.1	Single-Tree Selection	Fall/Winter
5	506	11-14	Rocky Branch	15	Hardwood	3.1	Single-Tree Selection	Fall/Winter
6	506	11-8	Rocky Branch	43	Hardwood	3.1	Single-Tree Selection	Fall/Winter
7	506	11-5	Rocky Branch	15	Paper Birch	3.1	Clearcut	Summer/Fall/Winter
8	506	11-3	Rocky Branch	11	Hardwood	3.1	Clearcut	Summer/Fall/Winter
9	506	11-4	Rocky Branch	14	Hardwood	3.1	Clearcut	Summer/Fall/Winter
10	509	16-27	Rocky Branch	15	Hardwood	3.1	Seed Tree (oak regen <sup>1</sup> )	Summer/Fall/Winter
11	509	16-27 & 18	Rocky Branch	94	Hardwood	3.1	Single-Tree Selection	Fall/Winter
12	509	16-27	Rocky Branch	39	Hardwood	3.1	Commercial Thin	Fall/Winter

**Table 2-2a: Stand acres and Harvest Method Summary for the Proposed Action**

Stands - HMUs 506 & 509	Harvest Method	Acres
All MA 2.1 Ac = 700	Single-Tree Selection	184
All MA 3.1 Ac = 4900	Commercial Thin	243
<u>5600</u>	Seed Tree	15
	Clearcut	<u>40</u>
Total 6.1 & 6.2 = 3150		
Total Project Ac = 8750	Total All Harvest Methods	482

HMU- Habitat Management Unit

C-Std - Compartment and Stand where the unit is located

MA - Management Area

Operating season - Time of year when harvest activities would occur.

<sup>1</sup> - Oak regeneration would occur in this harvest unit through using a "seed tree" regeneration harvest with 1-3 subsequent prescribed burns for site preparation and competition reduction.

As shown in Table 2-2b, about 12% of MAs (Management Areas) 2.1 and 3.1 would have timber harvested in HMU (Habitat Management Unit) 506 and about 5% in HMU 509. About 9% of MAs 2.1 and 3.1 would have timber harvested in HMUs 506 and 509 combined. This equates to about 5.5% of the entire 8,750 acre Iron Maple Analysis Area.

**Table 2-2b: Harvest Acreage Summary - Alternative 2**

Harvest Method	HMU 506 (2,700 Ac in MA 3.1)	HMU 509 (2,900 Ac in MA 2.1 & 3.1)	Total (5,600 Ac in MA 2.1 & 3.1)
Single-Tree Selection	90 Ac. (3.3%)	94 Ac. (3.5%)	184 Ac. (3.3%)
Seed Tree	0 Ac. (0.0%)	15 Ac. (0.5%)	15 Ac. (0.3%)
Commercial Thin	204 Ac. (7.6%)	39 Ac. (1.4%)	243 Ac. (4.4%)
Clearcut	40 Ac. (1.5%)	0 Ac. (0.0%)	40 Ac. (0.7%)
<b>All Harvest Methods</b>	<b>334Ac. (12.4%)</b>	<b>148 Ac. (5.1%)</b>	<b>482 Ac. (8.6%)</b>

(x.x%) - Harvest acreage as a percentage of the MA 2.1 and 3.1 acreage in the HMU.

**Figure 5: Iron Maple Project Alternative 2 - Proposed Action Map**

**Figure 6 – Road alternatives map**

## **Alternative 3 - Management without New Road Construction**

### *Issues Influencing Development of the Alternative*

This alternative was developed to address Agency (NH State Fish and Game) concerns about the opening proposed in Unit 10 (seed tree prescription), and to address concerns about building 900 feet of new road (in Alternative 2) versus reconstructing the existing road and using a temporary log stringer bridge to cross Otis Brook.

In this alternative, Unit 10 would receive a "shelterwood" prescription, leaving more trees per acre within the unit than the seed tree prescription in Alternative 2. About 20-30 square feet of basal area (BA) per acre of mature trees are left and would be retained until a subsequent commercial entry. The prescribe burn in unit 10 to establish oak is also proposed. All other units would receive the same silvicultural treatments as identified for Alternative 2. In this alternative, Unit 1 would not include the narrow peninsula of land that extends northwest, adjacent to Rocky Branch.

### *General Harvest Prescriptions*

Alternative 3 would treat about 482 acres of hardwood and mixedwood stands using commercial harvest methods. This alternative proposes 243 acres of commercial thin, 40 acres of clearcut, 15 acres of shelterwood and 184 acres of uneven-age management using single-tree selection.

The shelterwood prescription is designed to address the need for regenerating red oak seedlings to eventually replace the existing mature oak stand. Unit 11 has the same condition, but is proposed as a single tree selection due to its proximity to Rocky Branch.

### *Estimated Outputs*

An output of Alternative 3 is an estimated 2.7 million board feet of timber. Alternative 3 produces 55 acres of regeneration age habitat, promotes softwood development on approximately 184 acres, and provides for quality hardwood development on approximately 243 acres proposed for thinning.

### *Connected Actions for Alternative 3*

Connected actions under Alternative 3 include reconstruction of approximately 4150 feet of existing unclassified road to a landing for units 1-5. This is the same unclassified road used in the proposed action, except that the proposed action constructs new road along some of the distance, and in this alternative the landing is on a bench between Units 1 and 4. An additional 1650 feet of reconstructed road would be needed to reach this landing and would enable trucking along this 1650 feet of road rather than skidding logs along it. A temporary bridge to cross Otis Brook would be needed.

This alternative would utilize about 2.1 miles of Forest Roads that have been historically used for timber hauling. Forest Road 27 would receive pre-haul maintenance as needed prior to hauling. Pre-haul maintenance includes grading roadways, cleaning culverts, and removing downed trees and limbs. The estimated 1000 feet of non-system road leading to a landing just north of unit 11 would also be reconstructed.

Reconstructed roads would be designed for use on dry ground and frozen ground conditions. When harvest operations are completed on these roads, drainage structures would be removed, the road seeded, and access again closed to vehicular traffic.

**Table 2-3: Iron Maple Project Alternative 3**

Unit	HMU	C-Std	Drainage	Approx. Acres	Forest Type	MA	Harvest Method	Operating Season
1	506	12-10	Rocky Branch	98	Hardwood	3.1	Commercial Thin	Fall/Winter
2	506	11-10	Rocky Branch	30	Hardwood	3.1	Commercial Thin	Fall/Winter
3	506	11-7	Rocky Branch	76	Hardwood	3.1	Commercial Thin	Fall/Winter
4	506	11-8	Rocky Branch	32	Mixedwood	3.1	Single-Tree Selection	Fall/Winter
5	506	11-14	Rocky Branch	15	Hardwood	3.1	Single-Tree Selection	Fall/Winter
6	506	11-8	Rocky Branch	43	Hardwood	3.1	Single-Tree Selection	Fall/Winter
7	506	11-5	Rocky Branch	15	Paper Birch	3.1	Clearcut	Summer/Fall/Winter
8	506	11-3	Rocky Branch	11	Hardwood	3.1	Clearcut	Summer/Fall/Winter
9	506	11-4	Rocky Branch	14	Hardwood	3.1	Clearcut	Summer/Fall/Winter
10	509	16-27	Rocky Branch	15	Hardwood	3.1	<sup>1</sup> Shelterwood	Summer/Fall/Winter
11	509	16-27 & 18	Rocky Branch	94	Hardwood	3.1	Single-Tree Selection	Fall/Winter
12	509	16-27	Rocky Branch	39	Hardwood	3.1	Commercial Thin	Fall/Winter

**Table 2-3a: Stand acres and Harvest Method Summary for Alternative 3**

Stands - HMUs 506 & 509	Harvest Method	Acres
All MA 2.1 Ac = 700	Single Tree Selection	184
All MA 3.1 Ac = 4900	Commercial Thin	243
<u>5600</u>	Clearcut	40
	Shelterwood	<u>15</u>
Total 6.1 & 6.2 = 3150		
Total Project Ac = 8750	Total All Harvest Methods	482

<sup>1</sup> - Shelterwood – 20 to 30 square feet of residual BA retained in the overstory until a future entry.

As shown in Table 2-3b, about 12% of MAs (Management Areas) 2.1 and 3.1 would have timber harvested in HMU 506 and about 5% in MU 509. About 9% of MAs 2.1 and 3.1 would have timber harvested in HMUs 506 and 509 combined. This equates to about 5.5% of the entire 8,750 acre Iron Maple Analysis Area.

**Table 2-3b: Harvest Acreage Summary - Alternative 3**

Harvest Method	HMU 506 (2,700 Ac in MA 3.1)	HMU 509 (2,900 Ac in MA 2.1 & 3.1)	Total (5,600 Ac in MA 2.1 & 3.1)
Single-Tree Selection	90 Ac. (3.3%)	94 Ac. (3.5%)	184 Ac. (3.3%)
Commercial Thin	204 Ac. (7.6%)	39 Ac. (1.4%)	243 Ac. (4.4%)
Shelterwood	0 Ac. (0%)	15 Ac. (0.5%)	15 Ac. (0.3%)
Clearcut	40 Ac. (1.5%)	0 Ac. (0%)	40 Ac. (0.7%)
<b>All Harvest Methods</b>	<b>334 Ac. (12.4%)</b>	<b>148 Ac. (5.1%)</b>	<b>482 Ac. (8.6%)</b>

(x.x%) - Harvest acreage as a percentage of the MA 2.1 and 3.1 acreage in the HMU.

## Figure 7: Iron Maple Project Alternative 3 Map

## **Alternative 4 - Uneven-Aged Management**

### *Issues Influencing Development of the Alternative*

This alternative was developed primarily to address public concerns regarding even-age management. Even-aged management includes clearcutting, and thinning designed to prepare a unit for a future clearcut. Alternative 4 proposes to manage these units with uneven-aged prescriptions including single tree selection and group selection that would result in smaller openings than those created with clearcuts.

Alternative 4 addresses concerns about visual effects that timber harvest activities in Unit 11 might have along Forest Road 27 adjacent to Rocky Branch River by omitting unit 11.

Alternative 4 partially addresses concerns about noise from harvesting in units 7 and 8 in summer because the prescription for smaller openings and would result in less time needed to harvest these units.

### *General Harvest Prescriptions*

Proposed treatment of 388 acres of hardwood and mixedwood stands in Alternative 4 includes 333 acres single-tree selection and 55 acres of group selection.

Group selection prescriptions place small openings from one quarter acre up to two acres scattered throughout the unit so that a variety of age classes are represented in the stand over time. Alternative 4 proposes the first entry into these units, with a subsequent entry to be analyzed separately in 10 to 20 years. Over time these stands (as a whole) become uneven-aged. These units are within hardwood stands where group selection can be applied to address the need for regeneration within the project area.

Single-tree selection promotes uneven-aged stand conditions.

### *Estimated Outputs*

An output of Alternative 4 would be an estimated 1.9 million board feet of timber. Alternative 4 would produce approximately 11 acres of regeneration habitat in small openings, 243 acres of improved hardwood quality, and promotes softwood development on approximately 90 acres. However, single tree selection prescription (uneven age management) results in a different stand type over time (shade tolerant species) than does even-age management (thinning, and eventual regeneration harvest). In addition, group selection openings do not result in regeneration aged stands.

### *Connected Actions for Alternative 4.*

Connected actions for this alternative are the same as for Alternative 3.

**Table 2-4: Iron Maple Project Alternative 4**

Unit	HMU	C-Std	Drainage	Approx. Acres	Forest Type	MA	Harvest Method	Operating Season
1	506	12-10	Rocky Branch	98	Hardwood	3.1	Single-Tree Selection	Fall/Winter
2	506	11-10	Rocky Branch	30	Hardwood	3.1	Single-Tree Selection	Fall/Winter
3	506	11-7	Rocky Branch	76	Hardwood	3.1	Single-Tree Selection	Fall/Winter
4	506	11-8	Rocky Branch	32	Mixedwood	3.1	Single-Tree Selection	Fall/Winter
5	506	11-14	Rocky Branch	15	Hardwood	3.1	Single-Tree Selection	Fall/Winter
6	506	11-8	Rocky Branch	43	Hardwood	3.1	Single-Tree Selection	Fall/Winter
7	506	11-5	Rocky Branch	15	Paper Birch	3.1	Group Selection	Summer/Fall/Winter
8	506	11-3	Rocky Branch	11	Hardwood	3.1	Group Selection	Summer/Fall/Winter
9	506	11-4	Rocky Branch	14	Hardwood	3.1	Group Selection	Summer/Fall/Winter
10	509	16-27	Rocky Branch	15	Hardwood	3.1	Group Selection	Summer/Fall/Winter
12	509	16-27	Rocky Branch	39	Hardwood	3.1	Single-Tree Selection	Fall/Winter

**Table 2-4a: Stand acres and Harvest Method Summary for Alternative 4**

Stands - HMUs 506 & 509		Harvest Method	Acres
All MA 2.1 Ac =	700	Single-Tree Selection	333
All MA 3.1 Ac =	4900		
	<u>5600</u>	Group Selection	55
Total 6.1 & 6.2 =	3150	Total All Harvest Methods	<u>388</u>
Total Project Ac =	8750		

As shown in Table 2-4b, about 13% of MAs (Management Areas) 2.1 and 3.1 would have timber harvested in HMU 506 and about 1.5% in MU 509. About 7% of MAs 2.1 and 3.1 would have timber harvested in HMUs 506 and 509 combined. This equates to about 4.4% of the entire 8,750 acre Iron Maple Analysis Area.

**Table 2-4b Harvest Acreage Summary - Alternative 4**

Harvest Method	HMU 506 (2,700 Ac in MA 3.1)	HMU 509 (2,900 Ac in MA 2.1 & 3.1)	Total (5,600 Ac in MA 2.1 & 3.1)
Single-Tree Selection	294 Ac. (10.8%)	39 Ac. (1.3%)	333 Ac. (5.9%)
Group Selection	40 Ac. (1.5%)	15 Ac. (0.5%)	55 Ac. (1.0%)
<b>All Harvest Methods</b>	<b>344 Ac. (12.7%)</b>	<b>44 Ac. (1.5%)</b>	<b>388 Ac. (6.9%)</b>

(x.x%) - Harvest acreage as a percentage of the MA 2.1 and 3.1 acreage in the HMU.

## Figure 8: Iron Maple Project Alternative 4 Map

## Alternative 5 - Defers Harvest along Rocky Branch River and West of Otis Brook

### Issues Influencing Development of the Alternative

Alternative 5 was developed to address public concerns regarding timber harvest and use of existing logging roads west of Otis Brook by omitting units 1-5 and reconstruction of access to those units. National Forest lands west of Otis brook have not been managed since the early 1980's.

Alternative 5 addresses concerns about visual effects that timber harvest activities in Unit 11 might have along Forest Road 27 adjacent to Rocky Branch River by omitting unit 11. Alternative 5 does not address concerns about clearcutting units 7-9 nor concerns about noise from harvesting units 7-9 because summer logging would be allowed in these units. Alternative 5 partially addresses concerns about even-aged management because thinning units 1-3 are omitted from this alternative.

### General Harvest Prescriptions

This alternative proposes treatment on 137 acres of hardwood and mixedwood stands including 39 acres of thinning, 40 acres of clearcut, 15 acres of seed tree, and 43 acres of single-tree selection. Silvicultural prescriptions for units proposed in this alternative are identical to the proposed action (Alternative 2).

### Estimated Outputs

An output of Alternative 5 is an estimated 1.2 million board feet of timber. Alternative 5 produces 55 acres of regeneration age habitat, promotes softwood development on approximately 43 acres, and provides for quality hardwood in the future on approximately 39 acres proposed for thinning.

**Table 2-5: Iron Maple Project Alternative 5**

Unit	HMU	C-Std	Drainage	Approx. Acres	Forest Type	MA	Harvest Method	Operating Season
6	506	11-8	Rocky Branch	43	Hardwood	3.1	Single-Tree Selection	Fall/Winter
7	506	11-5	Rocky Branch	15	Paper Birch	3.1	Clearcut	Summer/Fall/Winter
8	506	11-3	Rocky Branch	11	Hardwood	3.1	Clearcut	Summer/Fall/Winter
9	506	11-4	Rocky Branch	14	Hardwood	3.1	Clearcut	Summer/Fall/Winter
10	509	16-27	Rocky Branch	15	Hardwood	3.1	Seed Tree (oak regen <sup>1</sup> )	Summer/Fall/Winter
12	509	16-27	Rocky Branch	39	Hardwood	3.1	Commercial Thin	Fall/Winter

**Table 2-5a: Stand acres and Harvest Method Summary for Alternative 5**

Stands - HMUs 506 & 509	Harvest Method	Acres
All MA 2.1 Ac = 700	Single-Tree Selection	43
All MA 3.1 Ac = 4900	Commercial Thin	39
5600	Seed Tree	15
	Clearcut	40
Total 6.1 & 6.2 = 3150		
Total Project Ac = 8750	Total All Harvest Methods	137

<sup>1</sup> - Oak regeneration would occur in this harvest unit through using a "seed tree" regeneration harvest with 1-3 subsequent prescribed burns for site preparation and competition reduction.

As shown in Table 2-5b, about 3% of MAs (Management Areas) 2.1 and 3.1 would have timber harvested in HMU 506 and about 2% in MU 509. About 2.5% of MAs 2.1 and 3.1 would have timber harvested in HMUs 506 and 509 combined.

**Table 2-5b: Harvest Acreage Summary - Alternative 5**

Harvest Method	HMU 506 (2,700 Ac in MA 3.1)	HMU 509 (2,900 Ac in MA 2.1 & 3.1)	Total (5,600 Ac in MA 2.1 & 3.1)
Single-Tree Selection	43 Ac. (1.7%)	0 Ac. (0.0%)	43Ac. (0.8%)
Commercial Thin	0 Ac. (0.0%)	39 Ac. (1.4%)	39 Ac. (0.7%)
Seed Tree	0 Ac. (0.0%)	15 Ac. (0.5%)	15 Ac. (0.3%)
Clearcut	40 Ac. (1.5%)	0 Ac. (0.0%)	40 Ac. (0.7%)
<b>All Cutting Methods</b>	<b>83 Ac. (3.1%)</b>	<b>54 Ac. (1.9%)</b>	<b>137 Ac. (2.4%)</b>

(x.x%) - Harvest acreage as a percentage of the MA 2.1 and 3.1 acreage in the HMU.

*Connected Actions for Alternative 5*

Connected actions for this alternative are the same as the Proposed Action except that there would only be 1000 feet of road reconstruction (to access units 6-9) and only 1.8 miles of pre-haul maintenance.



## Figure 9: Iron Maple Project Alternative 5 Map

## **E. Mitigation for the Action Alternatives**

In addition to the applicable Forest-wide and Management Area standards and guidelines listed in the Forest Plan (pages III-5 through III-29; III-36 through III-41 and Appendix VIIB; 18-22); the following specific mitigation and coordination measures are planned.

*The following mitigation measures would apply to all action alternatives:*

1. A 50 foot slash disposal zone, where slash from trees would be removed would be established along FR 27 for units 10 - 12.
2. Harvest activities may be suspended during periods of seasonal thaw to protect soil and water resources. Harvest and haul operations would be prohibited during the approximate mud season dates of March 15 to May 15.
3. No harvest activity would be allowed in designated vernal pools at any time of the year. Canopy cover would be maintained in the 50 foot zone around the perimeter of any pool, and disturbance to the forest floor would be minimized within that zone with removal of harvested trees away from the vernal pool.
4. Trees whose roots support stream banks would not be removed in order to maintain riparian area stability.
5. Trees that provide primary shade and leaf organic matter, or potentially would provide woody debris to the stream, would be retained along stream courses.
6. Log landings would not be located within 100 feet of a pond or stream in order to minimize adverse effects to water quality.
7. Skidding within 100 feet of a pond or a flowing stream would be limited to dry or frozen ground conditions except on designated skid trails and designated stream crossings in order to minimize adverse effects to water quality and channel morphology. Exposed soil would be limited to less than 5% of the riparian area.
8. Stream protection measures would be used wherever skid trails cross wet areas or streams (Forest Plan pages III-21, 22). Skidding patterns would minimize the number of stream crossings. Where appropriate, previously used stream crossings would be used again.
9. Fifty percent of the basal area within 50 feet of streams would be retained as a minimum, according to Forest Plan standards on page III-16 (amended, 11/6/89), maintaining the quality of riparian areas.
10. Skid roads would be designated to minimize soil compaction during skidding operations.
11. No trees would be harvested within 15 feet of Otis Brook or Rocky Branch, and to trees would be harvested within ten feet of the intermittant drainage in units 2 and 3, unless a hazard to operations.

12. Temporary crossing structures such as box culverts, pipes, or temporary bridges would be installed on skid trails that cross flowing water. Temporary crossing structures would be removed and channel banks restored following project implementation to minimize effects to channel morphology and water quality.
13. Waterbars and other cross drainage structures would be installed to direct water off skid trails, allowing it to disperse and infiltrate into soils, minimizing erosion and effects on water quality.
14. Within units listed in Table 2-6 below, riparian areas would be extended on either side of streams in all action alternatives to the width shown in the table. Within the riparian area, no more than 50% of the existing basal area would be removed. This would minimize effects within riparian areas.

**Table 2-6: Riparian Areas**

<b>Units</b>	<b>Riparian Area - Minimum Width</b>	<b>Riparian Type</b>
3, 4, 6, 11	50 ft. + (2 x % slope)	12, 17
1, 4, 5, 11	50 ft. or floodplain to the top of first terrace	20
1, 2, 3, 4, 5, 9, 11	50 ft.	Intermittent Streams

Units adjacent to Rocky Branch and Otis brook would have 15 foot no entry/no harvest buffers, and the intermittant drainage ( within units 2 and 3) would have a ten foot buffer. These no-cut buffers overlap the buffers required by Forest Plan standards shown above.

15. Management prescriptions would encourage the recruitment and retention of wildlife trees a minimum of 18 inches dbh (diameter at breast height) as per Forest Plan standards on page III-15d.
16. No whole tree harvesting would be allowed; logging slash would be left where it falls.
17. Borrow pits would generally not be permitted within the foreground sight of roads or trails that are open to the general public or be within the filter strip of a stream or pond. Excavation would not be allowed within the channels of live streams (Forest Plan, III-24).
18. Signs would be placed on FR 27, Jericho Road, and at the Rocky Branch Trailhead to increase awareness and caution people about recreational users, harvest activities and log trucks.
19. A provision in the sales contract requires the immediate cessation of sale activities upon discovery of a sensitive plant or animal species. Experts in the field of plant and animal biota would be consulted to determine their significance and protective measures prescribed.
20. Any cultural resource discovered during sale activities requires immediate cessation of operations and notification of the Forest Service. Cultural resource specialists would be consulted to evaluate the site and recommend measures to protect the site from disturbance. Known historic sites (a cellar hole) within unit 1, and northeast of units 2 and 3 (Otis Farm orchard, cellar hole and rock wall), would be protected from disturbance and avoided during harvest operations.

21. Wildlife trees, such as those suitable for cavity dwellers and mast production, and those with known raptor nests, would be reserved during layout and marking unless they pose a safety hazard to cutters or the public. For uneven-aged management, maintain a basal area no less than 1.25 to 2.5 square feet per acre in trees with a diameter of 18 inches or more and two or more major defects where attainable. Where possible reserve partially live trees with observable woodpecker cavities to provide roost sites for bats.
22. Stands with a concentration of bear-clawed beech trees would have specific marking prescriptions to retain this habitat feature.
23. Road reconstruction of Forest Roads 5002, 5005, and 5012 would be to standards for dry season and frozen ground conditions. Subsequent hauling on these roads would be dry season or winter only. Following harvest activities, culverts would be removed and these roads waterbarred, seeded and closed.
24. Detection of any threatened, endangered, or sensitive species during implementation of any of the alternatives would be reported to the District Biologist. Requirements to protect the species would be implemented.
25. Log haul on Jericho Road would be consistent with Town of Bartlett restrictions.
26. Bridge sill construction for access into units 1 - 5 should only occur between May and the end of September to avoid siltation during the eastern brook trout egg incubation period. Road construction or other actions that may create sedimentation in fish-bearing streams would not occur between October and April. Any permanent culverts placed in fish-bearing streams shall be bottomless.
27. Within clearcut units, reserve patches and reserve trees would be identified and protected to meet the terms and conditions of the Biological Opinion for the Indiana Bat (Environmental Assessment and Biological Evaluation) Forest Plan Amendment.
28. Large (>18" DBH) live and dead hazard trees cut for safety reasons would be retained on site. In addition, trees found to be cull after cutting may be retained on site to increase large woody material.
29. Harvest equipment would be washed to remove invasive plant material prior to being brought on National Forest.
30. On closeout or when stopping harvest for more than 1 season, waterbar skid trails as per contract specifications. Seed landings and skid trails only where slopes may cause soil erosion and use native seed determined to be non-invasive. Allow for natural regeneration of vegetation where possible.

## F. Comparison of Alternatives

This table compares the alternatives by measurement indicator (acres, percent, feet and effects). The environmental effects of each alternative are discussed in detail in Chapter 3, Environmental Consequences.

**Table 2-7:** Comparison of Alternatives - Iron Maple Project

Measurement Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<b>Issue 1. Effects on forest vegetation in relation to wildlife habitat management strategy and goals</b>					
<i>Acres of thinning</i>	None	243	243	None	39
<i>Ac clearcut, SW, seed tree, group selection</i>	None	55	55	55	55
<i>Acres of single tree</i>	None	184	184	333	43
<i>MA 2.1 and 3.1 within the HMUs to be treated and cumulatively</i>	None	8.6 percent / 9.9 percent	8.6 percent / 9.9 percent	6.9 percent / 8.2 percent	2.4 percent / 3.7 percent
<b>Issue 2. Effects on wildlife habitat diversity, management indicator species and species viability.</b>					
<i>Acres of softwood developed</i>	None	184	184	90	43
<i>Acres of regeneration created</i>	None	55	55	11	55
<i>Effects on MIS common to the area</i>	Loss of habitat in young age classes affects several species	Benefits Most MIS Species	Benefits Most MIS Species	Benefits Some MIS Species	Benefits Most MIS Species
<i>Viability of MIS</i>	All MIS remain viable	All MIS remain viable	All MIS remain viable	All MIS remain viable	All MIS remain viable
<b>Issue 3. Effects on water quality</b>					
<i>Road reconstruction</i>	None	3500 feet	5150 feet	5150 feet	1000 feet
<i>Acres in skidtrails and cumulatively</i>	None / 130	54 / 184	59 / 189	46 / 176	17 / 147
<b>Issue 4. Effects to Forest visitors, visual quality, and adjacent landowners</b>					
<i>Acres treated</i>	0	482	482	388	137
<i>Road reconstruction</i>	None	3500 feet	5150 feet	5150 feet	1000 feet
<i>Acres of openings affecting Visual Quality</i>	No Change	55	55	11	55
<i>Noise for units 6-8; and on Jericho Rd. as a function of volume or trips</i>	None/None	527 MBF in units; 700 trips on Jericho Road	527 MBF in units; 675 trips on Jericho Road	287 MBF in units; 475 trips on Jericho Road	527 MBF in units; 300 trips on Jericho Road

## Notes that apply to the table above:

- *Ac clearcut, SW, seed tree, group selection.* Units treated with any of these prescriptions would appear open or fairly open following treatment. *SW* means shelterwood, proposed only for unit 10, only in Alternative 3. This shelterwood would have a leave basal area of 20-30, or about one fifth the current density of this stand. Shelterwood trees are normally mature vigorous trees with healthy crowns. Retaining a diversity of tree species is important, as is retaining species that are well suited to the soil type, soil moisture, other site conditions, and project objectives. In this case, the project objective is retention and regeneration of red oak to increase its presence over time to meet wildlife habitat objectives. Additional considerations include leaving trees that may now or in the future be used by wildlife as den, nest or roost trees.
- Group selection Units 7-10 in Alternative 4 are expected to establish regeneration on approximately 11 acres. However, the species regenerated and the growth rates would be affected by the smaller size of openings. This is due to the increased percentage of shade relative to the size of the opening. Species regenerating and thriving in shaded areas (the perimeters of openings) are often different species than those found in the center of openings. Shade tolerant species occupy a larger percentage of an opening that is small and shade is more prevalent.
- *Percent of MA 2.1 and 3.1 within the HMU to be treated now, and cumulatively* – These percents represent acres proposed for treatment in each alternative expressed as a percent of the total number of acres in those Management Areas within the two HMUs. To achieve a sustained yield of products from manageable National Forest lands in an HMU, a relatively constant percent of the manageable landbase could theoretically be treated each decade. For example, for a hundred year rotation, ten percent of the manageable landbase could be treated each decade. The second percent represents the cumulative figure, including all the treatment acres under that alternative plus 71 acres of regeneration units in the 0-9 year age class created since 1992 in these HMUs.
- *Effects on MIS common to the area* is a summary effects statement for the analysis of Management Indicator Species. There are over 20 Management Indicator Species, so the table is very general in its representation of effects. However, the wildlife section of Chapter 3 discusses in detail the effects to Management Indicator Species that are known to inhabit the project area.
- *Road Reconstruction* in the table includes proposed road reconstruction, placement of a temporary bridge over Otis Brook, and 1250 feet of new road construction as proposed under each Alternative.
- *Acres in skidtrails and cumulatively* – are total acres in skid trails for the units, landings, and proposed new constructed or reconstructed truck (haul) roads under this action. Also included are a calculated 130 acres in skid trails, roads and landings for previous actions since 1986 within the 14,450 acre cumulative effects analysis area (see Figure 11 and table 3-5).
- *Noise generated from units 6-8.* All alternatives allow for summer, fall and winter logging of units 7 and 8, and unit 6 is fall/winter logging. All alternatives have the same prescriptions for unit 6. Only Alternative 4 differs in its prescription for units 7 and 8, from clearcut to group selection. The acre differences for unit 7 and 8 in the alternatives are from 26 acres clearcut, to a

total estimated 6 acres of group selection openings under Alternative 4. Therefore, implementation of units 7 and 8 under Alternative 4 would be likely to take less time. The duration of activities and therefore the amount of noise generated is linked to the volume for these units. However, the duration may also be linked to equipment capabilities of the prospective purchaser, purchaser efficiency, and to weather related contract adjustments.

- *Noise generated on Jericho Road.* The duration of noise on Jericho Road can be determined by estimating the relative number of truck trips for each alternative. This was estimated using 4,000 board feet per truckload divided into the estimated volume for each alternative.



## Chapter 3 – Affected Environment and Environmental Consequences

### Introduction

The following resources are considered: Wildlife and Vegetation including Federal Threatened, Endangered, and Proposed Species; Regional Forester Sensitive Species; other species of concern, fisheries, soil; water, recreation, visuals, economics, heritage resources, and environmental justice. Supplemental information is in the Appendix to this EA, or in the project file available at the Saco Ranger District Office.

Applicable issues, the affected environment, and environmental effects are summarized for each resource in this section.

### Management Areas

Management Areas (MA) within the project area and their approximate acreages are as follows:

- (a) MA 2.1 - Multiple-Use Forest, Lower Intensity of Management, 700 acres
- (b) MA 3.1 - Multiple-Use Forest, Higher Intensity of Management, 4900 acres
- (c) MA 6.1 and 6.2 - Semi-Primitive, Non-Motorized Recreation, 3150 acres

The terrain is relatively moderate within MA 2.1 and 3.1 land, while MA 6.1 and 6.2 land within the project area tends to be steeper and rockier with rock outcrops, ledges and peaks. Wilderness lands (MA 5.1) within these compartments are not part of the HMUs. Management Area 6.1 and 6.2 lands make up 36% of these HMUs. Lands within MAs 5.1, 6.1 and 6.2 are not proposed for treatment. All proposed harvest units are in MA 3.1.

### 3.1 Wildlife and Vegetation Effects

#### Issues:

- Effects of harvest methods, especially clearcutting, on wildlife habitat diversity
- Effects of the proposed harvesting on non-game species
- Effects of harvesting on the beaver ponds located on a tributary of Otis Brook
- Effects of proposed harvesting on specific wildlife species including bear, fox, eagles, hawks, raccoons, deer, moose, fisher, and coyote

#### Forest Plan direction for Wildlife Habitat Management

Management for wildlife species diversity can be achieved by providing a broad spectrum of habitat diversity. To meet the goals of the National Forest Management Act, the Forest developed a wildlife strategy based on Habitat Management Units (HMUs). HMUs provide necessary habitat diversity to maintain wildlife populations on the Forest (Forest Plan, Appendix B, page VII-B 1-28). An HMU is a unit of land large enough to provide habitat requirements of native wildlife species and may include upland vegetated areas, non-forested areas, wetlands, riparian zones, and areas of ecological significance.

Management of HMUs involves two major habitat parameters: the spatial distribution of community or vegetative types over the landscape and the relative proportions of successional stages, or age classes,

within the vegetative or community types. Changes in community types occurs either through natural succession over a long period of time or through catastrophic actions that may be either natural or man-created. Working with this understanding provides the foundation used to work towards achieving the desired conditions within each HMU.

Forest wide within Management Areas 2.1 and 3.1 the lands are divided into uneven-aged or even-aged management systems. Within the even-aged portion the lands are further divided into age classes: regeneration, young, mature and overmature. The mature and overmature age classes (on average greater than 60 years and 120 years respectively) typically comprise between 75% and 100% of the even-aged lands. Regeneration-aged habitat (0-9 years) typically makes up less than six percent.

Management Area direction is to create and maintain a diversity of habitat for both game and non-game species. In addition, management would consider and blend with natural ecosystem processes and tendencies.

#### **Wildlife Analysis Area and Project Area definition**

The *analysis area* is an 8,750 acre area that encompasses HMUs 506 and 509. Due to past harvest activity and current stand conditions compartments 13, 14, 15, 17 and 68 were not considered for treatments. Therefore, the 2,013 acre *project area* encompasses compartments 11 and 12 in HMU 506 and compartment 16 in HMU 509.

#### **Affected Environment — Forest-wide Environment**

The direction of the National Forest Management Act is to manage habitat to maintain viable populations of existing native and desired non-native vertebrate species (36 CFR 219.19). Through field reconnaissance and literature review (DeGraaf and Yamasaki 2001) it is known a wide array of wildlife species inhabit the White Mountain National Forest throughout all or part of the year including approximately 31 species of reptiles and amphibians, 190 species of birds, and 56 species of mammals. These species use a variety of habitat types and age classes to meet their needs. In forested habitat, approximately 70% of the species use mature and overmature habitats while 66% use early-successional habitats for all or part of their life cycle (DeGraaf and Yamasaki 2001, DeGraaf et al. 1992).

Over 416,000 acres (approximately 54 percent) of the 771,000-acre landbase of the White Mountain National Forest are not actively managed (Management Areas 5.1, 6.1, 6.2, 6.3, 8.1, 9.1 and 9.2). Habitat changes occur through natural processes, including occasional natural disturbances by wind, ice and insects. These reserved management areas are highly interconnected throughout the Forest. This provides areas of interior forest habitat for species dependent on this characteristic.

#### **Affected Environment – Iron Maple Analysis Area**

Logging has played an important role in the White Mountains since the 19<sup>th</sup> century and the present vegetative condition is largely the result of past logging and forest management. Past timber harvesting reduced the amount of down large woody material and standing snags, and provided for much of the current even-aged condition. The forest canopy is generally fully occupied, except where recent clearcuts have established new young stands. Forest canopy tends to be of uniform height.

Rocky Branch drainage has a history of logging since the early 1900's when railroad logging was extensively used in what is now the White Mountain National Forest. A 1918 fire in the upper reaches

of the drainage ended the timbering operations for almost 25 years. In the 1940's a sale in the vicinity of the proposed project harvested birch and in the 1950's two sales, west and south of the project area took place. Blowdown was salvaged in the 1960's from the upper end of the project area including the area northwest of Otis Brook. Existing logging roads remain throughout these areas, although they have not been open for vehicular use and are often not up to today's standards. Some of the material salvaged in these operations was removed using the same skid and haul roads as is proposed for use in this project. Salvage of diseased trees and removal of small quantities of mature paper birch in stands along Rocky Branch road has occurred intermittently since 1960. An area south of Rocky Branch was harvested in the 1980's and during the 1990's Back A Pickering sale was sold (see Figures 10 and 11 and table 3-4a). Recent clearcuts have been limited in number and size on National Forest land in this project area but those present are well spaced and are low to mid slope in elevation.

These past management activities have resulted in a mosaic of stand ages and vegetation structure and composition. This condition has provided some opportunity for wildlife species that favor younger stands and extensive opportunity for interior species and species preferring non-fragmented mature stands.

Private landowners near Unit 8 have recently clearcut approximately 120 acres of their property. Large tracts of unmanaged timber on National Forest land and on adjacent private lands east of this project provide continuity of mature and over-mature habitat. Much of the private land to the east of the project area is wooded residential, with house lot openings dispersed among the forest. Logging on private land appear to be primarily thinning, and openings are primarily created for new home construction.

An ice storm in January 1998 damaged many hardwood trees with greater than 75 percent crown loss. Units 7, 8 and 9 were proposed for treatment prior to the ice storm and received light damage. Other stands within this project area were not damaged enough to warrant immediate action or occurred in management areas that do not allow harvesting. Approximately 120 acres of private land on Iron Mountain was treated because of ice storm damage.

The forest throughout the project area is predominantly made up of northern hardwoods with a small component of scattered softwoods within them. Some softwoods are on soils indicating natural processes would lead towards a purer softwood stand. Several stands have scattered dominant hardwoods with a dense softwood understory. Others are on soils that will always have a large percentage of hardwoods. Softwoods including spruce, fir and white pine are the primary softwoods with small pockets of hemlock and are often present in drainages. Pure softwood stands are typically found in the highest elevations where soils are thin and conditions are harsh.

Table 3-1 summarizes the harvest methods by alternative under the Iron Maple Project. It also shows which units would be deferred from harvest in each alternative.

**Table 3-1: Unit Harvest Methods by Alternative**

Unit	Alt. 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
1	Defer	Commercial Thin	Commercial Thin	Single Tree Selection	Defer
2	"	Commercial Thin	Commercial Thin	Single Tree Selection	"
3	"	Commercial Thin	Commercial Thin	Single Tree Selection	"
4	"	Single Tree Selection	Single Tree Selection	Single Tree Selection	"
5	"	Single Tree Selection	Single Tree Selection	Single Tree Selection	"
6	"	Single Tree Selection	Single Tree Selection	Single Tree Selection	Single Tree Selection
7	"	Clearcut	Clearcut	Group Selection	Clearcut
8	"	Clearcut	Clearcut	Group Selection	Clearcut
9	"	Clearcut	Clearcut	Group Selection	Clearcut
10	"	Seed Tree (oak regen)	Shelterwood	Group Selection	Seed Tree (oak regen)
11	"	Single Tree Selection	Single Tree Selection	Defer	Defer
12	"	Commercial Thin	Commercial Thin	Single Tree Selection	Commercial Thin

**Table 3-2** shows the general forest types, general stand condition, average basal area per acre (BA), acres, Ecological Land Type (ELT), and compartment and stand of the proposed units based on the Saco Ranger District database. ELT's are areas generally 100's or 1000's of acres having well known forest successional sequences on unique soil materials (see Figure 13 for an ELT map). Many of the proposed harvest units are mapped on more than one ELT. The most prevalent ELT associated with each unit is listed.

**Table 3-2: Iron Maple Project Proposed Harvest Units Stand Information**

Unit	Forest Type	Unit Condition	Avg. BA	Acres	ELT	C-Std
1	Hardwood	Mature	130	98	115G	12-10
2	Hardwood	Mature	120	30	115G	11-10
3	Hardwood	Mature	110	76	115G	11-7
4	Mixedwood	Mature	110	32	115G	11-8
5	Hardwood	Mature	110	15	115G	11-14
6	Hardwood	Mature	110	43	115G	11-8
7	Paper Birch	Low Quality	110	15	115G	11-5
8	Hardwood	Low Quality	100	11	115G	11-3
9	Hardwood	Low Quality	110	14	105	11-4
10	Hardwood	Mature	110	15	115C	16-27
11	Hardwood	Mature	110	94	11	16-27 & -18
12	Hardwood	Mature	110	39	115C	16-27
Total				482		

### **HMU 506 vegetative condition**

A diversity of community types is highly desired in both even-age and uneven-age management systems. Northern hardwood community types compose almost all of HMU 506. The Forest Plan calls for over 200 acres of even-aged regeneration age class (0-9 years) within HMU 506 although only eleven acres are present. An over-representation of young and mature even-age classes is present and there are fewer acres in overmature age-classes than desired, although this acreage has and would continue to trend upward.

Northern hardwood community type is found primarily along the south-facing, mid-slope sections of the project area and consist of beech, sugar maple, red oak, red maple, and yellow birch with some ash, paper birch and aspen scattered throughout. There are a few scattered apple trees along FR 27.

Units 1-3, 5, 6, and 8-12 are hardwood stands of primarily sugar maple, beech, yellow birch, and white ash. Unit 7 has a significant percentage of paper birch in the stand, and units 10, 11 and 12 have a strong representation of northern red oak.

Proposed harvest unit 11 is a northern hardwood stand within Rocky Branch corridor and includes pine and hemlock, reflecting both soils and proximity to the river. It is essentially a two-aged stand on ecological land type 11, which is a spruce-fir-hemlock climax forest association on outwash sands.

Unit 4 is identified as mixedwood because it includes hardwoods such as sugar maple, beech, yellow birch, red spruce and eastern hemlock.

### **HMU 509 vegetative condition**

There is an over abundance of mature and overmature northern hardwood within HMU 509 with only fifty acres of northern hardwood regeneration. HMU 509 has a minor representation of paper birch, hemlock and spruce/fir. There are ten acres of oak community in regeneration-age class. Soils indicate that the oak/pine community type should represent a larger percentage of land within HMU 509.

The Forest Plan identifies the "ideal" desired condition for community types and age/successional stage distribution within an HMU (see Forest Plan VII-B-5 and 11). HMU tables prepared for this analysis were derived by applying percentages of various habitat conditions shown in the Forest Plan Standards and Guidelines (pages III-12 and 13) to HMUs 506 and 509 for this project. An ideal situation would contain these percentages; however, land conditions and other resource considerations affect the actual percentages that can be achieved (See Appendix B for HMU tables). These percentages show a need to pursue management actions to move these HMUs toward these Forest Plan desired conditions.

### **Summary of both HMUs**

There are fewer acres of paper birch, aspen, and spruce/fir than is desired in both HMUs. Aspen and paper birch currently exist in pockets across both HMUs but not at levels necessary to categorize these pockets as stands. Wildlife species would benefit from increased habitat diversity within both HMUs.

This analysis area presently has 617 acres under uneven-age management. The desired amount is 1578 acres (see HMUs Tables in Appendix B and Forest Plan guidelines).

An outcrop of rock exists just west of Iron Mountain. This area is within Management Area 6.1 and not considered for any harvest activity. Tailing piles, small excavations, and a shallow mineshaft remain from a mining operation on Iron Mountain prior to the establishment of the White Mountain National Forest.

New Hampshire Natural Heritage Inventory (NHNHI), a division of the State Department of Resources and Economic Development, in conjunction with The Nature Conservancy, conducted floral field surveys of the analysis area for threatened, endangered and sensitive species. No listed plants were documented as existing in the project area. The NHNHI report is available at the Saco Ranger District Office.

NHNHI had identified three areas of primary interest within HMUs 506 and 509 (Engstrom 1994, Bechtel 1999). A red pine rocky summit forest woodland community is located in Compartment 68 near Mt. Stanton in MA 6.1, and another is located in Compartment 16 near Iron Mountain in MA 6.1. A third area is a boreal acidic rocky summit community located in Compartment 16 near Iron Mountain in MA 6.1. No harvest activity is proposed in or near any of these areas (see Figure 12 - the first of the three locations is south of the mapped area).

Natural communities (hemlock-spruce, and sugar maple-beech-yellow birch) within proposed harvest areas were noted (Bechtel 1999) although none were rare or require special protection. No enriched areas or areas of calcareous soils have been determined to exist within the analysis area.

Bear-clawed beech trees were observed scattered throughout the area. Sign of moose, deer, snowshoe hare, red squirrel, coyote, fox, were observed along with numerous bird species.

#### **Display of Harvest Actions by Alternative and Cumulatively in the Analysis Area**

Land in hardwood forest types allocated to even-aged management in HMUs 506 and 509 is 2600 and 2300 acres, respectively (4900 acres total). Rotation ages for these forest types range from 60 years for the aspen type to 120 years for northern hardwood and oak/pine (Forest Plan, Appendix C, pages VII-C-1, VII-C-7, and VII-C-21). In addition, 10% of each forest type is managed to extended rotation ages of 90 years for aspen and 175 years for northern hardwood and oak/pine type. Theoretically the average amount of even-aged regeneration harvest acres per decade considering rotation ages and forest types would be 8.9 percent of the landbase within an HMU. In HMUs 506 and 509 this translates to 231 and 205 acres per decade, for a total of 436 acres (see table 3-3). The proposed action and alternatives propose a maximum of 55 acres in new regeneration treatments and 126 acres cumulatively for the decade in HMUs 506 and 509.

**Table 3-3: Forest Plan Even-Aged Regeneration Per Decade in HMUs 506 & 509**

HMU	Even-Aged Landbase	Expected Average Regeneration Entry Per Decade (Pct)	Expected Average Regeneration Entry Per Decade (Acres)
506	2600 Acres	8.9 Percent	231 Acres
509	2300 Acres	8.9 Percent	205 Acres
Both	4900 Acres total	8.9 Percent	436 Acres total

While deviations from the average in any single decade are expected they nonetheless would affect the availability or scarcity of harvest stands in future decades. The table below shows existing stand regeneration within the past ten years including stands currently under contract (Back A Pickering) and a 120 acre clearcut on private land. No other foreseeable vegetation management projects within Rocky Branch watershed are planned. No other harvest activities on adjacent private lands are known or anticipated. Table 3-4 shows that a maximum of 2.6 percent (126 acres) would be regenerated under this project. Cumulatively, even including private land adjacent to the analysis area, a total of five percent (246 acres) would be regenerated this decade. This is well within desired goals for the area.

**Table 3-4: Even-Aged Regeneration Harvest Acres for HMUs 506 and 509**

<b>Even-Aged Regeneration</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
Existing Stand Regeneration	71	71	71	71	71
Proposed Stand Regeneration *	0	55	55	11	55
Total Regeneration Acres	71	126	126	82	126
Regeneration Percent**	1.4 %	2.6 %	2.6 %	1.7 %	2.6 %
Total acres with 120 acres of private land ***	191	246	246	202	246
Cumulative percent with private land	3.9 %	5.0 %	5.0 %	4.1 %	5.0 %

\*Regeneration acres result from clearcut, shelterwood and group selection harvest proposals. Acres in regeneration for group selection units are estimated to be 20 % of the acres in those units, because only 20 % of the acres receive treatment.

\*\* Regeneration percent is the percent of total acres regenerated in each alternative divided by the 4900 acres slated for even-aged management for HMUs 506 and 509.

\*\*\*Private land adjacent to the analysis area is not within the HMU but is included in the cumulative effects analysis, providing the cumulative percent shown in the last row.

**Figure 10 – past harvest History Map – 0-9 yr. Regeneration harvests**

**Figure 11 – past harvest History Map – All harvests within HMU 506 and 509**

The following table shows harvest characteristics for timber sales shown on the proceeding map (Figure 11). Regeneration harvest units within these sales were considered in the cumulative effects analysis for wildlife. All of the harvest treatments were considered in the cumulative effects analysis for water and soils, except for Cave Mountain because it is on the southwest side of Montalban Ridge, in the Saco River Watershed. Cave Mountain sale is not in Rocky Branch watershed although it is within HMU 509, and was considered in the wildlife analysis for this reason. Additional sales occurring prior to this analysis period were not included below or in Figure 11 to avoid confusion because the effects of sales prior to 1986 are no longer measurably adding to the cumulative effects for water, soil and regeneration aged stands. The vegetation analysis included all previous harvests because these treatments and their associated age classes and community types are recorded in the vegetation database (HMU tables, Appendix B).

**Table 3-4a:** Past Harvest History (since 1986) for HMUs 506 and 509

<b>Sale Name</b>	<b>Year Sold</b>	<b>Treatment</b>	<b>Acres</b>
Back A Pickering	1996	Clearcut	36
		Commercial Thin	180
		Single Tree Selection	83
		Seed Tree	10
Total Acres			309
Stairs Brook	1990	Commercial Thin	92
		Clearcut	19
		Improvement Cut	25
Total Acres			136
Rocky Branch Roadside	1988	Clearcut	51
		Commercial Thin	105
Total Acres			156
Cave Mountain	1987	Seed Tree Removal	8
		Commercial Thin	154
		Clearcut	51
Total acres			213
<b>Total of all sales</b>			<b>814</b>

**Figure 12 Map – Wetland and NHNHI Communities**

**Affected Environment – Management Indicator Species**

The direction of the National Forest Management Act is to manage fish and wildlife habitat to maintain viable populations of existing native and non-native vertebrate species (36 CFR 219.19). Viable populations of these species are to be maintained by providing suitable habitat that is well distributed (CFR 219.19). Management Indicator Species (MIS) associated with various habitats were selected to assess the effects of various management activities of the Forest Plan (as directed in 36 CFR 219.19 and documented in LRMP WMNF, VII B-5-10. See Appendix C of this EA for a MIS species summary table. MIS may exist and be effected by project actions however viable populations of these species encompass a much larger land base than the project area. MIS are monitored forest-wide because they represent affects of the Forest Plan. Suitable habitat for several MIS species exists within the analysis area but lies outside of the project area. Table 3-5 summarizes the MIS that are known to exist or have potential habitat within this analysis area. **MIS species are in bold print** throughout the wildlife analysis.

The following habitats are not known to exist within the project area or are not affected by the project and will not be discussed further in this document. Individuals of these species may be present in the analysis area even though the habitat they represent is not present. This occurs because many MIS species use habitats in addition to those that they represent as an indicator species.

**Table 3-5 – Management Indicator Species not affected, or habitat not present**

Habitats not Affected by Project	Management Indicator
Regeneration and young pine	northern junco
Mature and overmature pine	pine warbler
Hemlock	white-tailed deer
Upland openings	eastern kingbird and eastern bluebird
Wetlands and water	black duck
Permanent lakes, ponds, streams	<b>brook trout</b>
Cliffs and talus	peregrine falcon
Large water bodies	osprey
Large water bodes	common loon
Deep cold water bodies	Sunapee trout
Alpine	Robbin’s cinquefoil
High elevation spruce/fir	Bicknell’s thrush

**Affected Environment – Other Species of Concern**

New Hampshire State listed species of concern not listed on the Federal list or Region 9 Forester’s list (see Project File) that may be present within the analysis area include American marten (*Martes americana*) and ciliated aster (*Symphyotrichum ciliolatum*). **Marten** is also listed and effects analyzed as an MIS species. Ciliated aster has not been identified in the project area.

### **General Effects on Wildlife Habitat under all Action Alternatives**

The general effects of vegetative management on wildlife are outlined in the WMNF FEIS in Chapter IV, sections 9 and 11. This assessment addresses the direct and indirect as well as cumulative effects of all of the alternatives as they relate to anticipated species response to vegetative change.

Any of the alternatives including No Action has an effect on wildlife species. Each alternative would benefit some species and have an adverse effect on others. In analyzing alternatives the needs of all vertebrate species that inhabit the Forest are considered. Species noted to have particular affinity to certain habitat types or age classes (MIS species) are mentioned as examples of expected response to actions proposed in the alternatives.

Direct effects on wildlife are related to habitat alteration, including potential benefits of vegetative changes for some species, and loss of some habitat or displacement for others. Each of the action alternatives would produce these effects. In the short term the No Action Alternative would not produce changes in habitat or the corresponding adverse or beneficial effects expected with the action alternatives.

Individuals of a given species inhabiting treatment areas may experience displacement during harvest activities due to localized noise, human presence, and change to or elimination of habitat. Removal of trees in which active nests or dens occur may have a direct effect on individuals living there. Species such as deer and moose would adjust their foraging habits from day to night when harvesting activity has ceased, or adjust the location of their activities. Tracks of these animals often provide evidence that browsing on cut treetops is occurring at night.

Other individuals such as nesting birds, amphibians, and rodents may have their mobility temporarily altered during harvest due to an inability to disperse to other areas or may be eliminated due to soil disturbance and compaction.

Proposed clearcut units would create edge habitat along unit boundaries. Research has shown that regeneration aged edge habitat is not present long in New England forests because in a few years the "edge" created attains some vertical height. No distinct bird communities are associated with these edges. (DeGraaf. 1991).

Clearcutting in heavily forested areas such as the WMNF have not encouraged brown-headed cowbirds to expand into the forest interior. These birds are known to adversely affect many Neotropical migrant birds by parasitizing their nests. Studies done on the WMNF have shown no increase in brown-headed cowbirds (Yamasaki, et.al. 2000). Additional research on the WMNF has shown the impact upon interior forest breeding Neotropical migrant birds to be statistically insignificant (King 1993).

The season in which a unit is harvested may affect certain species, especially during critical times of the species' life cycle. Generally, species with home ranges that are larger than the harvest units avoid the treatment areas when harvest activity is occurring but otherwise continue to use these areas. Their daily activity may be altered, but the overall effect is not life threatening. Breeding, young rearing, feeding, and winter survival are common critical times for most species. The critical period varies for different species. No species are expected to be affected to the point that species viability is affected.

Summer harvest (May through August) affects species, which use trees for nesting, cover and foraging (such as breeding birds) and on ground dwelling species (mammals, amphibians and reptiles) as well as those breeding in vernal pools. As discussed above, individuals of a species might be displaced or mortally affected during harvest operation.

Fall harvest (September to December) affects fewer nesting species but potentially effects autumn breeding species such as **brook trout**, some amphibians, mast feeding species such as black bear, and small ground-dwelling mammals. Effects could be displacement, egg suffocation, harassment, mortality, or beneficial effects such as increased browse, increased availability of prey species or increased habitat type.

Certain species are affected in winter harvest (December through March). Owls, fox and some other species breed in winter. Species that use cavities such as chickadees and nuthatches or denning species such as squirrels, fisher, and raccoons could be effected if the tree they are using is harvested. Winter harvest could potentially effect critical winter habitat such as deer wintering areas. Adverse effects would occur if wildlife were displaced to the point where that habitat is completely unusable. Beneficial effects occur when skidder snow-packed trails provide wildlife such as deer greater mobility to access forage and cover. In addition, treetops provide available browse for deer and snowshoe hare at a time when it is difficult to attain forage. Compaction of the skid-trails may have a negative affect on wildlife that burrow in the ground or snow, or on prey species by providing better access for predators such as coyotes and bobcats.

Even-age and uneven-age vegetation management have differing effects on wildlife. Even-age management allows clearcutting, and provides a variety of community types of various age classes over the landscape. Clearcutting includes the removal of mature and overmature stands with the creation of regeneration age (0-9 years) stands and subsequent succession of communities such as paper birch or aspen. These differing stand types and age classes provide habitat diversity that benefits many wildlife species.

Uneven-age management maintains a forested stand at all times. It may allow for conversion of community types, but once established, that community type is likely to be retained. Potential for these areas to provide shade intolerant communities are minimal. A mix of both even and uneven-age habitat over the landscape allows for management of the greatest wildlife habitat diversity.

Some species, especially browsing mammals such as deer and moose and low-canopy foliage gleaners such as **chestnut-sided warblers** and snow-shoe hare would be positively effected by vegetative management that promotes regeneration of herbs, shrubs and trees in openings and in forested understories.

Forest Plan Standards and Guidelines (S&G) must be adhered to during project implementation. Many of the S&Gs for wildlife provide a method of retaining specific habitat elements such as den trees and vernal pools, leaving groups of trees in clearcut units, and retaining trees in riparian areas.

### **3.1a Wildlife Effects - Alternative 1: No Action**

Under this alternative natural processes of plant and forest succession would continue to occur. Natural mortality would open up small patches within the forest allowing shade tolerant species to regenerate,

though their growth would be slow. Diseased and over-mature tree mortality would provide new snags as existing snags rot and fall. Snags would become more common as stands mature, even to numbers approaching six trees per acre (Deadwood Report 1999). Natural selection processes, favoring stronger individual trees and favoring shade tolerant species would occur naturally as individuals compete for water, sunlight and nutrients.

Regeneration age stands would not be created under natural processes without large scale disturbance such as insect or wind events. Desired future conditions of a mosaic of community types and age classes, including early-successional regeneration age stands and subsequent sapling and pole stands of northern hardwoods and paper birch, would not be attained as described in the Forest Plan for Management Area 2.1 and 3.1. The opportunity to manage these stands to achieve desired management effects on approximately 482 acres would be lost. Increased risk of insect infestation or disease may occur.

From a timber management point of view improved future timber quality would not occur. In the near term suppressed trees and short lived species that are nearing mortality and declining in value would not be removed. The opportunity to provide a level of commodity production would be lost.

Over time, diseased and suppressed trees and short-lived species such as paper birch and aspen would be replaced by shade tolerant and long-lived species such as maple and beech. Stands containing hemlock and spruce would likely retain these species presence. In the long term (well beyond 2023) an uneven-aged forest would prevail.

HMU 506 currently shows 27 acres of paper birch in the overmature age-class. Under the no action alternative, this community type is expected to convert to northern hardwoods because paper birch is a short-lived species and many would die within twenty years. Paper birch does not regenerate in a close-canopy stand so this component would decrease. Under this alternative, an over abundance of mature northern hardwood age-classes would occur. No change in the number of uneven-age class acres occurs.

The same is true for the oak community type. In twenty years, this community type would be predominantly overmature. If no-action continues, oak regeneration would not become established and the oak community type would decline over the long term.

Horizontal diversity (the distribution of various communities and age classes over a landscape), vertical diversity (various ages or heights of trees within an area) and species diversity would decline with this alternative. (Forest Plan VII-B-5-13). Over the long term, the paper birch and aspen component would decrease throughout the area to scattered individuals. No regeneration-age paper birch or aspen stands would be expected. This would have immediate as well as long term affects on wildlife species that prefer these community types. Overall, habitat diversity would decrease. Without regeneration-age habitat, successional age classes (such as young-aged stands) would also decline over the long term.

Over the next twenty years young stands would succeed into mature condition and currently mature stands would succeed into over-mature age-classes. Presently there are 1319 acres of northern hardwood young age class. Over the next 20 years 673 of these acres would become mature classes leaving 646 acres in young classes.

There are currently 61 acres in northern hardwood over-mature age-class. Over the next 20 years an additional 170 acres would enter overmature age classes naturally for a total of 231 acres and exceed the desired 145 acres in this age class.

This alternative does not provide immediate or long-term benefits for species both faunal and floral that require disturbance or regeneration-age habitat. Wildlife species requiring this habitat would not be expected to occur in this area. Other species that use openings for foraging would find less territory to forage in. This alternative does not meet the objectives of MA 3.1, which includes providing for those species requiring early-successional habitat nor does it provide a mix of habitats, including the regeneration-age habitat as required in MA 2.1.

### **Effects on Management Indicator Species - No Action**

Appendix C (MIS table) summarizes the list of MIS species affected by this alternative and states the expected affect on their preferred habitat. **MIS** are **highlighted** throughout the remainder of this report. The presence of suitable habitat does not guarantee the presence of a listed species nor does the lack of suitable habitat foreclose a species from being present. The individual could be passing through or surviving in marginal habitat, or utilizing other habitat than it represents. For this analysis however, presence of habitat is used to as an expectation of a species' presence and affect on population trend.

This alternative makes no changes to the current habitat other than natural succession or a natural disturbance event. Disturbance habitat (early succession in the 0-9 year age class) currently existing in the analysis area would be expected to grow out of this stage over the next twenty years. Therefore, habitat for **chestnut-sided warblers** and **mourning warblers** would decline. Populations of these species would also decline. The population trend for **chestnut-sided warblers** is declining in the region while **mourning warblers** are considered stable (USFS 2001). Habitat for both species has been declining on the forest and in the New England region (USDA Forest Service 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000 Monitoring Reports; USDA Forest Service 2003. Habitat trend analysis 2003; Trani et al. 2001). Implementation of this alternative may contribute to the continued decline in habitat for these species however direct changes to the population are not expected to be measurable because the project area is such a small part of the overall range of this species.

Paper birch is a short-lived species and the existing stand within the project area is already overmature. Expectation is this community type would become non-existent within the analysis area over the next twenty years without a natural disturbance event. Expectations are **broad-winged hawk** and **ruffed grouse** populations within the project area would decline as this habitat disappears. **Broad-winged hawk** populations have been stable on the WMNF and in the region while **ruffed grouse** population trends are somewhat uncertain because they have fluctuated on the WMNF making a trend unclear (USDA Forest Service 2001). Regeneration-age habitat of both aspen and paper birch are declining on the WMNF, with mature and overmature paper birch and aspen starting to decline in recent years (USDA Forest Service 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000 Monitoring Reports; Habitat Trend Analysis 2003; Trani et al. 2001). Implementation of the No Action alternative would minimally contribute to the decline in paper birch habitat due to the failure to create new regeneration. Implementation of this alternative may contribute to the continued decline in habitat for these species however direct changes to the population are not expected to be measurable because the project area is such a small part of the overall range of this species.

Currently habitat is present for **American marten** and **northern goshawk** throughout the project area. Mature and overmature northern hardwood habitat and uneven-age spruce/fir habitat has been increasing on the WMNF (USDA Forest Service 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000 Monitoring Reports; USDA Forest Service 2003. Habitat trend analysis). **Northern goshawks** have a relatively stable population on the WMNF though it is uncommon (USFS 2001). **American marten** are slowly increasing on the WMNF, particularly in the northern section (USFS 2001). This alternative would cause no change in habitat for either of these species. Populations of the species would be expected to remain the same as their current trends.

For all of the other MIS, this alternative would cause no change in habitat and therefore no expectation of change in population trend.

### **Effects on Other Species of Concern - No Action**

#### ***Ciliated Aster *Symphotrichum ciliolatum****

This perennial blooms from August to September with wind-dispersed seeds. Indications are this species is governed by disturbance that creates small to large openings in the forest canopy. It has been found on roadsides, which implies use of some edges and in scattered small or large canopy openings in the forest. This species is recorded as growing in early-successional habitats such as clearings, and late successional habitats, such as woods. It appears to need openings, even within woods habitat. There is one historic report from Franconia, New Hampshire in the WMNF from 1896.

The probability of this species occurring within the project area is extremely low. The most likely habitat would be the ditches along the FR 27. The ditches of this road have been maintained through mowing, brushing, grading, and reshaping over many years. The level of road maintenance is not expected to change regardless of what alternative is selected. Therefore actions making this area suitable or unsuitable for this plant are expected to continue.

Implementation of this alternative may effect individuals of this species but there would be no concern about the viability of the species as a whole in the region.

### **Cumulative Effects of No Action**

This alternative perpetuates a mature and overmature forested habitat to the benefit of species such as **northern goshawk** and **American marten**. It eliminates or postpones the creation of regeneration-age habitat and therefore directly and indirectly affects a variety of wildlife species. Diversity of habitat in the HMUs would decrease. Back-A-Pickering sale to the south would be the only vegetative action providing diversity in the area this decade. Few regeneration age dependent floral and faunal species would be expected in this area. This would negatively affect species such as rose-breasted grosbeaks and American redstarts that prefer young age (sapling) northern hardwood communities. In addition, a decrease in paper birch and aspen communities, as well as pin cherry, raspberries, and other mast-producing vegetation would negatively affect species dependent on these communities and mast producers.

This alternative would continue to add to the maturing age of forest habitat as well as interior habitat that has been steadily increasing over the past several decades on the White Mountain National Forest as well as across all of New England (1993 WMNF Monitoring Report; Askins 1993).

### Issues raised during Scoping: - No Action

All of the issues raised during scoping involved effects from harvesting. Since no harvesting would be occurring under this alternative, no further discussion is warranted.

### 3.1b Effects on Wildlife - Alternative 2

Alternative 2 would move the analysis area towards the wildlife objectives set forth in the Forest Plan by providing a portion of the requirements for native wildlife species. Some stands where the paper birch community would regenerate within HMU 506 (units 7, 8 and 9) and the oak community type (unit 10) in HMU 509 would be regenerated. This would provide regeneration age-classes of these community types, and later the subsequent successive age classes. Species dependent on regeneration-age habitat such as **chestnut-sided warblers** and **mourning warblers** as well as species such as deer, bear, fox, and moose would have 55 new acres of regeneration age habitat. The total amount of proposed clearcut acres is less than 0.6 percent of the entire analysis area. This moves the HMU towards Forest Plan objectives by providing early-successional habitat that is in decline on the White Mountain National Forest (1993 WMNF Monitoring Report) and in New England over the past several decades (Askins 1993).

Creation of these regeneration areas (northern hardwood, paper birch and oak) would diversify the current forest condition. Nesting habitat for **northern goshawk** would be decreased by 55 acres since they place their nests in mature habitat. These nests are often located near openings in the forest so the perimeter of these openings may actually become more suitable for goshawk nest placement.

Increased habitat diversity would benefit moose, deer, fox, grouse and other species that have large home territories and can move through them easily. These species would benefit from increased production of browse that occurs from sprouting stumps in all harvest units, and the increased production of grass, forbs and soft mast. Species that may be adversely affected by this change in habitat are animals with small home ranges such as the woodland jumping mouse and red-backed salamander (DeGraaf, et. al. 1989). While individuals may be adversely affected, no species as a whole would be affected to the point that species viability would be a concern.

Seed tree harvest to regenerate oak in unit 10 would provide regeneration-age habitat for **rufous-sided towhees** as well as some mature trees that would provide vertical structure for species such as hawks, woodpeckers and **gray squirrels**.

Commercial thinning on 243 acres of northern hardwood forest would continue to provide interior forest habitat for species such as **northern goshawk** but may reduce its suitability for **American marten**.

Singletree selection harvest on 184 acres would increase softwood regeneration on about 126 acres for species such as snowshoe hare but may never result in classic softwood stands. Any increase of softwood habitat is beneficial for wildlife on this forest. Interior forest habitat for species such as **marten** would be retained on these acres.

This action would directly effect those individuals (some beneficially, others adversely) presently living in the stands selected for harvest. It would indirectly benefit species dependent on regeneration habitat and community types to be created. Cumulatively, no species would be affected to the point its viability would be in jeopardy.

The Proposed Action retains much of the existing short-term and long-term benefits for species requiring mature forest habitat (even-aged and uneven-aged), softwood cover, community types, interior forest conditions and localized habitat features such as riparian areas. In addition it provides horizontal habitat diversity that includes even-aged regeneration age habitats.

This alternative has immediate positive and negative effects on ground dwelling individuals, and nesting and denning species in harvest units and along access roads.

### **Effects on Management Indicator Species with Alternative 2**

This alternative increases habitat within the project area for **chestnut-sided warblers, mourning warblers, ruffed grouse, rufous-sided towhees, and snowshoe hare**, all of which use disturbed or regeneration-aged habitat where shrubby growth is present. Regeneration-age habitat in all community types has been declining on the WMNF and in the region (USDA Forest Service 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000 Monitoring Reports; USDA Forest Service 2003 (Habitat trend analysis; Trani et al. 2001). Populations of **chestnut-sided warblers, mourning warblers, and rufous-sided towhees** have been declining on the WMNF and in the region (USFS 2001). **Ruffed grouse** population trends are somewhat uncertain and have fluctuated on the WMNF making a trend unclear (USDA Forest Service 2001). **Snowshoe hare** populations have been stable to increasing on the WMNF (USDA Forest Service 2001). This alternative improves habitat on 32 acres by increasing the amount of spruce/fir regeneration. The habitat however would remain typed as uneven-age northern hardwood or mixedwood forest so no change in habitat trend would be evident.

Implementation of this alternative would improve habitat for species desiring regeneration-age or early-successional type habitat, however it is not expected to cause a reversal in the current downward population trends of these species as the project area is not large enough to affect overall populations.

Suitable habitat for **northern goshawk** is maintained in stands that are commercial thinned and single tree selected. Mature and overmature northern hardwood habitat has been increasing on the WMNF (USDA Forest Service 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000 Monitoring Reports; USDA Forest Service 2003. Habitat Trend Analysis). **Northern goshawk** populations have remained stable on the WMNF, though uncommon (USFS 2001). **Gray squirrel** may have fewer oak trees to find mast (acorns), however the proposal is expected to perpetuate oak in the area through oak regeneration. **Gray squirrel** populations have remained stable on the WMNF (USFS 2001). Oak habitat has remained stable on the WMNF but regeneration of stands has not occurred to expect continued stability into the future. Implementation of this alternative would alter habitat for these species however the habitat would be classed as the same forest type so no change in habitat trend would occur.

Nesting habitat for **northern goshawk** and **broad-winged hawk** would be reduced in the seed tree cut and clearcuts. However it provides for future habitat for **broad-winged hawk** in the perpetuation of paper birch habitat. **Broad-winged hawk** populations have been stable on the WMNF (USFS 2001) however paper birch habitat is in decline (USDA Forest Service 2003. Habitat trend analysis). Implementation of this alternative would cause a minimal decline of nesting habitat for **northern goshawk** but because of its small area would not have an effect on the population of this species. This alternative would cause a change in the current age class of paper birch however it would remain as the habitat type and therefore cause no change in habitat trend.

There are indications that the population of **American marten** is slowly increasing on the Forest (WMNF Monitoring Report 1993; USFS 2001). Often they occur at higher elevations. The WMNF has seen an increase in mature and overmature habitat (USDA Forest Service 2003. Habitat trend analysis) that **marten** would favor in all community types. **American marten** may find less suitable habitat in the thinned stands under this alternative (forested stands 30+ feet tall with a basal area of less than 80 ft<sup>2</sup>), but are not expected to totally avoid them as they use a wide variety of habitats within their home range. While some portions of the project area may not be ideal for **marten** habitat, the diversity created would not deter **marten** from utilizing the area. Therefore no real change in **marten** habitat or population is expected under this alternative.

While suitable habitat exists within the analysis and project areas there may be a lack of specific habitat structure in the form of large standing and downed wood for denning sites (Fay et al. 1994). The Forest Plan (USFS 1986a) guideline to retain wildlife trees in harvest units, along with the project mitigation to retain all large downed wood on the ground as well as retaining all snags and hazard trees cut for safety concerns, may improve the area even further for **marten**.

This alternative causes no change for other MIS. Implementation of this alternative is expected to increase habitat for some species and decrease habitat for other species. This may contribute in a minimal way to habitat trends for these MIS. However, this project proposal (Alternative 2) is not large enough to affect the regional population trend of any MIS species. Implementation of this alternative would cause no concern of viability for any of these species.

#### **Effects on other species of concern under Alternative 2**

##### ***Ciliated Aster *Symphyotrichum ciliolatum****

The habitat description and requirements for this species has been described under Alternative 1. This alternative is not expected to alter ongoing maintenance on FR27. The probability of this species occurring within the project area is extremely low. The affects of implementation would be similar to No Action, where roadside maintenance would still occur. Implementation of this alternative may affect individuals of this species, but there would be no concern about viability of the species as a whole in the region.

#### **Cumulative Effects under Alternative 2**

Natural regeneration and stump sprouting are virtually guaranteed in the forest types treated under this project. Past experience, and the evidence presented from previous vegetative treatments in this area and in similar areas across the Forest indicate regeneration failure is very rare. For example, White Mountain National Forest employees have performed third year stocking surveys on the Ammonoosuc, Saco and Pemigewasset Ranger Districts for 20 years and have located only one 20 acre stand that had not met its reproduction stocking goal due to overbrowsing by moose. An additional 40-acre stand was stocked at just above the minimum required 400 trees per acre. Considering past regeneration success of harvest units using similar harvest methods within the same ELT's, regeneration within all of the proposed harvest units would be established as predicted within three years.

Over 3,150 acres of Management area 6.1 and 6.2 lands within HMUs 506 and 509 are not available for vegetation management and would remain untreated indefinitely. Within managed stands many of the habitat components and natural processes continue to occur and provide for a stable ecosystem and other resource values such as clean water, wildlife habitat and recreation values. In non-treated lands other values including old stands with old trees, snags, and large woody material would provide for species

that require these conditions. On a watershed basis over time this cycling of conditions provides for the greatest diversity of stand types. Young, mature, and old growth stands would be present throughout the watershed. Species composition would move toward climax species (shade tolerant) in all stands, at varying stages of development. Understory species, pioneer species and forbs, and the wildlife that depend on these varying conditions, would have opportunities to participate in this successional pattern.

Cumulatively, additional perspective on vegetative diversity and old growth can be obtained from looking at the White Mountain National Forest as a whole. Of approximately 781,000 acres within the WMNF, approximately 385,000 acres are in Management Areas that allow for timber management. The remaining 396,000 acres are in Management Areas that do not allow timber management and are moving into old-growth forests. Of those lands that allow management activities, the current trend is to manage fewer and fewer acres each year. As for private lands adjacent to the National Forest, private lands are maturing, some are managed for timber production, and some are being cleared for new home sites. On a moderate percentage of low elevation private lands near resorts and towns, and where views are possible, a prolonged trend is to convert these lands to residential areas or into medium sized lots for new home construction. These lands retain many of their forested features, but often lack the kind of habitat required by many wildlife species.

### **Issues Raised during Scoping for Alternative 2**

Individuals of deer, moose, fox, and bear may be directly affected by timber harvest if they are residing in the area and become disturbed or harassed enough to relocate. In rare instances death has occurred if a tree fell on an individual. Most wildlife vacate the area during harvest activity though may return during the night or other periods of inactivity. These species would most likely be affected indirectly through habitat change. All of these species are habitat generalists in that they use various habitats during the day, year or lifetime. A diversity of habitat would be ideal. Alternative 2 does create more diversity than currently exists.

Bald eagles have been known to migrate over the forest however none are known to inhabit the WMNF (Foss 1994; Martin, personal communication). They prefer areas with large bodies of water in which to forage for fish. The Golden Eagle is considered rare in New Hampshire. It inhabits remote, mountainous terrain throughout the Northern Hemisphere well removed from human activity. In eastern North America they forage over open areas such as bogs, old burns and clear-cut (Foss 1994). The Proposed Action would have no direct effect on either species of eagle.

The term "hawks" could be understood to include the following species: osprey, northern harrier, sharp-shinned hawk, cooper's hawk, **northern goshawk**, red-shouldered hawk, **broad-winged hawk**, red-tailed hawk, American kestrel, peregrine falcon, and merlin. Of these, osprey require large bodies of water to forage for fish, northern harriers prefer large bogs or open areas in which to nest and forage. Neither is known to inhabit the WMNF. **Northern goshawks**, sharp-shinned hawks, Cooper's hawks, red-shouldered hawks, and **broad-winged hawks** prefer canopied forests usually near a forest opening or water source. Red-tailed hawks use a wide range of habitats from woodlands to farmlands, wetlands, roadsides, and powerline rights-of-way. Kestrels prefer open terrain of old fields, large bogs, pastures, and powerlines. All of these species could be benefited by harvest activities that would create openings near forested habitat. Peregrines require cliffs for nesting and prey on birds by diving or swooping in the air. Merlins are primarily migrants in New Hampshire and are residents of spruce-fir forests with nearby openings. Removal of large trees may affect any of these species should the tree contain an

active nest or be suitable as a nest tree. Efforts are made to avoid active nest trees of raptors. Should an active nest be located during implementation, logging activities would cease in the immediate area until nesting activities were completed. Suitable nesting habitat is available on most of the WMNF. Implementation may affect individual raptors but would not cause a viability concern of any species.

Raccoons, while considered a forested species have adapted to human occupied areas resulting in higher populations being found on the perimeter of the WMNF. Raccoons are omnivorous and use a variety of habitat types (DeGraaf and Yamasaki 2001). Management that would create a diversity of habitat, increase soft and hard mast, and maintain aquatic habitats would benefit raccoons however there is no expectation the Proposed Action would cause an increase or decrease in the population of this species in the analysis area.

Fisher (home range of approximately 4,000 acres) use extensive forests and wet areas, are found less frequently in open stands, but use all habitats for foraging. Forage consists primarily of mammals along with insects, berries, nuts, and carrion (DeGraaf and Yamasaki 2001). The Proposed Action would provide a diversity of habitat type, increase berry production, provide long-term mast production and maintain a diversity of mammal species for prey.

The eastern coyote uses all habitat types and is extremely adaptable to changing habitats, food sources, and human activity. The Proposed Action would create a diversity of habitat types that the coyote would use however there is no expectation the project would effect coyote populations.

A beaver wetland west of Otis Brook is surrounded by a young (pole) age-class northern hardwood stand that was clearcut in 1979. Beaver find this habitat ideal for dam and lodge construction as well as forage opportunities. The result of this clearcut is regeneration of northern hardwoods that provide a buffer that would intercept any runoff that might occur. In addition, thin prescriptions proposed for unit 3, especially if implemented in winter, would leave sufficient canopy cover and root holding capacity, as well as forest litter to absorb heavy rains and prevent runoff. Unit 3 is to the east of the beaver ponds and Otis Brook and is on very level topography. All of units 1, 2 and the east portion of unit 3, drain into an unnamed tributary away from Otis Brook and the beaver ponds. The portion that might drain toward the ponds is very flat. Considering the thinning prescription and the hardwood stand buffer, no increase in water flow or change in water quality to the beaver ponds or to Otis Brook is anticipated. Neither the beaver nor the dams would be affected.

### **3.1c Effects on Wildlife - Alternative 3:**

This alternative has identical harvest proposals for all of the harvest units in HMU 506, and only harvest unit 10 differs in HMU 509. Unit 10 is a shelterwood rather than a seed tree prescription. Therefore, the direct, indirect and cumulative effects of this alternative would be nearly identical to those discussed under Alternative 2, with the only difference being for unit 10. Both Alternatives 2 and 3 essentially regenerate unit 10 and include burning prescriptions to foster oak regeneration. Alternative 3 leaves about 10 basal area more per acre. The effects on wildlife are essentially the same.

### 3.1d Effects on Wildlife - Alternative 4:

This alternative retains the area in a similar state in regards to wildlife habitat as the existing condition even though timber is removed. Species currently utilizing the area would be expected to use the area after harvest.

Under this alternative there would be no movement towards the desired even-age objectives stated in the Forest Plan. This alternative uses all uneven-age methods for harvest. The long-term effects of uneven-age management would be most evident on species requiring an oak community and paper birch community type (gray squirrel and rufous-sided towhee and **ruffed grouse** and **broad-winged hawk**). However, some wildlife objectives would be met, including increased browse from stump sprouting on 388 acres of harvest units.

Vegetative diversity would be less than the other action alternatives, and would be similar to the No Action alternative. New communities would not be created for species requiring regeneration age stands. Species affected include **ruffed grouse** and **broad-winged hawk** for paper birch and aspen stands, **rufous-sided towhees** and gray squirrel for oak stands, and chestnut-sided and mourning warbler for northern hardwood stands.

This alternative converts some acres currently in even age management to uneven age management. The increase in uneven-age northern hardwood acres meets one wildlife objective. At the same time, the decrease of even-aged mature northern hardwood acres within HMU 506 opposes wildlife objectives for long-term management of even-aged stands. Increasing the uneven-aged acres would retain habitat suitable for **marten** and goshawk. This alternative fails to achieve a balance of wildlife habitat objectives, and is similar to No Action in its effects on wildlife habitat. There is little attainment of Forest Plan HMU objectives.

The uneven-age management system which includes single tree selection and group harvest methods require more frequent entries into the forest stands than do even-aged thinning and clearcutting. A higher degree of wildlife displacement may occur due to more frequent harvest entries over the long term than No Action, the Proposed Action, or Alternative 3. Cumulative effects of temporary displacement, increased human presence, and harvest action occurring more frequently over the long term may cause some species to vacate the area. While individuals of these species may be adversely affected, no species is expected to be disturbed to the point its viability would be jeopardized.

This alternative would convert 287 acres of northern hardwood even-age to uneven-age management. This harvest method would remove trees of all size and age classes, resulting in an uneven-aged stand now and into the future. Combined with the surrounding stands, this would result in an interior mature forest benefiting species such as **American marten and northern goshawk**. Wildlife utilization of this stand would change little from how it is used currently.

The group selection method (Units 7, 8 and 9) would create openings from 1/4 acre up to 2 acres. This provides small open areas in which sunlight can reach the forest floor to promote some regeneration. Red maple, beech, sugar maple, and other shade-tolerant species would be the primary species to regenerate (Dale, Smith, & Percy, 1994.) Unit 7 is presently an overmature paper birch stand where aspen and paper birch would not be expected to regenerate with this harvest method to the extent it

would with a clearcut. The stand would convert 15 acres from even-age paper birch habitat to uneven-age northern hardwood habitat, eliminating this desired community type and its successional stages.

The reduction of paper birch in the stand would have a negative affect on **broad-winged hawks** that nest in this type of habitat. It would also reduce the amount of preferred habitat for **ruffed grouse** by not regenerating paper birch to the extent possible. It would retain the area as suitable for **marten** and possibly **northern goshawk**.

Units 8 and 9 would convert 25 acres of even-age northern hardwood acres to uneven-age northern hardwood acres. This area would retain its suitability for **American marten** and **northern goshawks**.

These small forest openings would provide some habitat for species requiring early-successional habitat. Wildlife species that key in on the structural habitat such as **chestnut-sided and mourning warblers**, would find insufficient or marginal regeneration-age habitat in this area. Communal species such as **chestnut-sided warblers** prefer large shrubby openings in which many of the same species claim territories. Species such as these may find these openings too small to meet their needs (Costello, C. 1995 and D. King 1996).

Under this alternative group-selection harvest in unit 10 would retain these acres in northern hardwood uneven-age management. Effects of group selection in northern hardwood habitat are discussed above. The objective for this stand is to regenerate oak. The group selection method of harvest may increase sunlight to the forest floor and regenerate some oak, but not to the extent as a seed tree or shelter wood harvest method. The majority of species that would regenerate would be red maple, beech, sugar maple and other shade-tolerant species (Dale, Smith, and Percy, 1994). This would retain the habitat for species such as **American marten** and **northern goshawk**. Not enough oak regeneration would occur to enhance the habitat for species such as **rufous-sided towhee**.

Unit 11 would be deferred under this alternative at this time. Effects would be similar to the No Action alternative. The area would maintain a mixed-wood habitat component. There would be little to no regeneration or increase of the softwood component over the next 15-20 years unless natural processes create sufficient gaps in the stand. The habitat would remain suitable for **marten** and **goshawk**.

Unit 12 would be harvested using a singletree selection method. This would retain 40 acres in northern hardwood uneven-age management. This action would cause no change in the HMU management objectives. Singletree selection would remove trees from all size and age classes and retain an interior forest characteristic. There would be some stump sprouting to provide browse for species such as deer, moose and hare over the next several years. Interior-forest wildlife species such as **marten** and **goshawk** would continue to use the area.

#### **Effects on Management Indicator Species under Alternative 4**

This alternative creates marginal habitat within the project area that may be used by **chestnut-sided and mourning warblers**. The proposed group selection units would create approximately 11 acres of regeneration-age habitat. Regeneration-age habitat in all community types has been declining on the WMNF and in the region (USDA Forest Service 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000 Monitoring Reports; and USDA Forest Service 2003. Habitat Trend Analysis; Trani et al. 2001).

Populations of **chestnut-sided and mourning warblers** have been declining on the WMNF and in the region (USFS 2001, Askins 1993). The small cuts (1/4 acre to 2 acre openings) scattered within forested habitat are not considered ideal habitat for species preferring shrubby habitat. However, eleven acres is an increase from current conditions. Even so, this alternative would have a minimal effect on populations of these species, and is not expected to effect population trends because the project area is not large enough to effect overall populations.

Because this alternative does not perpetuate paper birch or aspen community types, fewer individuals of **ruffed grouse** and **broad-winged hawks** may inhabit the area. **Ruffed grouse** population trends are somewhat uncertain and have fluctuated on the WMNF making a trend unclear (USDA Forest Service 2001). **Broad-winged hawk** populations have been relatively stable on the WMNF (USDA Forest Service 2001). While paper birch or aspen community type is expected to become non-existent under this alternative, it would not effect the current population trend of these species because the project area is not large enough to effect overall populations.

**Snowshoe hare** would have similar effects as described under Alternative 2. Under this alternative, habitat for **northern goshawk** would be reduced by 11 acres within the group selection units because large trees suitable for nesting would be removed. However, mature and overmature northern hardwood habitat has been increasing on the WMNF (USDA Forest Service 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000 Monitoring Reports; USDA Forest Service 2003, Habitat Trend Analysis).

**Northern goshawk** populations have remained stable on the WMNF, though uncommon (USFS 2001). While habitat may decrease, there is still more than adequate habitat for **northern goshawk** in the project area and on the WMNF. This alternative is not expected to effect the current goshawk population trend as the project area is not large enough to effect overall populations.

Under this alternative, **gray squirrels** may have three fewer acres of oak trees to find mast (acorns) and three acres of oak regeneration may be created. **Gray squirrel** populations and oak community types have remained stable on the WMNF (USFS 2001).

Only three acres of oak regeneration habitat would be created although this would benefit **rufous-sided towhees**. The population of **rufous-sided towhees** has been declining on the WMNF and in the region (USFS 2001). Oak regeneration-age habitat has declined on the WMNF (USDA Forest Service 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000 Monitoring Reports; USDA Forest Service 2003, Habitat Trend Analysis). There would only be three acres of oak habitat created under this alternative. This would contribute in a minor way to habitat needs for **rufous-sided towhees** and **gray squirrels** however it is not expected to effect current population trends of these species because the project area is not large enough to effect overall populations.

There are indications that the population of **American marten** is slowly increasing on the Forest (WMNF Monitoring Report 1993; USFS 2001). Often they occur at higher elevations. The WMNF has seen an increase in mature and overmature habitat that **marten** favor in all community types (USDA Forest Service 2003, Habitat Trend Analysis). Habitat suitability for **American marten** would not change under this alternative. The majority of the project area and analysis area would meet preferred **marten** habitat of forested stands at least thirty feet tall with at least 80 feet of basal area after

implementation. There would be no effect on population trend of this species because there is ample suitable habitat within the analysis area and this alternative treats a very minor percentage of that area.

While suitable habitat exists within the analysis and project areas, specific habitat structure in the form of large standing and downed wood for denning sites may be lacking. However, Forest Plan (USFS 1986a) guidelines to retain wildlife trees in harvest units, and the mitigations to retain all large downed wood on the ground and to retain all snags and hazard trees cut for safety reasons during operations, may improve the area even further for **marten**.

This alternative causes no change for other MIS. Implementation of this alternative is expected to increase habitat for some species and decrease habitat for other species. This may contribute in a minimal way to habitat trends for these MIS. However, this project proposal (Alternative 4) is not large enough to effect the larger population trend of any MIS species. Implementation of this alternative would cause no concern of viability for any of these species.

#### **Effects on Other Species of Concern under Alternative 4**

##### ***Ciliated Aster *Symphyotrichum ciliolatum****

The habitat description and requirements for this species has been described under Alternative 1. This alternative is not expected to alter maintenance on FR27. The probability of this species occurring within the project area is extremely low. The affects of implementation would be similar to that described under Alternatives 1. Implementation of this alternative may effect individuals of this species although there would be no concern about the viability of the species as a whole in the region.

#### **Cumulative Effects under Alternative 4**

Past actions have been described under Alternative 2, Cumulative Effects. From a broader cumulative perspective, this alternative does not contribute a balanced variety of wildlife habitat (even-aged habitat) as was created in past timber sales on this part of the forest. It fails to contribute because it does not create much diversity in age classes or forest types due to the pure uneven-aged prescriptions. Under this alternative Back-A-Pickering timber sale and the harvest on private land adjacent to the analysis area are creating the only new regeneration-age habitat in or adjacent to the project area, totaling 191 acres. There are no other planned or foreseeable harvests in HMUs 506 or 509, and none known to be planned on private land.

Research has indicated those species showing population decline in the northeast are primarily Neotropical migrant birds associated with early-successional habitat. (Askins. 1990). Early-successional habitat has been declining in New England and on the WMNF over the past several decades (Askins 1993; Trani et.al. 2001). These species may still be found in the area due to habitat created by past timber sales although their numbers are expected to be much lower. For **chestnut-sided warbler** breeding opportunities would be minimal.

#### **Issues raised during Scoping for Alternative 4**

The direct effects of proposed harvesting on deer, moose, fox, and bear are discussed under Alternative 2. All of these species are considered habitat generalists. All use a variety of habitat types and age classes during the year and lifetime. A variety of habitat types would be the ideal conditions for all of these species. This alternative would maintain a canopied forest cover, and minimizes areas where grass, herbaceous plants and soft mast would be found because few openings are created. All of these

species would be expected to use the area, although not to the extent if a more diversified habitat were created.

This alternative would have no direct effect on eagles. There are no openings created under this alternative that may benefit those species of hawks that prefer to roost, nest and forage near openings.

Raccoon, fisher and coyote are expected to continue to use this area under this alternative. However this alternative would not cause an increase or decrease in the population of these species in the analysis area. Ideally these species would benefit from a more diversified forest than this alternative provides because they forage on fruit, mast, rodents and other prey species more often found in brushy open areas. This alternative would not create this type of habitat.

The beaver wetland near Otis Brook is surrounded by a young northern hardwood stand, and would not be affected by this project because the hardwood stand surrounding the beaver ponds provides a wide buffer around the ponds. The hardwood stand provides a buffer that would intercept any runoff that might occur. In addition, thin prescriptions, especially those implemented in the winter, leave sufficient canopy cover, and root holding capacity, as well as forest litter to absorb heavy rains and prevent runoff. Unit 3 is to the east of the beaver ponds and Otis Brook and is on very level topography. All of units 1, 2 and the east portion of unit 3, drain into an unnamed tributary away from Otis Brook and the beaver ponds. The portion that might drain toward the ponds is very flat, and considering the thinning prescription and the hardwood stand buffer, no increase in water flow, or change in water quality to the beaver ponds or to Otis Brook is anticipated.

### **3.1e Effects on Wildlife - Alternative 5:**

This alternative provides regeneration age habitat for wildlife currently lacking this habitat condition in the analysis area. Creating regeneration-age habitat through clearcutting (40 acres) and the seed tree harvest (15 acres) would provide habitat for these species. In addition, the paper birch community (unit 7) would be maintained as paper birch in regeneration age and would provide successive age classes into the future.

Deferring singletree selection and commercial thinning in Units 1-5 would cause effects on wildlife similar to those described in the No Action Alternative. These harvests alter habitat in minor ways. Species such as **northern goshawk** would still find the area suitable. Deer, moose and snowshoe hare would be provided with additional browse habitat that occurs with clearcutting, but would not benefit from stump sprouting in units 1-5 as they are omitted.

This alternative meets HMU objectives to a similar extent, as does the Proposed Action except it does not convert as many acres of northern hardwood even-age management to uneven age management.

From an HMU perspective, Alternative 5 would move towards meeting the wildlife objectives set forth in the Forest Plan by providing a portion of the requirements for native wildlife species. The paper birch community would be regenerated in HMU 506 and the oak community type regenerated in HMU 509. This has immediate short-term effects of providing regeneration age-classes of these types and the long-term effects in providing the successive age classes and retaining the community type in the area. Additional regeneration-age northern hardwood habitat would be a result of implementing this proposal. This would provide 55 acres total habitat for those species that are dependent on regeneration-age

habitat such as **chestnut-sided warblers**, **mourning warblers**. This meets Forest Plan objectives by moving towards the HMU ideal conditions.

Creation of the regeneration areas (northern hardwood, paper birch and oak) in this alternative would diversify the forest that presently exists. The increased diversity would benefit moose, deer, fox, grouse and other species that have large home territories and can move through them easily. These species benefit from the increased production of browse that occurs from sprouting stumps, and the increased production of grass, forbs and soft mast. Species that may be adversely affected by this change in habitat are animals with small home ranges such as the woodland jumping mouse and red-backed salamander (DeGraaf, et. al. 1989). While individuals may be adversely affected, no species as a whole would be affected to the point its viability would become a concern.

This alternative perpetuates the paper birch community by regenerating 11 acres in HMU 506. This type of habitat is used by **ruffed grouse**. It also creates 15 acres of oak regeneration in HMU 509 and 29 acres of northern hardwood regeneration in HMU 506.

The seed tree harvest to regenerate oak would provide regeneration-age habitat for **rufous-sided towhees** as well as some mature trees that would provide vertical structure for species such as hawks, woodpeckers and **gray squirrels**.

Commercial thinning would occur on 39 acres of northern hardwood forest. These acres would continue to provide interior forest habitat at this time for species such as **northern goshawk** but may cause it to become less suitable for **American marten**. These areas would be available for conversion to early-successional habitat in the future for those species dependent on that habitat type.

This alternative increases early-successional habitat that has been declining on the White Mountain National Forest (1993 WMNF Monitoring Report) and in New England over the past several decades (Askins 1993).

There would be no increase in softwood habitat as the singletree selection harvest in Unit 6 is not on soils that would result in this community type, and units 4 and 11 are omitted.

This alternative maintains a mix of even and uneven-age habitat in both HMUs. The paper birch and oak community types are maintained. This provides immediate and long-term benefits for species dependent on these communities and their successive age classes.

This action would directly affect those species (some beneficially, others adversely) presently living in the stands selected for harvest (137 acres). It would indirectly benefit those species that depend on the habitat expected to be created from the proposed action. While individuals of species may be severely affected during this as well as future harvest entrees, cumulatively no species is expected to be affected to the point its viability would be in jeopardy. Species requiring habitat that presently does not exist would benefit from this proposal.

#### **Effects on Management Indicator Species under Alternative 5**

Effects on habitat and population would be similar for documented or suspected MIS species as described under Alternative 2. As with Alternative 2, Alternative 5 may contribute to habitat trends for MIS species however there is no expectation population trends forest-wide or region-wide would be

altered with this implementation because the project area is too small to affect any population trends for the MIS species present.

This alternative causes no change for other MIS. Implementation of this alternative is expected to increase habitat for some species and decrease habitat for other species. This may contribute in a minimal way to habitat trends for these MIS. However, this project proposal (Alternative 5) is not large enough to affect forest-wide or region-wide population trends of any MIS species. Implementation of this alternative would cause no concern of viability for any of these species.

### **Effects on Other Species of Concern under Alternative 5**

#### ***Ciliated Aster *Symphotrichum ciliolatum****

The habitat description and requirements for this species has been described under Alternative 1. This alternative is not expected to alter maintenance on FR27. The probability of this species occurring within the project area is extremely low. The effects of implementation would be similar to that described under Alternatives 1. Implementation of this alternative may effect individuals of this species although there would be no concern about the viability of the species as a whole in the region.

### **Cumulative Effects under Alternative 5**

Alternative 5 would add to the effects of past harvests described under Alternative 2, the current Back-A-Pickering and Back-A-Pickering II harvests, and the harvest done on private land adjacent to the analysis area. A more diversified habitat would be created as the Forest Plan directs, while there would be a retention of large areas of interior habitat throughout the two HMUs as well as with the MA 6.1 and 6.2 lands surrounding them.

Total regeneration-age habitat desired in HMU 506 is over 200 acres. If the acres harvested on private land were included, implementation of this alternative would not exceed the desired amount of regeneration-age habitat.

Alternative 5 retains much of the existing short-term and long-term benefits for species requiring mature forest habitat (even-aged and uneven-aged), softwood cover, community types, interior forest conditions and localized habitat features such as riparian areas. In addition it provides horizontal habitat diversity that includes even-aged regeneration age habitats. It has immediate positive and negative effects on ground dwelling individuals, nesting and denning species in the harvest units and along the access roads. None of the species affected under any of the action alternatives would be impacted to the degree that species viability would become a concern, or that a specie would be considered for listing under federal or state Endangered Species Program.

Alternative 5 continues the cycle of sustaining various age classes over time. However, there are no harvests planned in these HMUs in the foreseeable future.

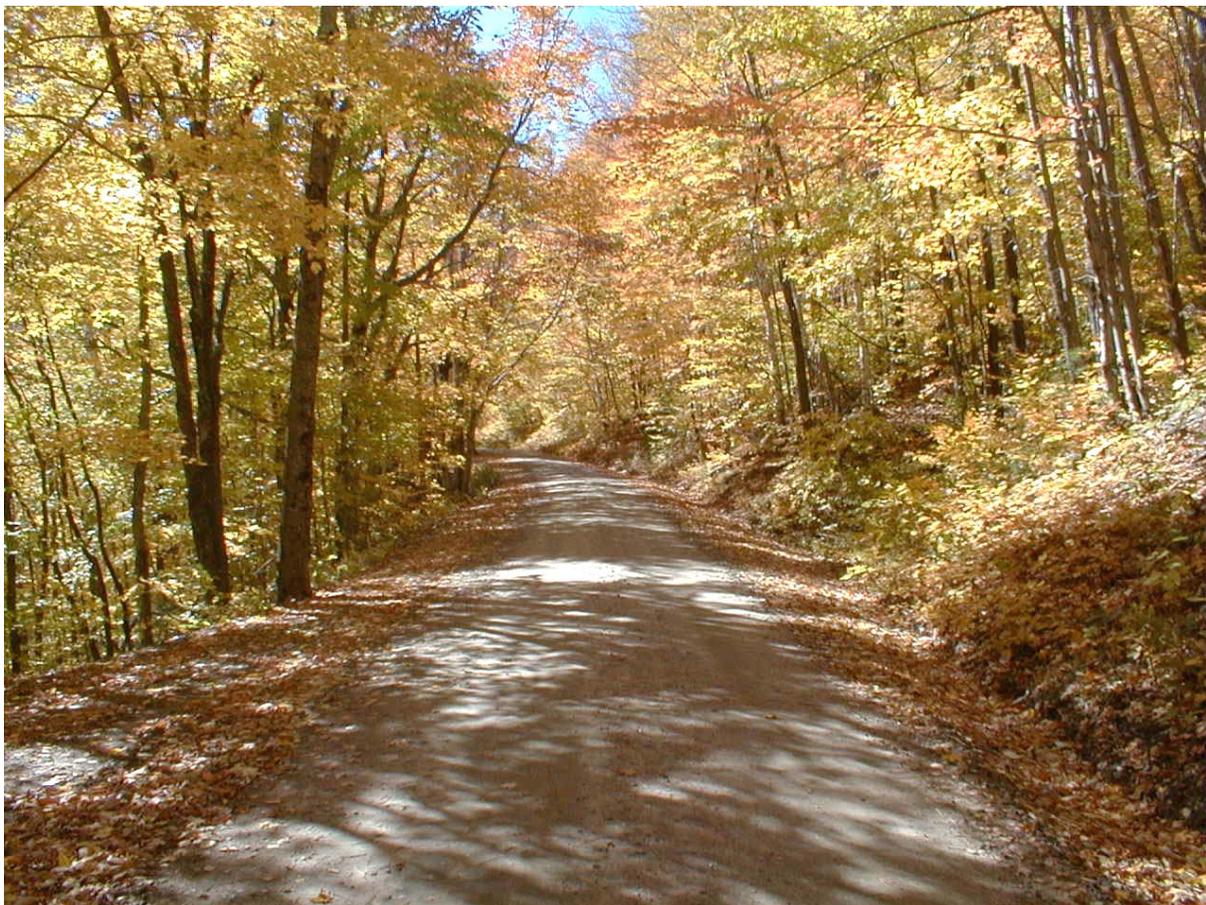
### **Issues raised during Scoping under Alternative 5**

The effects of proposed harvesting on deer, moose, fox, and bear have been addressed in other areas of this alternative. This alternative would have no direct effect on eagles. The openings created under this alternative may benefit those species of hawks that prefer to roost, nest and forage near openings. Red-shouldered hawks and **northern goshawks**, if present, would be sensitive to the harvesting activity. Raccoon, fisher and coyote are expected to continue to use this area under this alternative.

There would be no effects on the beaver ponds located along Otis Brook because adjacent harvest units are deferred under this alternative.

Direct effects of harvest to deer, moose, fox, and bear would be similar to that discussed under Alternative 2. These species would most likely be affected indirectly through habitat change. All of these species are habitat generalists in that they use various habitats during the day, year or lifetime. A diversity of habitat would be ideal. Alternative 5 creates more diversity than the No Action Alternative and Alternative 4, although not as much diversity as Alternative 2 or 3.

Effects of harvest on eagles, hawks, raccoon, fisher and coyote would be similar to that described under Alternative 2.



## Comparison of Alternatives in Meeting Wildlife Habitat Objectives

As shown in Table 3-6, Alternatives 1 and 4 are similar to each other in terms of meeting wildlife habitat diversity objectives. The difference between them is that Alternative 4 would result in some vertical habitat diversity in its proposed harvest units. In addition, Alternatives 2 and 5 are similar; the difference being the greater amount of single-tree selection and commercial thinning harvesting in Alternative 2, resulting in more acres with vertical diversity. Alternatives 2 and 5 create the same amount of new community types, horizontal diversity, and percentages of forest type/age classes for the desired future condition. Alternative 3 would create a marginal oak community in the shelterwood prescribed for unit 10; this treatment in unit 10 would result in a substantial amount of northern hardwoods other than red oak including maples, beech, and yellow birch. Shelterwood harvest in unit 10 would provide marginal horizontal diversity since about 30 feet of basal area would remain uncut.

**Table 3-6:** Comparison of Alternatives in meeting Wildlife Habitat Objectives HMUs 506 and 509

Measurement Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5			
Acres of New Community Types Created	None	30 ac paper birch 15 ac oak	15 ac oak (Marginal)	None	30 ac paper birch 15 ac oak			
Contribution to Horizontal Diversity* at This Time	None	40 ac CC, 15 ac ST	55 ac SW (Marginal Effect)	None	40 ac CC, 15 ac ST			
Contribution to Vertical Diversity** at This Time	None	184 ac STS, 243 ac CT	15 acSW 184 ac STS, 243 ac CTh	333 ac STS, 55 ac GS	43 ac STS 39 ac CT			
Attainment of Desired Future Condition at This Time	None	<u>HMU 506</u> 100% of PB Regen 20% N Hdwd Regen	<u>HMU 509</u> 40% of Oak Regen	<u>HMU 506</u> 41% of N Hdwd Regen	<u>HMU 509</u> 40% of Oak Regen	None	<u>HMU 506</u> 100% of PB Regen 20% N Hdwd Regen	<u>HMU 509</u> 40% of Oak Regen
Amount of Red Oak Basal Area left in unit 10 After Harvest (ft <sup>2</sup> /acre)	100+	10	20 - 30	>50	10			

CC = Clearcut; ST = Seed Tree; SW = Shelterwood; CTh = Commercial Thin; STS = Single-Tree Selection; GS = Group Selection; PB = paper birch; N Hdwd = Northern Hardwood; Regen = Regeneration

\*Horizontal Diversity = the distribution of various communities and age classes over a landscape.

\*\*Vertical Diversity = various ages or heights of trees within an area.

### 3.1f Summary of Effects to Threatened, Endangered and Sensitive Species

A Biological Evaluation required by Forest Service Manual 2673.4 and Section 7 of the Endangered Species Act was prepared for all Alternatives and is located in Appendix A. The Biological Evaluation (BE) documents effects on Federally Listed Species as well as species contained on the Regional Forester's Sensitive Species List. Determination through the Biological Evaluation is that Indiana bats, eastern small-footed bats, and northern bog lemmings may inhabit or use the analysis area. There is suitable habitat within the analysis area for Canada lynx, however proposed harvest units are in non-lynx habitat. Lynx are considered extirpated from the White Mountain National Forest. The Biological Evaluation determined the No Action Alternative would have no effect on any of the above named species. None of the Action Alternatives would affect Canada lynx since it is considered extirpated. Any of the action alternatives "May Effect But Would Not Likely Adversely Effect" the Indiana bat. In addition, any of the Action Alternatives "may impact individual eastern small-footed myotis and/or northern bog lemming but would not likely cause a trend toward federal listing or loss of viability"

## 3.2 Fisheries

### Issues:

- *Effect of proposed harvest activities on fisheries in Rocky Branch*  
Some people are concerned that soil disturbance near Rocky Branch may effect the fishery.

### Affected Environment - Fisheries

Rocky Branch River is the main watershed of the analysis area (HMUs 506 and 509). Rocky Branch River empties into the Saco River. Rocky Branch watershed is a 3rd to 4th order stream and includes several un-named tributaries, Otis Brook, and Stairs Brook. Back-A-Pickering timber sale and Back-A-Pickering II timber sale are being implemented on the south side of Rocky Branch. No other sales are occurring in Rocky Branch drainage at this time.

Portions of Rocky Branch River were inventoried for stream habitat conditions in 1988 using a transect method. The survey summary indicated there is less pool habitat and large woody debris than desired in this stream. Otis Brook, a 1st to 2nd order stream, was inventoried in 1992 using the Hankin and Reeves survey method. The summary report from this survey indicates this brook also lacked pools and large woody debris.

Native **brook trout** (*Salvelinus fontinalis*) exist in both Otis Brook and Rocky Branch. New Hampshire Fish and Game records indicate that Lower Stairs Brook, Otis Brook, and Rocky Branch have not been stocked. The Saco River is stocked annually with hatchery-raised fish and some of these may enter the Rocky Branch drainage. During the survey, American toads, three species of salamanders, and numerous macroinvertebrates were observed.

Factors that are important to maintain quality habitat for **brook trout** include cool continuous flowing water, unimpeded travel upstream and downstream, clean gravels for spawning and egg incubation, clear water during the growing season, instream cover, adequate food supply (usually macroinvertebrates), high quality headwater streams, and suitable riparian habitat.

The desired condition for fisheries/aquatic resources of these streams is to meet standards and guidelines identified in the Forest Plan for water quality, riparian, fisheries, and aquatic habitat management (Forest Plan III, 15 a-d, 16, 19, 20).

The old road that crosses Otis Brook is proposed for reconstruction under alternatives 3 and 4. It appears that this road extended over the ridge into the Meserve Brook drainage at one time. This indicates early settlers established the road. There are signs of braiding above and below this crossing of Otis Brook.

As Otis Brook approaches the old roadbed it has a relatively steep gradient with a substrate of cobble and large boulders. The gradient flattens out within approximately 75 feet of the old road crossing and the substrate becomes more of a sandy outwash. There are numerous side-channels in this flatter area that most likely have flows only during spring thaw and high rain events. Below the crossing the stream enters a sandy till soil with various overflow channels evident. Otis brook flows year-round however the braided section flows only at spring run-off and during high rainfall events. **Brook trout** are found in Otis Brook year round, however they would not be present in the overflow channels except at times of high flows.

Units 3, 4 and 6 have sections of their boundaries near Otis Brook. Small sections of Units 1, 5 and 11 border sections of the Rocky Branch River. Both of these would be buffered in the action alternatives. The beaver pond within the project area is not bounded by any proposed harvest area and would not be affected by any of the Alternatives.

#### **Effects on Fisheries - Alternative 1**

There would be no direct, indirect or cumulative effects on fisheries or aquatic habitat from the No Action Alternative.

#### **Effects on Fisheries - Alternative 2**

This alternative includes 1,250 feet of road reconstruction and 1,250 feet of new road construction to access units 1-5. This alternative would use the existing bridge crossing Otis Brook; the first of the two bridges on FR27. The new section of road would reconnect to the existing roadbed (road 5005) further upstream on Rocky Branch River. This relocation construction would occur in the floodplain of the Rocky Branch River and cross several overflow channels of Otis Brook before reconnecting to road 5005. Site plans indicate the new road would lie approximately 100 ft. from Rocky Branch and on average 200 ft. from Otis Brook.

There would be no direct effect on **brook trout** because no road work is being done directly on Otis Brook where **brook trout** would reside. In addition, work would not be implemented when water would be flowing in the side channels. Without mitigation, adverse effects from road construction could include increased sedimentation, and increased water temperature in perennial and intermittent streams below the work sites. This could reduce the quality of habitat for fish and other aquatic life. Based on experience and Forest Plan Standards and Guidelines to provide erosion control at stream crossings, as well as along skid trails and at log landings, mitigations for road construction or reconstruction would adequately mitigate potential for adverse effects to fisheries.

A section of road 5005 to be reconstructed lies close to Rocky Branch River. Field inspection revealed the Rocky Branch has eroded some of this bank since the last harvest to the point this existing segment of road is adjacent to the river bank. This alternative would relocate this section of this road further away from Rocky Branch. Relocation would eliminate the possibility of runoff and potential sediments entering Rocky Branch due to road usage. This would indirectly affect **brook trout** by reducing the potential for sediments entering Rocky Branch.

The 1000 feet of road reconstruction to access units 6 through 9 approaches but does not cross an intermittent stream. Further up this intermittent stream, where a designated skidder crossing is needed is well above the area where any spawning or fry would occur. **Brook trout** may use the very lowest sections of this intermittent stream near Rocky Branch for egg deposition, where newly hatched young of the year may locate to this intermittent stream to avoid predation from larger fish. However, considering the location of the existing road and the proposed new landing site along with the location of the designated skidder crossing, there would be no effects to fisheries or fish at this location.

Fish habitat elements would be protected by harvest restrictions in the riparian management area along the Rocky Branch in units 1, 5, and 11 and along Otis Brook in units 3, 4, 5 and 6 (buffer mitigation). Trees directly on the stream bank would not be removed. Any tree within the riparian zone deemed a hazard during harvest would not be removed from the unit, but left on the ground. These riparian buffers maintain shade that regulates stream temperature, retains trees for potential future large woody debris, and limits ground disturbance near stream banks. In addition, Forest Plan riparian harvest guidelines would be followed. These mitigations protect the physical habitat features as well as protect against additional sedimentation (Society for the Protection of New Hampshire Forests (SPNHF) 1997).

Riparian management guidelines and identified mitigations would be followed during layout and implementation. Thinning and singletree selection harvest along Otis brook, Rocky Branch and the intermittent streams within units would maintain a canopy cover and adequate basal area in these units and especially in adjacent riparian zones. Promotion of large trees along the streambank would maintain water temperature, provide cover, streambank protection, recruitment of large woody debris, insect production, and nutrient load. Implementation of the Proposed Action would have minimal to no adverse effects on fish habitat in Otis Brook or on Rocky Branch because areas of impact are well mitigated, treatments are partial cuts along the riparian zones, and treatment areas are small compared to the total length and condition of the riparian areas for both of these streams.

### **Effects on Fisheries - Alternative 3**

Under this alternative a temporary log-stringer bridge would be constructed across Otis Brook following the old roadbed. The bridge would span over the streambanks. No abutments would be constructed. In addition, the roadbed would be raised approximately 2 feet for approximately 200 feet where Otis Brook has created side-channels at times of high flow. Additional temporary culverts would be placed along this raised roadbed where water flows during high water events. Geotextile fabric would minimize sedimentation by helping to stabilize the added material. A drainage culvert would be placed to allow water to flow as it currently does.

Under this alternative no new road construction in the overflow floodplain of Otis Brook would occur. Less potential for sedimentation would occur than with new road construction described in the Proposed

Action. Otis Brook would not be changed at this crossing site because log sills would be placed on top of the existing banks. Therefore fish passage would not be obstructed.

This alternative has 1,650 additional feet of road reconstruction than the Proposed Action (combined construction and reconstruction). If properly designed and mitigated this alternative would have fewer effects on fish and aquatic habitat than the Proposed Action.

There is no difference between this alternative and the Proposed Action, and only a slight difference (omission of unit 11) from Alternative 4 regarding the effects on fish of stands adjacent to or within riparian zones.

#### **Effects on Fisheries - Alternative 4**

This alternative has the same road proposals as described in Alternative 3 and therefore has similar effects as described there. Unit 11 is deferred from harvest in this alternative and therefore potential effects on fisheries would be less than alternatives 2 and 3. Units 1, 2, and 3 are proposed for singletree selection harvests instead of commercial thinning.

Singletree selection method of harvest typically removes a little less volume than commercial thinning. The harvest units (except unit 11) have identical boundaries in both alternatives and riparian management practices would be applied in both alternatives. Forest Plan standards and guidelines would be followed therefore this alternative would have similar or slightly less direct, indirect and cumulative effects on fish and aquatic habitat as that described for the Proposed Action and Alternative 3.

#### **Effects on Fisheries - Alternative 5**

Under this alternative only 1000 feet of existing road would be reconstructed. Units 1-5 and 11 are deferred. This eliminates any potential effects as a result of new road construction or any potential effect that may have occurred due to harvest activities.

Potential effects in units to be harvested (units 6-10 and 12) would be similar to those described under Alternative 2. Forest Plan standards and guidelines and mitigations described above apply.

#### **Cumulative Effects on fisheries for all Alternatives**

It is expected past harvests have had an effect on fish habitat in Otis Brook and Rocky Branch River (Taylor et al. 1996). Stream inventories conducted across the White Mountain National Forest indicate that most streams have suitable instream habitat needed by **brook trout**, including cold water temperatures and good hiding cover. However there continues to be a lack of habitat diversity with the percentage of pools far lower than recommended guidelines (USDA Forest Service 1996).

Otis Brook drainage was heavily cut over in the early 1900's. Historical timber harvests rarely mitigated concentration of runoff and likely resulted in stream sedimentation. Forests have grown back and are once again providing canopy cover and other riparian benefits (Taylor et al. 1996; Trani et al. 2001). However, the forests are not yet old enough to replace downed large wood as it once existed in the streams on the WMNF. Large wood continues to be deficient in these streams (Underwood. 1998).

Rocky Branch, being a higher order stream, is assumed to have been impacted during early 1900 era logging. Prior to that era, streams within Rocky Branch watershed are assumed to have been narrower

with more sinuosity and diversity of stream habitat. Streamcourse recovery processes are ongoing. Because of Forest Plan standards and guidelines, project design, and the identified mitigations, none of the alternatives in combination with other activities within the watershed would adversely effect fisheries or aquatic habitat.

Back-A-Pickering and Back-A-Pickering II sales are the only past vegetation management projects that have the potential to cause adverse effects, and then these are limited to Rocky Branch River. Other ongoing activities and features that may contribute to cumulative effects, however minimal, include effects associated with hiking trails (foot traffic disturbance), and effects associated with the presence and use of roads within the watershed.

**Brook trout** have been monitored across the Forest since 1992. Young of the year were present at all sites each year indicating that trout are well distributed across the Forest and producing young. None of the sites showed increasing or decreasing densities over the sampling years. It also was concluded that juvenile trout productivity in the White Mountain region was similar to other areas of New Hampshire (USDA Forest Service 1999). This report also addressed the effects of management activities on eastern **brook trout** (pages 11-13). Data was collected on the Forest from 1992-1999. The report concluded that this data “does not show any evidence that land use activities are influencing fish populations perhaps due to the larger influence of other environmental factors such as floods or mild winters.” This data suggests wild **brook trout** populations are viable in all the major watersheds of the White Mountain National Forest (USDA Forest Service 2001).

In summary, implementation of any of the Action Alternatives may have a minor temporary localized effect on fisheries habitat within the project area. However, the affected area is such a small subset of the overall Otis Brook and Rocky Branch watersheds that there would be little to no measurable cumulative effect on **brook trout** or its habitat within the analysis area. Implementation of any alternative would add little to past actions because potential project effects on **brook trout** and its habitat are extremely small compared to the overall lengths of these streams. Implementation of any of the alternatives would not cause a change in brook population trends nor stream habitat trends under any of the alternatives. **Brook trout** would remain viable under any of the alternatives.

### 3.3 Soil Resources

#### Issues:

- *Some people are concerned that logging on steep slopes may cause soil erosion or mudslides, while others are concerned about long-term soil productivity.*

#### Affected Environment - Soils

Rocky Branch watershed has soils common to the White Mountain National Forest. At elevations generally below 2500 feet the soil is mainly deep, well and moderately well drained, sandy loam tills on 10-25% slopes. These soils correspond to the areas of “suitable” land base where planned timber management is allowed on the Forest. All of Iron Maple project proposed actions are in this zone. At higher elevations the soils are either deep, or shallow tills to ledge. All soils other than those where there are roads or permanent wildlife openings are under a closed forest canopy.

On the Forest, soil hazards that may occur include dry debris slides, deep soil slumps, and surface soil erosion. In Rocky Branch watershed, dry debris slides are not a risk because the ecological land type (ELT) with very steep slopes and thin, gravelly soil where these slides sometimes occur (Ecological Landtype 8), do not exist here. Deep soil slumps occur on very steep banks along major rivers and streams where there is poorly graded, very fine sandy-loam that has slight plasticity. These “break land” ecological types do not occur in Rocky Branch. Therefore, surface soil erosion is the hazard of interest. The specific soils associated with this project are mainly deep, moderate and well drained, with moderate to high surface soil erosion hazards. Their hazard ratings range from low to high, but the likelihood of soil erosion can be mitigated by factors such as steepness of slope, location on the slope, vegetation, canopy cover and presence of forest litter (see Figure 13 for an Ecological Land Type Map).



**Figure 13** Ecological Land Type and Proposed Harvest Map

Disturbance related to roads and skid roads are the main concern for soil erosion because they expose bare mineral soil (Patric, 1976). The mere act of cutting trees is not a source of soil erosion (Likens et al 1970). The main haul road leading to the sale area is Jericho Road (FR27). This is a single lane gravel surface road open for public use except during spring thaw. It is well maintained, with vegetated cut-banks, and no evidence of accelerated soil erosion. Forest Road 27A and 27B are single lane roads on native soil that lead off FR27 and are not open for public vehicular use. These roads are about 1.5 miles long. They show no evidence of accelerated soil erosion, meaning channel formation, but both experience some sheet erosion, which is managed by proper drainage and ditches.

Forest Road 5005 beginning where Otis Brook intersects Rocky Branch and following the east side of Rocky Branch for about 2000 feet is proposed for reconstruction and use to access harvest units 1-5. This road is on deep, well-drained soils showing no evidence of accelerated soil erosion. Forest Road 5005 is close to Rocky Branch in one location. Forest Road 5002 departs from FR 5005 and ascends a gentle sideslope close to an unnamed intermittent brook for a distance of 1000 feet. Soon after reaching level topography, proposed reconstruction on Forest Road 5002 (Alternatives 3 and 4 only) would terminate with a new landing. The road surface beyond this would be used as a skid road where applicable. This road continues a mile further up Otis Brook to an existing landing from a timber sale in the 1970's.

Forest Road 5012 leads to the landing for units 6-9 and is on deep well drained soils. This road does not show signs of surface erosion. Forest Road 5012 continues to an existing landing further up the grade that was constructed for a timber sale in the 1980's.

In general the magnitude of soil impacts from skidding within units relates to the total acres treated and the season of harvest. Harvest activities on well-drained soils reduce the chance for overland flow of water and resultant soil erosion. Winter harvest helps avoid creating channels that concentrate surface water and accelerate soil erosion.

Surface soil erosion on roads within Rocky Branch watershed is only occurring in limited locations, including for example a few locations on FR 27A and 27B. The reason surface erosion is not an issue in Rocky Branch (even cumulatively) is because this watershed is well forested, existing roads are well maintained, and old roads and landings recovered quickly from previous disturbances. Studies on similar soils show that soil erosion in undisturbed or carefully managed forest is estimated at 0.5-0.10 tons per acre, which is less than the geologic norm of 0.18-0.30 tons per acre (Patric, 1976). Any remaining risk of soil erosion would become less over time as a leaf litter layer becomes thicker on these unclassified roads and skid roads. This occurs because leaf litter and other forest debris prevents raindrop splash, which dislodges the soil, and also mitigates overland flow of surface water. The concern with soil erosion includes reduction of forest soil productivity and sedimentation effecting natural aquatic systems of streams and brooks.

Timber sale inspection reports for nearby previous sales that used FR 27A and 27B do not indicate erosion issues with the roads or sales (Wilson, 2003). Research on soil erosion at forestry operations conclude that erosion (and sedimentation) in managed forests can be controlled with timely application of standards and guidelines (Martin et al, 1994). This is consistent with other findings about soil erosion

in eastern forests, where it reports that forestland can be managed so there is little or no increase in soil erosion (Patric, 1976).

### **3.3a Effects on Soils - No Action**

Surface soil erosion on roads and in the general forest within Rocky Branch watershed that may be occurring in limited locations, even cumulatively, is not affecting water quality or fisheries. This is because this watershed is well forested, existing roads are well maintained, and old roads and landings recovered quickly from previous disturbances. Risk of soil erosion is less over time as a leaf litter layer becomes thicker and prevents raindrop splash and overland flow of surface water.

### **3.3b Effects on Soils - Alternative 2**

Access to stands 1-5 would include new 1250 feet of new road construction in two segments adjacent to existing Forest Road 5005. Approximately 1250 feet of Forest Road 5005 would also be reconstructed (See Figure 6). The south portion of new construction is 600 feet across gentle terrain on poorly drained soils that have experienced periodic overflow from Otis Brook and contain shallow overflow channels. This flat terrain would mitigate soil erosion but disturbance of the poorly drained soils and the channels is likely to cause site-specific soil erosion during construction. This would expose mineral soil to overland flows during high runoff events. Use of hay bales or silt fences would mitigate and limit this effect.

Another 650 feet of new road construction is proposed at the north end of this segment of FR 5005, leading to a proposed landing in Unit 5 (Alternative 2 only). This new construction segment is proposed on flat well-drained sandy loam tills. Moderately steep side slopes immediately to the east. While the surface soil erosion hazard is rated high, staged construction, application of road construction standards, and the deep well-drained soil would lead to little or no soil erosion here. Roads 5002 and 5005 would be closed and the culverts removed when implementation is complete.

However, the risk of soil erosion is greatest during the first 12 months following new construction (Stone 1977). Therefore, reconstructing an existing road, (such as the length of this route proposed in Alternatives 3 and 4) could reduce erosion potential as compared to new construction. The segment of existing road connecting these two areas of new construction should experience no surface erosion because it is essentially flat well-drained soil with opportunities to properly drain surface water.

In addition, in this alternative 1000 feet of existing road near an unnamed stream would be used as a main skid road for units 1-4. This alternative would deliver that volume to a landing in Unit 5. Surface soil erosion would occur on this route with fall or winter skidding because of the volume to be skid over this road and due to the likelihood that bare mineral soil on 10-20% slope would be exposed. There are limited opportunities to direct surface runoff away from the intermittent brook at this location, which could lead to a small amount of site-specific soil erosion. The risk of sedimentation is greater on these 1000 feet of (skid) road with fall use because mineral soil would not be frozen, and therefore would be susceptible to dislodgement by overland flow. The risk of sedimentation is also greater on this section of road in this alternative because potential disturbance during skidding is greater than disturbance caused by proper road reconstruction and subsequent truck haul. This is because the opportunity to mitigate potential impacts associated with skidding down this 1000 feet of road are limited whereas reconstruction would incorporate more effective permanent drainage features.

There would be potential exposure of mineral soil on the secondary skid roads within the 482 acres to be treated in this alternative. The amount of potential soil erosion at these locations would be small individually and cumulatively because so little mineral soil would be exposed and organic matter remains on-site (within and below the units) to prevent overland flow.

A thousand feet of existing road re-construction is proposed for the section of road leading to units 6-9. There are opportunities with this road to manage surface water to safe outlets. This road re-construction would not lead to soil erosion because the soil is well drained, the slope is gentle, and use of standards and guidelines for road reconstruction would mitigate potential impacts.

Harvesting in stands 6-9 during the summer, fall or winter would lead to some site-specific surface soil erosion, especially on steeper slopes because small areas of exposed mineral soil may occur. These kinds of impacts were anticipated in the Forest Plan (FEIS). Previous experience on similar soils, including sales within Rocky Branch watershed have shown that soil erosion is not a substantial problem in most cases when there is good supervision of the harvest activity.

Harvest in units 10-12 is on flat or gentle slopes. The soils are deep, well-drained sandy loam and loamy sands with low to high soil erosion hazard. Soil erosion would be minimal or non-existent because of soil and topographic features. Although summer logging is allowed in unit 10, fall and winter operations in unit 11 and 12 would further minimize potential for erosion impacts.

As related to moving logs to landings, given that the magnitude of soil impacts from skidding within units is related to the total acres treated combined with the season of harvest, the impacts of this alternative are equivalent to the impacts of Alternative 3.

### **3.3c Effects on Soils - Alternative 3**

Soil impacts differ in this alternative from Alternative 2 for two reasons. First, the existing unclassified road across Otis Brook, along Rocky Branch, and upslope to a log landing is proposed for reconstruction. Therefore, no new road construction would occur. This road is proposed for dry season and winter haul only. Second, trucking rather than skidding would occur near the unnamed stream adjacent to this road.

Like Alternative 2, this Alternative has a greater soil erosion effect than No Action. Re-constructing approximately 5150 feet of existing unclassified road includes minor grading only as necessary to re-establish drainage along Rocky Branch, and re-shaping the section along the unnamed brook leading to the log landing (See Figure 6). Soil erosion would be limited, if any, along Rocky Branch because the soil is deep, well drained, and mitigation measures can be easily applied to manage surface water. Re-shaping the road near the unnamed brook would lead to some soil erosion following disturbance to the mineral soils. In general, trucking along this route is less likely to lead to soil erosion than skidding because more control can be exerted on handling drainage from the road surface.

Limited sediment delivery to streams may occur with bridge construction over Otis Brook; however, this is routinely mitigated by the timing of construction, application of Forest Plan standards and guidelines, and administration of the contract. This bridge is to be removed, as are the drainage culverts on the 5002, 5005, and 5012 roads, when the sale is complete.

Harvesting within units would have the same soil erosion effects as Alternative 2. However, this alternative avoids 1250 feet of new road construction by reconstructing that distance on the existing road, plus an additional 1650 feet to the landing on flat terrain above Unit 5.

In general, the magnitude of soil impact from skidding relates to the acres treated, the area in skid trails, and the season of harvest. As in Alternative 2, this alternative treats 482 acres. Skid trail systems would be the same under both alternatives, except for the skid road referred to above.

### **3.3d Effects on Soils - Alternative 4**

This alternative is essentially the same as Alternative 3 from the soil erosion perspective, except that unit 11 is omitted. Therefore, the total acres of timber harvest changes from 482 to 388 acres. Unit 11 is on deep, excessively drained sandy outwash soil, which has the lowest soil erosion hazard of all soils on the Forest.

The effects of this Alternative on soil erosion are essentially the same as Alternative 3. This is because the standards for road reconstruction, the location and length of proposed road reconstruction including the temporary bridge over Otis Brook, and the proposed season of use are similar to that described in Alternative 2.

From the perspective of harvest activities within the units, the effects are the same, except deferring unit 11 slightly diminishes potential soil erosion impacts. However, this being the soil with the least erosion hazard, the potential impact is nominal.

### **3.3e Effects on Soils - Alternative 5**

This alternative is different from all other action alternatives because it eliminates road construction and harvest treatments beyond Otis Brook. This alternative avoids potential soil erosion effects of road construction or reconstruction along Rocky Branch, and the unnamed brook. It also reduces the harvest acres to 137 acres, thereby reducing the potential for soil erosion from skid trails.

The effect of road re-construction on about 1000 feet of existing road would be little or no additional soil erosion because the road is on well-drained soil with gentle grades.

Harvest in this alternative is on generally well-drained soils; therefore soil erosion would be limited. This alternative affects only 137 acres so potential soil erosion from skidding is the least of all action alternatives.

### **3.3f Cumulative Effects of the Alternatives on Soils**

The cumulative effects analysis area is the Rocky Branch sub-watershed as shown on the hydrologic analysis map. This analysis includes past, present and potential future timber sales since 1986 and includes Rocky Branch Roadside, Cave Mountain, Stairs Brook, Back A Pickering, and this project. The cumulative impacts analysis includes past, present and potential road (re)construction and road maintenance and use within Rocky Branch drainage, including Forest Road 27, 27A and 27B, and the proposed roads in the alternatives. It also includes the 40-acre clear-cut on private land that lies within this watershed. The cumulative effects analysis for soils only includes 40 of the 120 acres clearcut on private land because eighty of the acres lie in Meserve Brook watershed. Activities that might

contribute to cumulative soil erosion include timber sale skid roads, road construction, road reconstruction, road maintenance, any type of road use, and skidding of forest products.

Outside of this project, no new timber sales, harvest units, road construction, or other soil disturbing actions are planned or foreseen in the reasonably near future (5 to 10 years) in this watershed. The minor amount of trail relocation (Stairs Col) that might occur would be inconsequential.

The No Action alternative would lead to gradual reduction in site-specific soil erosion because a leaf layer would slowly cover the remaining areas of exposed mineral soil such as on the unclassified roads mentioned above and for Back A Pickering sale.

All the action alternatives would lead to some cumulative increase in soil erosion because roads are re-opened and skidders would re-expose mineral soil, especially along the main skid roads, but also the skid trails into units. Alternative 2 is most likely to increase cumulative soil erosion because it includes 1250 feet of new road construction that is new disturbance. Limited sediment delivery to Rocky Branch may occur with road construction (Alternative 2) or with road reconstruction and installation/removal of a temporary bridge over Otis Brook proposed in Alternatives 3-5. However, these activities are routinely mitigated with timing of construction, application of Forest Plan standards and guidelines, and administration of the construction. Cumulative soil erosion effects originate from past, present and reasonably foreseeable future actions. No evidence was observed of soil erosion effects from past road building at this site. Proposed road construction in these alternatives and future road use is not anticipated to result in other than limited on-site soil erosion.

Alternative 5 would have the least cumulative effect because no new roads are constructed, the length of reconstructed road is least, and the least number of acres are harvested.

Previous experience in Rocky Branch watershed and on similar soils in other watersheds across the White Mountain National Forest do not indicate that soil erosion is a substantive issue with carefully managed sales. Water quality records indicate that stream sedimentation on the National Forest rarely exceeds 1 Nephelometric Turbidity Units while the State standard to not exceed 10 Nephelometric Turbidity Units (NTU's). The State standard even applies to municipal watersheds where timber harvest, roads and road building and regular public use including dispersed hiking and picnicking occurs.

### **3.4 Soil Calcium**

#### **Issue:**

- Some people are concerned that logging may cause loss of calcium in forest soils and reduce soil productivity.

#### **Soil Calcium – Background and Affected Environment**

Research at Hubbard Brook Experimental Forest on the White Mountain National Forest have included studies about soil calcium (calcium-oxalate) loss from atmospheric deposition and timber harvest (Federer 1989). The studies include analysis of possible long-term effects on forest productivity, health and composition. Results show there is reason for concern when short rotation forestry is practiced, meaning clear-cut harvest at 40-year intervals. There is also reason for concern when “whole-tree

harvest” is applied, meaning that treetops and upper limbs are removed from the forest along with tree boles. Thus the Forest Plan requires a higher standard when whole tree harvest is planned.

For this calcium depletion analysis, the distinction between even-aged (clear-cutting, seed tree) and other practices (single tree selection, shelterwood, thinning, group selection) is based on differences in the magnitude of effects. Clear-cut and seed tree have a greater short-term effect on soil calcium loss because more biomass is removed from the site and harvest-induced leaching occurs when this intensity of harvest occurs. Studies show however, that very long-term uneven-aged harvest can have greater effects on soil calcium loss (Adams et al 2000) because more biomass may be removed from the forest over time.

Site-specific soil impacts related to soil or forest productivity are not likely to extend beyond the actual harvest activity area. The time span for this analysis is from early harvesting at the beginning of the 20<sup>th</sup> century to the reasonably near future, as estimated by others (Likens et al 1996). Early harvesting is considered because land use history affects soil nutrients, including calcium. Future harvesting and atmospheric deposition are considered for the same reason.

Based on research at Hubbard Brook it is estimated that 5% of the total soil calcium may have been lost since 1950 when acid rain began in earnest (Federer 1989). This assessment incorporates the mineral weathering rates at Hubbard Brook, and forest species composition based on ecological land types.

Historic records indicate that portions of the Iron Maple area were clearcut harvested in the early 1900’s (Goodale 1999). Bole-only clear-cut harvest on northern hardwood soils is estimated to deplete approximately 2% of the total calcium supply (Fay et al 1993). It is reasonable to expect at least ten more years of acid deposition is likely to occur within this cumulative effects analysis period, leading to an estimated 1.6% loss. The total cumulative impact on all sites previously harvested therefore, is estimated at 8.6% of the total calcium supply currently otherwise available to those soils.

Some researchers believe there may be a larger pool of soil calcium than was applied in earlier studies. If so, then actual calcium loss may be smaller than estimated in this analysis.

Research findings indicate the 1970 Clean Air Act and its 1990 Amendment are altering the impacts of acid deposition (Likens et al 1996). Less acid anions are being deposited through atmospheric deposition. While the consequences of this are not yet appearing as an improvement in stream acid neutralizing capacity (ANC), it is reported that in the long term, stream chemistry recovery would probably occur. Even with an uncertain timeline, continued rates of depletion as estimated by Federer (1989) are not likely in the long term. A gradual improvement is expected.

Soils at Iron Maple are deep and moderately or well drained. The proposed treatment areas do not include soils shallow to ledge where soil mass or nutrient supply is a concern. Unit 11 is on outwash sand soil. Research guidance recommends no whole-tree harvest on outwash sands. No whole tree harvesting is proposed for this project.

In general, soil calcium concentrations are at the lower end in this southwest portion of the Forest as compared to other richer soil types on the forest. However, long-term forest measurements at nearby Bartlett Experimental Forest do not indicate a change in forest biomass accumulation (growth) since

measurements have been taken in 1934 (Neugenkapien 1998). A summary of other measurements in this vicinity, including bole-only, whole-tree harvest, and clear-cutting, do not indicate biomass accumulation has been impacted (Fay et al 1997).

Sixty years of measurement at Bartlett Experimental Forest do not indicate any changes in forest composition (Leak et al 1998). Forest health measurements made on WMNF as a part of a regional study indicate only minor branch dieback that might be attributed to soil calcium changes, in comparison to significant mortality shown in western Pennsylvania from calcium loss (Hallett et al 2001).

The general effects of timber harvest activity on soils can be found in the Forest Plan FEIS, pp. IV-30 through IV-32.

#### **3.4a Effects on Soil Calcium - No Action**

Under Alternative 1, harvesting is deferred on lands that are currently assigned as suitable timberland in the 1986 LRMP until some later time. Because no harvesting would occur, the current supply of soil calcium would be maintained on the 482 acres of northern hardwood forest that could be affected by this project. Continuing estimated losses attributable to acid deposition would occur, as would losses from past harvest activity. Existing soil calcium (base saturation) is available in these soils to buffer possible future impacts from acid rain or from proposed timber harvest. Research findings based on detailed modeling at Hubbard Brook indicate that a hysteresis pattern exists for soil calcium, meaning that soil calcium recovery from past harvest and acid deposition is possible over time.

Because no harvesting would occur under Alternative 1, the present buffering capacity of the soil is likely to persist. Indirectly, this can help minimize cumulative impacts to forest productivity, species composition, and health that may result from future timber harvest or acid deposition. Based on current research and monitoring these forest conditions would likely remain unchanged (WM Monitoring Report 2000, pp. 43-50). The only evidence of negative indirect effects in northern hardwoods shown at "sugar maple decline study sites" located on the Forest is limited dieback of branches (Hallett, 2000). Species other than sugar maple are not showing evidence of decline. Sugar maple is of special interest because it is a calcium demanding species.

#### **3.4b Effects on Soil Calcium - Alternatives 2-5**

No whole-tree harvest is proposed in this project. Clear-cut and seed tree harvest lead to an estimated 2% loss of soil calcium from a single entry, bole-only harvest in northern hardwood forest (Fay et al 1993). Single-tree selection, thinning and group selection harvest leads to an estimated <1% loss of soil calcium from a single entry, bole-only harvest in northern hardwood forest (Fay et al 1993). The percent estimated losses come from earlier calculations (Fay et al 1993), which are based on even earlier work on calcium loss by Federer (1989). Differences among alternatives relate to the proportions of these two categories of harvest, and the acres harvested.

The acres of harvest by method and alternative are shown in Table 3-7. The separation is shown in the same categories, as described above.

**Table 3-7: Acres of Northern Hardwood Treated by Harvest Method(s)**

Harvest Method	Alternative 1 (Acres)	Alternative 2 (Acres)	Alternative 3 (Acres)	Alternative 4 (Acres)	Alternative 5 (Acres)
Clear or Seed Tree Cut	0	55	40	0	55
Other Rx	0	427	442	388	82
Total acres	0	482	482	388	137

Environmental factors that may affect calcium depletion include atmospheric deposition, timber harvest and nitrogen deposition. The overall consequences of harvesting activities in Alternatives 2-5 would be to lower the buffering capacity of the soil.

The direct effects of timber harvest proposed for each alternative can be calculated by applying the percent of estimated calcium loss by harvest method (e.g. Clear-cut and Seed Tree cut, or Other Methods) to the acres proposed for each Alternative.

**Table 3-8: Estimated Calcium Loss (within units to be treated) by Alternative.**

Alternatives	Clear-cut or Seed Tree (1)	Other Methods (2)+
1	None	None
2	2 % on 55 acres	<1 % on 427 acres
3	2 % on 40 acres	<1 % on 442 acres
4	0 acres	<1 % on 388 acres
5	2 % on 55 acres	<1 % on 82 acres

+ For column 2, a factor of 1 percent was used in the calculation, even though this is higher than the < 1 % figure the formula assumes.

Potential indirect effects of timber harvesting are effects on forest productivity. The Forest Service has a responsibility to maintain long-term productivity of the National Forest. Measurement of northern hardwood permanent forest plots at Bartlett Experimental Forest and at other sites across the White Mountain National Forest does not indicate a statistically distinguishable change in forest productivity due to human impacts, even including the impacts of acid deposition (Nuegenkapan, 1998). There is a continuing concern, however, about the impacts of acid deposition on forest productivity and health, especially related to sugar maple (NAPAR 1998). Research on this topic continues in the Northeast. Other related studies are already summarized herein (Hallett 2000; Fay et al 1997; Adams 2000).

Stocking surveys of clear-cut harvest areas in Rocky Branch indicate clear-cuts successfully regenerate within three years of harvest (Wilson, 2003). Visits to “till source” study plots across a full range of calcium richness sites on the White Mountain National Forest did not reveal any qualitative evidence of changes in forest health on northern hardwood stands over sixty years old at low, mid and ridge-top positions similar to those found in Iron Maple Project Area (Fay 2003).

### **3.4c Soil Calcium - Cumulative Effects**

The cumulative effects analysis area for soil calcium includes only those 482 acres within compartments 11, 12 and 16 where treatments are proposed. Outside of proposed units, the cumulative effects on soil calcium within this analysis area are the same for all alternatives, and are at baseline. Cumulatively,

ongoing natural and human caused cycling of calcium through the ecosystem occurs, and has been estimated by Federer (1989) as shown in the formula below. To quantify this process, cumulative calcium loss due to human caused factors can be estimated from the following formula: Estimated Cumulative Effect equals 2% (land use history) + 5% (acid deposition up to 2001) + 1.6% (future acid deposition) + percent for the proposed harvest (derived from table 3-8). The first three figures represent the baseline percent for the analysis area under the No Action alternative. The cumulative percent for the No Action alternative therefore, is the baseline percent (8.6 %). Units within action alternatives would be at baseline plus the estimated (<1 or 2) percent calcium loss associated with that units treatment. Each alternatives effects are summarized in table 3 - 9.

**Table 3–9** Estimated Cumulative Effects of Alternatives in Compartments treated

Alternative	Clear-cut or Seed Tree (1)	Other Methods (2)	Cumulative Effects within units
1	None	None	8.6 (baseline)
2	2 % on 55 acres	<1 % on 427 acres	10.6% on 55 acres < 9.6% on 427 acres
3	2 % on 40 acres	<1 % on 442 acres	10.6% on 40 acres < 9.6% on 442 acres
4	0 acres	<1 % on 388 acres	< 9.6% on 388 acres
5	2 % on 55 acres	<1 % on 82 acres	10.6% on 55 acres < 9.6% on 82 acres

The greatest site-specific cumulative effect on estimated soil calcium loss would occur with Alternative 2 because the greatest combination of acres are clear-cut, seed tree cut or partial cut. Alternatives descend in affects from alternative 2 to alternative 5. Alternative 1, No Action, shows the baseline percent of 8.6. This number is based on Federer’s (1989) work. Within individual clearcut or seed tree units then, the cumulative percent loss of calcium could be 10.6 percent. In partial cut units, the percent loss could be 9.6 percent or less.

When considering the 8.6 percent cumulative baseline for all acres on the forest resulting from land use history combined with past and expected acid deposition, the cumulative increase due to the proposed harvests is relatively inconsequential. All previous research findings are for sites that have been affected by a similar regime of acid deposition since the 1950’s, plus early harvest and recent harvests. For these reasons, it is estimated that changes in long term soil productivity are not occurring at a magnitude that would lead to changes in forest productivity, forest health or species composition.

## 3.5 Water

### Issues

- Effects to water quality of Rocky Branch
- Some people are concerned that logging operations avoid wet areas rather than use slash and brush on skid roads to operate on wet soil
- One resident is concerned that his domestic water supply located on the north side of Iron Mountain may be affected
- Effects of harvesting on the beaver ponds located on a tributary of Otis Brook

### Affected Environment - Water

Watershed features have an important role in maintaining watershed health. These features include the physical attributes of watershed such as hydrology, soil, and geology. These features influence the biological aspects of a landscape. Hydrologic features and the related components of water quality and water yield are discussed in this report. Affected Environment - Water Quality and Quantity

Watershed features are features that have an important role in 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. Soil is discussed in the soil report of this document. Hydrologic features and the related components of water quality and water yield are discussed in this report. In addition, other water related resources such as vernal pools and wetlands (where present) are discussed elsewhere in the EA. Riparian areas are present in the project area. These are discussed in aquatic resources report and in this report where relevant.

Iron Maple Timber Sale is located in Rocky Branch River watershed, a tributary of the Saco River. The watershed of Rocky Branch River contains approximately 14,450 acres. The watershed is aligned north to south with the outlet to the south. The northern end peaks at Boott Spur. There are named and unnamed tributaries of Rocky Branch River within the project area. There are also small ephemeral drainages and swales throughout the watershed.

### Affected Environment - Streams and Riparian Areas

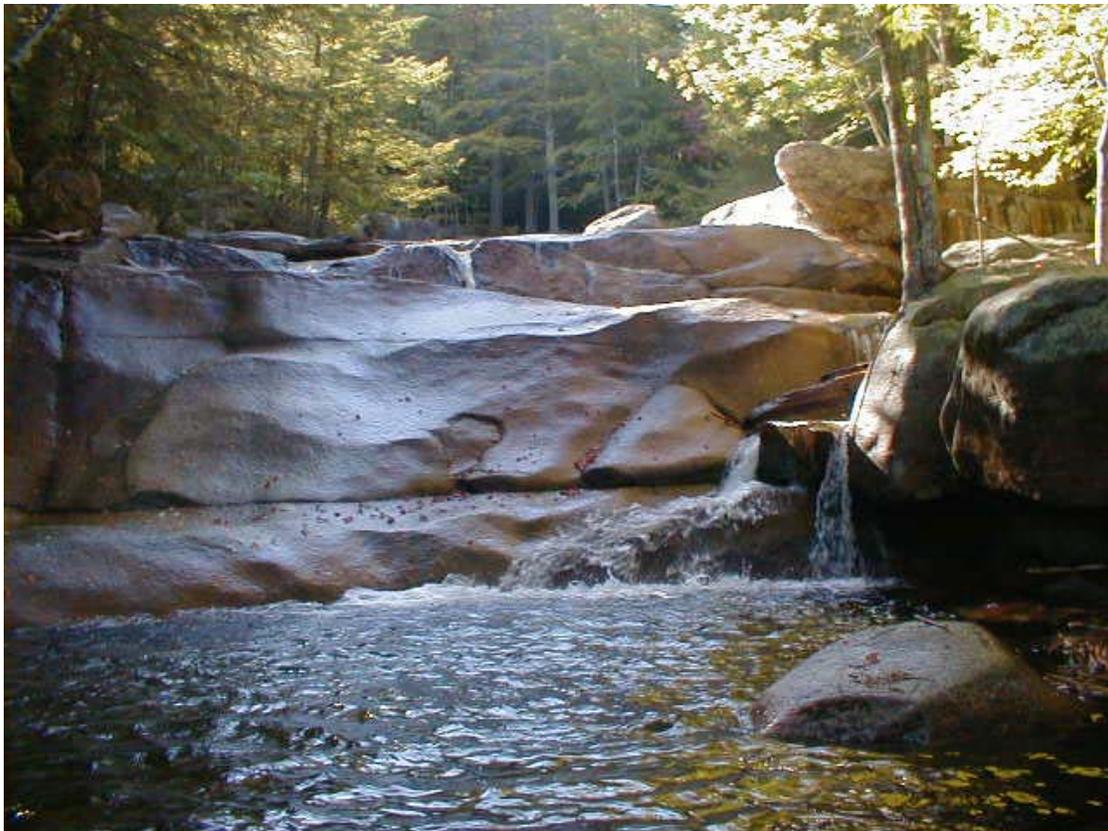
Streams are important because they are pathways that transport water, sediment, and nutrients through the landscape. Streams are classified in a variety of ways. The simplest is based on how often the stream has water in it. Streams that have water in them continually are called perennial streams. Ephemeral is the name for streams that only flow right after it rains or during snowmelt. Streams that flow beyond a precipitation event but still not year round are called intermittent. There are 19.4 miles of perennial stream within the Rocky Branch watershed (as identified by the current GIS

theme using CFF codes). Most (83%) of the perennial portions are located in the main branch of Rocky Branch River. The rest of the perennial portions are located in the lower portions of three tributaries. Otis Brook is the largest of these. The rest of the tributaries are intermittent or ephemeral.

Most of the perennial stream portions within the project area have been classified using the White Mountain National Forest riparian classification system. A riparian area includes stream channels, lakes, adjacent riparian ecosystems, flood plains, and wetlands. As shown in table 1, types 10, 12, 17, and 20 are found within the Rocky Branch Watershed. Approximate Rosgen types are also listed on this table as extrapolated from the riparian classification data.

**Figure 14** on the next page shows the project area in relation to other adjacent watersheds, and in relation to HMUs 506 and 509. Mountain Brook is shown just east of HMU 509 and its confluence with the Saco River is evident.

**Figure 15** on the following page shows the Rocky Branch Watershed Cumulative Effects Area and Subwatersheds, as discussed in this analysis.



**Figure 14** Subwatersheds and Streams

**Figure 15** Rocky Branch Watershed Cumulative Effects Area and subwatersheds

Riparian areas and stream courses on the White Mountain National Forest including the Rocky Branch watershed are generally considered to be properly functioning. This means streams and their associated riparian areas exhibit the attributes and process that are appropriate to each riparian area's capability and potential. Riparian areas dissipate stream energies associated with high flows, filtering sediment, development of diverse channel characteristics to provide habitat for aquatic biota, and protection of streambanks from scour.

Historic railroad logging occurred in the Rocky Branch Watershed and culminated with a large fire in 1918 in the upper reaches. Trees were logged from riparian areas and woody material was removed from streams. Subsequent flooding and scour added to these effects and resulted in portions of Rocky Branch with less than potential levels of woody material and loss of diverse channel and floodplain characteristics. Increased woody material contributes to the protection of stream banks, and creation of habitat for aquatic species. However, processes are functioning in the watershed and recovery continues as woody material accumulates and trees regrow.

Riparian types 12, 17, and 20 occur within the project area. There are also unclassified intermittent streams with associated riparian areas. The large portions of the higher gradient types 12 and 17 have a bottom material that is dominated by boulders and cobble. This provides for a channel stability and minimal channel adjustment. Unclassified tributaries in the treatment area tend to be of this character as well as evidenced from topographic maps, aerial photography, and descriptions from field personnel. These channels tend to withstand high flows and changes in runoff regimes without significant bank erosion or channel adjustment.

**Table 3-10** Riparian Types within the Rocky Branch Watershed

<b>Riparian Type</b>	<b>Miles</b>	<b>Brief Description</b>	<b>Equivalent Rosgen Type</b>
10	1.4	Steep gradient, V shaped valley	A1, A2
12	18.1	Moderate gradient, U shaped narrow flat floored valley	B2
12L	0.1	Moderate gradient, U shaped narrow flat floored valley, dominated by bedrock features	B1
17	1.2	Low gradient, broad flat floored valley	B3, B4
20	5.3	Low gradient, very broad flat floored valley	C2, C3
20D	1.4	Low gradient, very broad flat floored valley, debris influenced	C2, C3

In contrast, the lower gradient types such as 20 have a larger component of finer material such as gravel and sand in the bedload. The lower gradient combined with a less resistant bedload and bank material results in a less stable channel more prone to adjustment from changes in runoff and high flow events. These channels rely on vegetation and woody material for channel stability and often have a wider active floodplain due to more active meandering processes. The main channel of Rocky Branch exhibits these characteristics.

### **Public Water Supply**

There are several public water supply sources at the lower end of the Rocky Branch River watershed. All of these are ground water wells of varying depths.

### **New Hampshire Water Quality Standards**

The State of New Hampshire designates surface waters in Rocky Branch River watershed as Class B. This classification indicates that these waters are considered acceptable for fishing, swimming, and other recreational purposes and, after adequate treatment, for use as water supplies. Surface waters in the project area are not currently used for municipal purposes although there are uses of the surface water at the lower end of Rocky Branch. Recreationists who camp in the area may use the streams as a water source. At present, there are no surface waters listed as not meeting water quality standards in the Rocky Branch River watershed by the state of New Hampshire.

New Hampshire antidegradation provisions apply to all new and increased point and non-point source discharges of substances, including all hydrologic modifications and all other activities that would lower water quality or affect the existing surface waters of the State. Under these antidegradation provisions, waters of the National Forest are designated as "Outstanding Resource Waters" (ORW) and shall be maintained and protected (NHDES, 2001). Some limited point and nonpoint source discharges may be allowed providing they are of limited activity that results in no more than temporary and short-term changes in water quality. "Temporary and short term" means that degradation is limited to the shortest possible time. Such activities shall not permanently degrade water quality or result in water quality lower than that necessary to protect the existing and designated uses in the ORWs. Such temporary and short-term degradation shall only be allowed after *all practical means* of minimizing such degradation are implemented. Soil and Water Conservation Practices (SWCP) as described in this report and other mitigations elsewhere in the EA represent 'all practical means' and would be used should an action alternative be selected.

### **Background for Water Chemistry**

Water quality can be affected by a change in water chemistry. Changes in water chemistry have been observed in studies done in the White Mountain National Forest and elsewhere (Martin, Noel, and Federer, 1981, Davies, K., 1984, and Stafford, Leathers, and Briggs, 1996). Removal of trees increases 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). Increases in water, nutrients, and temperature are reduced within a few years as vegetation regrows so these variables return to precutting levels (Martin, et al 1986). Uptake by vegetative growth is, at first, less than nutrient release by accelerated mineralization, so nutrients are lost from some systems through streamflow (Borman and Likens, 1979) for the first few years after harvest.

Studies have shown that changes to nitrate concentrations have the potential to exceed water quality standards for short periods of time after harvest. Concentrations high enough to exceed water quality standards were associated with clearcutting entire watersheds (Pierce et al, 1971) along with subsequent herbicide treatment to keep vegetation from growing back. Water from watersheds with uncut portions tended to dilute this effect within the watershed. Watersheds that were treated with more conventional methods **did not** exceed water quality standards for nitrate (Hornbeck, et al, 1973). Martin and Pierce

(1980) recommended use of buffer strips, less cutting in the upper portions of watersheds, and staggered harvest to reduce this effect.

Another effect is the changed concentrations of nutrients and their depletion. Calcium losses have already been discussed in the soil report. In fact, soil characteristics greatly influence the chemistry of the nutrients. The type, size, density, and age of vegetation influence the rate of uptake by plants. Studies have shown that the usual harvest practices such as those used on the White Mountain National Forest including those proposed in the Iron Maple project, do not result in large nutrient losses and do not pose a risk to water quality (Brown, 1983). Usual harvest practices including mitigations would be used for the proposed Iron Maple project. Because of this, water quality standards are not expected to be exceeded and nutrients needed for vegetative growth would be maintained.

### **Background for Water Temperature**

When forest harvest reduces canopy shading along streams, the potential exists to increase stream water temperatures. Increases in stream temperature can be prevented or greatly reduced with reduced-cut or no-cut buffers along the edges of streams (Davies, 1984 and Staffard, et al 1996). Mitigations prescribed for Rocky Branch and Otis Brook, and for an intermittent tributary (unit 2, 3), provide for retention of shade on these streams. Trees adjacent to these channels and on steep streambanks would be retained. In thinning and single tree selection units, (the majority of treatment acres), trees and significant canopy cover is retained throughout the units. In addition, only portions of watersheds are being treated (see tables 2 and 3). This further reduces the potential for temperature increases in streams.

### **Effect on Water Chemistry and Temperature – (No Action)**

There would be no direct or indirect effects on water chemistry or temperature from implementation of Alternative 1 (No Action). The current condition would remain. Chemical water quality and temperatures would remain high quality and cold within water quality standards.

### **Effect on Water Chemistry and Temperature - Alternative 2-5**

Because mitigations would be used regardless of the action alternative selected, loss of nutrients, changes in water chemistry, and water temperatures related to the harvest of trees is not expected to deplete nutrient levels in the watershed or cause water quality standards to be exceeded for any of the action alternatives. Differences between action alternatives to water quality are unlikely to vary or be measurable between alternatives since mitigation would avoid the direct effect as in the case of uncut riparian buffers and dilute the effect through partial treatment of watersheds. Chemical quality would remain high, water quality standards would continue to be met, and temperatures would stay cold through the use of mitigations as described above.

### **Cumulative Effects on Water Chemistry, Temperature and Sediment**

There is a limited dataset for water chemistry within Rocky Branch watershed. Rocky Branch River was sampled at two sites from 1991 through 1994. These samples were analyzed for pH and major dissolved ions. Based on this data, the stream is chemically dilute with a mean pH of 6.4 and mean specific conductance of 17.1 umhos. The dominant cation is calcium with a mean of 1.2 mg/l. The dominant anion is sulfate with a mean of 3.6 mg/l. Temperatures were cool in the summer, averaging 56 degrees Fahrenheit (13.3 Celsius) within water quality standards. Overall chemical quality is high and none of the measured parameters indicate concerns for human use or aquatic biota.

There is no available data on bacterial components such as coliforms in the water. There is some potential for bacterial levels to be elevated locally and seasonally due to recreational use in the watershed. While there is a general closure order for camping within 1/4 mile of road 27 from the forest boundary to the gate, a trail does parallel the river throughout much of its length. Camping occurs in close proximity to the stream in several locations above this gate, but is not of such a level as to result in a forest protection area. Three shelters in the watershed are located along streams and have outhouses but are at an appropriate distance to mitigate pollution concerns. The potential for pollution directly into Rocky Branch would be limited to periods of high use coincident with high runoff conditions. Due to the low to moderate use that occurs in this watershed, this is unlikely to happen.

Erosion and sediment transport in streams are natural processes. There is no data on suspended sediment, bedload, or turbidity in Rocky Branch. It is likely that fine sediment is transported from roads to streams at crossings, ditch outlets, culverts, and other locations. Limited roads do exist on the lands managed for timber, wildlife habitat and semi-primitive motorized activities in the 3.1 lands on the forest. These lands comprise 30% of the watershed, mostly located in the lower portion off the ridges and along the river. All of the roads on forestlands are located in these 3.1 lands. However, the soil reports states that no rilling or rutting is evident on the roads in this watershed, so erosion from roadbed surfaces is sheet erosion and transport is limited to periods of runoff.

Studies have shown that sediment from roads is evident during runoff events even where best management practices are used. Where roads are in place, one study has shown that mitigations keep suspended sediment levels less than 2 NTU (nephelamine turbidity units) during non-storm flow periods on clearcut watersheds (Patric, 1980). The same study showed virtually no increase in average turbidity from lighter selection cuts that removed 25-30% of the basal area. However, regardless of cutting intensity, turbidities did increase during storms and were traced to logging roads. Another well-known study at Hubbard Brook (Likens, et al 1970) found negligible increases in stream turbidity after vegetation in a watershed was felled and left in place with no roads or skid trails. However, later studies at Hubbard Brook (Hornbeck, et al 1987) of a strip cut watershed with roads and skid trails did result in increases in turbidity. This points towards the roads and skid trails that are used to access and remove felled trees as the conduits for sediment movement and transport. This, in turn, indicates the importance of directing mitigations or BMPs towards roads and skid trails associated with the proposed activities.

There are few existing roads in Rocky Branch. Forty five percent (45%) of the watershed is in the Presidential Range – Dry River Wilderness Area, has no roads, and is managed for wilderness values. Another 20% of the watershed are MA 6.1 and 6.2 lands managed as semi-primitive nonmotorized and retained in a relatively natural or undisturbed state. As a result sixty five percent of this watershed does not have roads that can contribute sediment during runoff events. Most of these lands are found in the upper watershed but also can be found on the southwestern ridge and to some extent on the southeast ridge.

The highest densities of roads are found on private lands within the watershed. These private lands comprise 5% and are located in the lowermost portions of the watershed, largely downstream of forestlands. It is likely increased sediment from these roads is occurring in localized areas and contributes to sediment loads in the watershed during times of runoff.

## **Water Quantity - Background**

Water quantity in streams is largely related to the amount of precipitation that occurs throughout the year and the amount of summer evapotranspiration. At Hubbard Brook, 62% of the precipitation became streamflow (Likens and Bormann, 1995) and most of the rest was lost to evapotranspiration. Nonetheless, evapotranspiration has the greatest effect on streamflow from June through September. Changes in evapotranspiration result from changes in vegetative species, density and successional stage. Change in vegetation results in change to streamflow during summer low flow periods. The magnitude of change depends on the extent of change to 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.

Based on the research described above, it is unlikely that localized water yield increases are currently present within Rocky Branch watershed as the result of previous timber sale activity. Only Back-A-Pickering (which includes Back-A-Pickering II) timber sale has occurred in the Rocky Branch watershed within the last ten years. Although mostly even age treatments, units for this sale were dispersed across a large area and not concentrated in any one subwatershed so that no stream, including intermittent streams, had more than 25% of the basal area removed. Because of this, no water yield increases are expected to be measurable in the affected streams. There would be no cumulative effects related to water yield increase from Back-A-Pickering sale.

Changes in water quantity can occur when roads, skid trails, and landings are compacted thereby increasing surface water runoff directly to a stream and peak flows. In addition, changes in evapotranspiration occurs when trees are removed from an area. Depending on the amount of basal area removed this can result in increased base flows during the summer (Hornbeck, et al 1997). However, these increases became undetectable 7-9 years after timber harvest. In another study during the 8-25 year period after strip cutting, a decreased water yield was observed. This was attributed to the species of tree regenerating these openings; the first trees to grow after clearcut harvest such as cherry, aspen and birch, use more water than the harvested trees (sugar maple and beech) (Hornbeck, et al 1997).

For the project scale analysis three types of watershed units are found. Otis Brook is a 1030-acre watershed that supports a large perennial stream. Treatment units are also found within three small intermittent watersheds of 175 – 250 acres each. In addition, units are located on sideslopes without well-defined channels. The largest of these sideslope areas, South Sideslope (444 acres) includes only ephemeral or intermittent channels because these sideslopes disperse runoff rather than concentrate it.

These smaller units were analyzed for water quantity effects to estimate increases in water yield and to predict if these smaller streams would be likely to adjust channel dimensions. Changes in the predicted flow combined with stream characteristics determine this response. For this reason, subwatersheds and sideslopes where treatments are proposed were delineated and analyzed to assess water quantity effects.

### **Effects on Water Quantity - No Action**

There would be no new direct, indirect, or cumulative effects on water quantity from implementation of Alternative 1. Forest Plan direction, Standards & Guidelines, and Soil and Water Conservation Practices would continue throughout the project area. Current and on-going management activities would continue, but no new, federal management activities would be initiated during this entry. Changes such as road maintenance might occur through current management direction, natural processes, or other management decisions in the future.

### **Effects on Water Quantity – Alternatives 2-5**

Effects of harvest on streamflows tend to be localized and are unlikely to extend beyond first or second order streams in well-managed forests, where relatively small portions of the watershed are being harvested at a given time. This is because such increases lose their identity as they join streamflows from larger surrounding rivers (Neary and Hornbeck 1994). Channel characteristics (width, depth and bedload) may adjust to increased flow levels for the duration of the increase. The magnitude of increase and type of channel dictates the extent of change. This alteration could result in erosion from the channel and subsequent contributions to sediment, the extent of which is determined by structural characteristics of the stream. Proposed mitigations would combine to reduce this effect.

Where less than 25% reduction in basal area is proposed, no measurable increase in discharge is expected in the associated channel (Hornbeck, Martin, and Eagar, 1997). Table 3-11 summarizes the basal area proposed for removal on each of the smaller landscape elements delineated to assess effects of changed water yield. Except for two landscape units, all areas proposed for treatment would have less than 25% basal area removed. No measurable change in yield means no channel adjustment is expected.

Tributary 3 (see Figure 15 and table 3-12) and a very small sideslope area are proposed for more than 25% basal area removal in alternatives 2, 3, and 4. For Tributary 3, 33% of the basal area would be removed under either of these alternatives. Mitigations prescribed for streams and riparian areas would limit the amount of stream adjustment to a minimum, resulting in little erosion or bank instability. The intermittent stream for Tributary 3 has been prescribed a ten-foot no-cut buffer to insure water yield effects are avoided.

The small sideslope (see Figure 15), between the outlets of two streams would have thirty five percent of the basal area removed under Alternatives 2 and 4 and 40% in Alternative 3. Increases in water yield may occur on this landform due to tree removal although, landform characteristics and project mitigations would protect against increased water yields. This slope is shaped so as to allow dispersal of water.

**Table 3-11** Basal Area Reduction by Treatment Type

Treatment Type	Basal Area Reduction (%)
Clearcut	90
Group Selection	18
Single Tree Selection	40
Seed Tree	90
Shelterwood	80
Commercial Thinning	40

**Table 3-12** Comparison of Alternatives - Percent Basal Area Removed in Smaller Subwatersheds

Sub-watersheds	Percent of Subwatershed with greater than 25 percent Basal Area Removed, by Alternative				
	1	2	3	4	5
Otis Brook (OB)	0	5	5	3	4
Tributary 1 (T1)	0	4	4	0	0
Tributary 2 (T2)	0	7	7	1	7
Tributary 3 (T3)	0	33	33	33	0
North Sideslope NS	0	13	9	9	0
Middle Sideslope MS	0	16	15	4	8
South Sideslope So.S	0	5	5	2	2
Small Sideslope SS	0	35	40	35	0

The symbols in the watershed column reference subwatersheds as shown on Figure 15.

**Background - Streams and Riparian Areas**

Direct and indirect effects to streams, riparian areas, and floodplains would be mitigated as described below so that effects to these features are short term and recoverable. The condition of streams and riparian areas is related to the amount of disturbance that occurs in these areas. Direct effects include disturbance at stream crossings and removal of trees from the riparian area. Indirect effects include sedimentation from erosion and channel adjustment due to increased water yield. Through the use of mitigations, effects to streams, riparian areas, and floodplains are expected to be mitigated and not of consequence to the condition of these features. Streams, riparian areas, and floodplains would continue to function in much the same way as the current condition. Monitoring would occur to ensure these practices are implemented and effective.

### **Mitigations for Streams and Riparian Areas**

- For Rocky Branch and Otis Brook, no trees would be harvested from within the active channel/floodplain or on 15 feet to either side of the top of the bankful mark except at designated crossings. Vegetation on streambank slope would be left intact. Outside this no cut buffer, there is an additional buffer where less than 50% of the basal area can be harvested. The width of this buffer is defined below and depends on riparian type.

Riparian type 10            the greater distance of the inner-gorge or (50 ft + (4 x % slope))  
Riparian type 12, 17      50 feet + (2 x % slope)  
Riparian type 20            the greater distance of 50 feet or floodplain to top of first terrace

- For intermittent and ephemeral streams, specific protection measures would be prescribed on a site-by-site basis. For this sale, a ten foot no-cut buffer is prescribed for the intermittent stream adjacent to units 2 and 3. In all partial cut units trees adjacent to intermittent channels would be retained to provide structure and stability and there would be designated crossings.
- Streams with a definable channel would be kept free of logging debris.
- Trees would be felled directionally away from streams where possible.
- Existing woody material in streams would be left in place.
- Stream crossings would be designated.
- Monitor and restore stream crossings following implementation.
- Designate stream crossings before snow coverage if possible.
- Apply additional drainage control and/or improved crossing structures if needed.

### **Effect to Streams, Riparian Areas, and Floodplains – No Action**

There would be no new direct or indirect effects on streams, riparian areas, or floodplains from implementation of the No Action alternative. The current condition would remain. Stream, riparian areas, and floodplain would continue to function as presently.

### **Effects to Streams, Riparian Areas, and Floodplains -- Alternatives 2-5**

Considering these mitigations, the condition of streams, riparian areas, and floodplains, effects related to the removal of trees is not likely to vary between the alternatives and is expected to meet Forest Plan standards for water quality.

As discussed in the water quantity section of this report, only one of the subwatersheds (Tributary 3) would have more than 25% of the basal area removed overall. This stream has a large component of cobbles and boulders and derives stability from this material. Forest vegetation also contributes to streamcourse stability in all streams in the analysis area. Stream buffers and limited treatment areas would retain adjacent large woody material, which becomes a source of future large wood to streams, and provides for structurally intact streambanks. These buffers also allow for intact near-stream areas for more effective filtering of runoff.

All stream and riparian areas would have mitigations as discussed above. Mitigations to protect stream features are expected to be effective. Therefore, sediment resulting from increased flows is not likely to

occur in the larger streams or in Rocky Branch. Long-term direct and indirect effects to streams and riparian areas are not expected to occur for any of the action alternatives.

**Background for Water Quality effects - sediment from harvest, roads, skid trails, and landings**

Fine sediments are easily transported suspended in water. Direct effects can occur where roads and skid trails go across 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, and disturbed ground from tree dragging.

The EIS for the Forest Plan states that sediment production and its impacts from roads, skid trails, and landings can be reduced to a negligible amount with the use of mitigations such as careful layout and construction, using caution in wet and muddy conditions, and use of road closures. Skid trails also result in onsite soil erosion but the impact is small when mitigations are used. Careful consideration of skid trail location, designated skid trails, minimizing the number of skid trails, and avoiding steep slopes and wet areas with skid trails greatly reduces adverse effects to soils and water. Other mitigations include the use of waterbars, suspending operations during saturated and muddy periods, minimizing disturbance to stream channels, and winter harvest. Maintenance of Soil and Water Conservation Practices during harvest activities is expected to minimize potential effects. Prescribed mitigations would reduce effects to short term and minimal levels, and thereby result in no change to water quality.

Recent studies have shown that mitigations such as these would keep suspended sediment levels under 2 NTU (nephelamine turbidity units) during non-storm flow periods on clearcut watersheds (Patric, 1980). The same study showed virtually no increase in average turbidity from lighter selection cuts that removed 25-30% of the basal area. However, regardless of harvest intensity, turbidities did increase during storms and were traced to muddy logging roads. Another well-known study at Hubbard Brook (Likens, et al 1970) found negligible increases in stream turbidity after vegetation in a watershed was felled and left in place with no roads or skid trails. However, later studies at Hubbard Brook (Hornbeck, et al 1987) of a strip cut watershed with roads and skid trails did result in increases in turbidity. This points towards the roads and skid trails that are used to access and remove felled trees as the conduits for sediment movement and transport. This, in turn, indicates the importance of directing mitigations (including Best Management Practices, BMP) towards roads and skid trails associated with the proposed activities.

Most effects related to road reopening and skid trails are short term in duration through the use of the BMPs listed in Table 3-13. However, the effect of elevated turbidity during storm events would probably remain. Skids roads contributions would decrease to near zero as the skid trails revegetated and stabilized after used. Turbidity increases during storms related to permanent (existing) 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 because these roads are existing. Alternatives 3, 4 and 5 include road reconstruction that improves the road surface and drainage on these existing roads. Alternative 2 proposes 1,250 feet of new road construction, which could increase the cumulative effects or slow recovery under that alternative.

Normal ongoing road maintenance, and reconstruction of these roads would probably contribute some sediment since disturbance and use of these roadbeds allows sediment to mobilize and be removed in subsequent rainfall events. However, since the increases in turbidity occurs only during storm events

when turbidities are naturally elevated, it is not likely these increases would have an effect on aquatic life, stream morphologies, or overall water quality in the watershed.

**The next page provides Table 3-13. Mitigations for Water Quality**



Effect	Table 3-13. Mitigations for Water Quality	Source													
Roadbed disturbance during spring	<ul style="list-style-type: none"> <li>• Closure of roads for a period during spring.</li> <li>• Closure of operations during muddy and saturated conditions when needed.</li> </ul>	Forest Plan Appendix E													
Sediment transport from skid roads	<ul style="list-style-type: none"> <li>• Winter harvest where feasible.</li> <li>• Location and number of skid trails agreed to in advance with the sale administrator.</li> <li>• Minimize number of skid trails</li> <li>• Skid trails would be on the contour where practical.</li> <li>• Drainage features would be designed to disperse runoff after collecting it.</li> </ul>	Forest Plan Appendix E													
	<ul style="list-style-type: none"> <li>• Skid roads would be located on slopes 40 percent or less.</li> <li>• Where possible, skid trail grades would be 20% or less.</li> </ul>	Appendix E S&G III-17													
	<ul style="list-style-type: none"> <li>• Spacing of cross drainage on skid trails would be guided as shown below (also found in the LMP III-22)</li> </ul> <table border="1" data-bbox="363 709 1300 779"> <tr> <td><b>Grade, %</b></td> <td>2-5</td> <td>6-10</td> <td>11-15</td> <td>16-20</td> <td>21-30</td> <td>31-40</td> </tr> <tr> <td><b>Spacing, ft</b></td> <td>300-500</td> <td>200-300</td> <td>100-200</td> <td>100</td> <td>80</td> <td>60</td> </tr> </table>	<b>Grade, %</b>	2-5	6-10	11-15	16-20	21-30	31-40	<b>Spacing, ft</b>	300-500	200-300	100-200	100	80	60
<b>Grade, %</b>	2-5	6-10	11-15	16-20	21-30	31-40									
<b>Spacing, ft</b>	300-500	200-300	100-200	100	80	60									
landings	<ul style="list-style-type: none"> <li>• Landings would not be located within 100 feet of a stream.</li> </ul>	S&G III-18													
Sediment from stream crossings on skid trails	<ul style="list-style-type: none"> <li>• Where needed, silt fence or another effective methods would be used prevent sediment from reaching a stream course disturbed by crossing areas.</li> <li>• Channelized runoff from skids trails and roads would be dispersed before entering a riparian area.</li> <li>• Watershed protection measures such as waterbars and sediment control would be maintained as necessary until no longer needed.</li> <li>• Stream crossings would be restored as needed using shaping, matting, seeding, or other effective methods to restore stream morphology and function.</li> <li>• Install stream crossing structures at right angles to the stream channel in straight sections.</li> </ul>	Forest Plan Appendix E													
	<ul style="list-style-type: none"> <li>• Skidding within 100 feet of a flowing stream would be limited to dry or frozen and/or snow covered ground conditions except on designated skid trails for stream crossings. Exposed soil would be limited to less than 5% of the riparian area.</li> </ul>	S&G III-18													
	<ul style="list-style-type: none"> <li>• Locate skid roads outside of riparian areas to the extent possible</li> <li>• Align stream crossings so a minimum possible area is disturbed.</li> <li>• When possible avoid crossings at riparian types 10.</li> <li>• Stream width to depth ratio and gradient changes should be kept to a minimum and restored on temporary crossings.</li> <li>• Cross drainage on skids roads used in the timber sale would be directed into areas suitable for trapping sediment and not directly into a stream.</li> </ul>	S&G III-21													
	<ul style="list-style-type: none"> <li>• For intermittent and ephemeral streams, specific protection measured would be prescribed on a site-by-site basis. Protection measures for intermittent and ephemeral streams with a definable/visible channel may include designated stream crossings and retention of trees adjacent to the channel.</li> </ul>	S&G III-19													

In addition, the Forest Plan EIS (IV-25) states that there have been no documented cases of damage to fish or other aquatic organisms due to sediment on the forest. There has also been no mention of sediment as an impacting factor to water quality or aquatic life in any of the monitoring plans. In the 1993 Monitoring Report, monitoring in municipal watersheds showed occasional storm related turbidity measurements above the threshold 5 NTUs. However the NTUs exceedances did not appear to be related to forest management activities. In 1995, an onsite review of the effects of timber harvesting and road construction on each district was documented. Standards and guides for sediment control have been found to be effective in keeping the effects of management activities within the range of those shown in the Forest Plan EIS.

**Effects to Water Quality – sediment from harvest, roads, skid trails, and landings – No Action**

There would be no direct or indirect effects on water quality from implementation of the no action alternative. The current condition would remain.

**Effect to Water Quality – sediment from harvest, roads, skid trails, and landings - Alternatives 2-5**

These alternatives are discussed together because the effects of each action alternative are essentially the same for all action alternatives, except where units are deferred. Soil impacts on skid roads depends on the season of harvest not the treatment method. It is estimated that up to ten percent ground disturbance may occur in units harvested during the summer/fall and only one percent disturbance occurs during winter harvest (C.Guenther, sale administrator, 2-2002 and Rod Wilson, forester, 1-2003). Mitigations are expected to reduce potential effects from skid roads to short term and without measurable effects to water resources.

The amount of sediment anticipated for this sale can be measured by two parameters; 1) the acres of ground disturbance from skid trails and landings, plus the miles of road reconstruction and new construction and 2) stream crossing options for Otis Brook (see Table 3-14). Based on table 3-14, Alternative 5 disturbs 17 acres, compared to 46 acres for Alternative 4, 54 acres in Alternative 2, and 59 acres for Alternative 3. These numbers are an estimate of the maximum amount of ground disturbed (by processes such as compaction and loss of ground cover) which could be expected from the roads, landings, and skid trails that are needed to harvest these units. The amount of disturbance is an indicator of the area across which increased sediment transport could occur. The water quality measures above are solely used to show the differences between each alternative.

The direct and indirect effects on water quality from the proposed action alternatives are anticipated to be small and temporary. The existing roads, landings and skid trails provide an example of the condition that these facilities would be in several years following the sale if all appropriate standards and guidelines are followed. Skid trails and landings are vegetated and stable, showing little evidence of sheet or rill erosion. Water quality remains high. The turbidity standard for Class B waters is "not exceed natural conditions by more than 10 NTUs". The Proposed Action and alternatives would not violate this standard because mitigations outlined for the project would be implemented. Use of these mitigations would reduce potential effects to temporary and short term, and would not result in impacts to designated uses. In addition, Soil and Water Conservation Practices (SWCPs) are prescribed for all action alternatives.

**Table 3-14** Summary of Water Quality Measures

Alternative	Acres of Landings	Acres Disturbed by Skid Roads	Feet of New Road Construction	Feet of Road Reconstructio	Acres of Disturbance	Bridge
1	0	0	0	0	0	Existing bridge
2	4	48	1250	2250	54	Use existing over Otis Brook
3	4	52	0	5150	59	Temporary bridge over Otis Brook
4	4	39	0	5150	46	Temporary bridge over Otis Brook
5	2	14	0	1000	17	Crossing not needed.

**Background for Stream Crossings**

Sediment can be mobilized and enter a stream at stream crossings. This may occur if surface runoff is allowed to channelize before reaching a stream or stream buffer (filter). (Farrish et al, 1993). When combined with mitigations such as temporary stream structures to protect the channel, drainage structures, and sediment control where needed, the overall integrity of the stream is protected. Designated crossings are the only sites that may require restoration after proposed activities are complete. Restoration is often successful due to the quick revegetation ability in this area. Designated crossings would have drainage control where needed to prevent runoff directly into a stream. Silt fences may used to prevent sediment from running off disturbed sites into streams. Crossing sites would be reshaped and stabilized if needed. In this way, impacts related to stream crossings would be minimized. 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).

The stream crossing (existing truck road) at Otis Brook has a risk of exposing mineral soil during construction of the temporary bridge and reconstruction of the existing road. There are few opportunities at this location to divert road drainage away from the over flow channels of Otis Brook. It is likely that some sediment mobilized on this portion of the road would end up in the overflow channels. To mitigate this potential, road construction and drainage design at this location would include culverts, a raised road surface designed with permeable fill, and use of geo-tech filter cloth. The temporary bridge over Otis Brook would be placed on wood sills outside the existing streambank and would not disturb the stream banks. Sediment and erosion control features would be used during construction.

**Cumulative Effects Area Identification**

The cumulative effects area (CEA) for water resources is the Rocky Branch watershed and is used to assess cumulative effects across a larger landscape. This watershed is smaller than the 6<sup>th</sup> code watershed boundary that includes Mountain Brook. Since no treatment units are located in the Mountain Brook watershed and it is not a tributary of Rocky Branch River, this watershed was not included in the cumulative effects area.

This scale watershed was selected because the effects of multiple uses within a watershed could become additive and result in cumulative effects. As water flows downstream, pollutants mobilized into the watershed, changes in water yield and chemistry related to activities and uses merge with other waters within the watershed. This scale is large enough to integrate processes within the watershed and predict effects.

### **Cumulative Effects on Water Quality, Water Quantity, Condition of Streams, Riparian areas, and Floodplains**

Past and present activities that occur in the watershed include timber sales, recreation including trails and shelters, road maintenance and use, and activities on private land such as developments and roads. Future activities include the proposed action, additional activity on private lands, continued recreation use, and ongoing road maintenance and use.

Portions of private land have been cleared and roaded for housing and this is expected to continue. These private lands constitute 5% of the cumulative effects area and are located in the lower portions of the watershed. At present, water quality and changes to runoff as a result of these developments are not causing the river to exceed water quality standards. Future development on private land could contribute to localized pollution effects, especially if private septic/sewage systems become more prevalent.

In Rocky Branch watershed, approximately 312 acres in the Back-A-Pick Sale from 1996 were treated. Treatment types were largely even-age thinning, but included 71 acres of clearcuts and some uneven age single tree selection. Due to the limited nature of timber practices and the use of BMPs no measurable increases are present in the watershed. Units in current proposed actions may increase water yield in some smaller localized watersheds, but in Rocky Branch these additions to water yield would not be measurable. This is because **far less than 25%** of the basal area in this larger watershed is proposed for removal in all action alternatives. Only 3.3 % of the watershed is being treated under the maximum treatment alternative. In addition, to protect against cumulative effects on water quantity from generation of additional runoff, the Forest Plan includes a standard and guideline that limits the amount of clear cutting in a 1,000 acre or larger watershed to 25 percent within a ten year period (LRMP p. III-17). None of the alternatives would approach the 25% limit for clearcuts in either Otis Brook watershed (1030 acres) or Rocky Branch watershed (14,450 acres) even when combined with previous sales and activity on private lands.

Roads are likely contributing to some changes in the routing of water and sediment transport processes where present. This effect increases with proximity to stream and/or degree of slope. Past, present, and future road activities are expected to continue in much the same way as present. About 10.8 miles of classified roads are present in the watershed. Road density in the watershed is very low since a large part of the watershed is in wilderness or nonmotorized areas. As referenced from the soil report new road construction and reconstruction activities in all action alternatives would contribute to this effect since soil erosion would cumulatively increase. The new road construction proposed in alternative 2 would result in the greatest cumulative effect. Limited sediment transport into the Rocky Branch River could result from this new construction. Alternatives 3 and 4 also have potential to result in sediment into the Otis Brook by installing/removal of a temporary bridge.

Future recreation activities in Rocky Branch watershed are expected to remain constant. Recreation use in this watershed is largely limited to along trails, streams, and shelters. About 27 miles of trails are located within the Rocky Branch River watershed. As many as a third (1/3) of these trails are adjacent

to the Rocky Branch River. These trails and backcountry camping sites within riparian areas may be contributing to increased sediment loads into streams at localized areas. There is no evidence of sedimentation above naturally occurring levels and no observable cumulative impacts. There is no need for the forest protection area to be extended above where the road is gated.

There would be a low risk of cumulative effects on water quality, water quantity, the condition of streams, riparian areas, and floodplains in Rocky Branch River from the Proposed Action. This is because the proposed action and alternatives would create a small amount of new disturbance that would be mitigated as described in this report. The mitigations are expected to be effective based on previous experience on the White Mountain National Forest. The combination of mitigations, project design, and soil and water conservation practices would prevent measurable cumulative effects from occurring. These measures and project designs have been monitored and modified through the years to best address these activities and their related effects on the White Mountain National Forest.

### **Other public issues related to water quality and Cumulative effects**

*Logging operations avoid wet areas wherever possible.* Using logging slash on skid roads when soils become wet is a common practice because in New Hampshire, wet spots in skid roads is common. In these cases the soils in the forest are dry enough to operate, yet occasional wet spots develop in skid roads often persist without the slash mitigation due to repeated passes by the skidder. The abundant occurrence of precipitation and ground water in forested settings in New Hampshire dictates that low spots in skid trails would occasionally get wet. Standards and guides in the Forest Plan and Best Management Practices are designed to minimize effects to soil and water from logging. Reduced effects are also dependent on proper care by the logger and proper sale design and administration.

*Effects to a domestic water supply located on the north side of Iron Mountain are easily avoidable.* The water supply is over a quarter mile from the nearest harvest activity and is on the other side of Iron Mountain ridge, several hundred feet higher in elevation from the logging activities.

*Protection is afforded for the beaver ponds adjacent to Otis Brook* because these ponds are near, but not in, units to be treated in this project. The beaver ponds are in an area treated about 20 years ago. This area has regenerated and is occupied by a thick sapling stand. The new stand would intercept precipitation and the thick mat of roots and forest litter would prevent soil erosion. In nearby unit 3, eighty square feet of Basal Area per acre would be left, providing plenty of canopy to intercept rain, and roots to hold soil. Surface runoff in or below unit 3, even from high precipitation events, would not be likely. Any runoff or soil erosion that might occur related to skid roads would be redistributed by erosion control features such as water bars, and would be absorbed into the soils in the adjacent buffer afforded by the sapling stand before reaching the beaver ponds. No effect to water quality in the ponds or in Otis Brook is expected.

### 3.6 Effects on hiking the Rocky Branch Trail

#### Issue:

- Logging activities and road work may be audible to hikers, Nordic skiers and mountain bikers on Rocky Branch Trail

#### Rocky Branch Trail - Affected Environment

##### *Recreation Opportunity Spectrum*

In Management Area 2.1 and 3.1, the general recreation goal is to broaden the range of recreation options. For those lands where actions would take place under this project, Forest Plan standards, guidelines and direction for Management Areas 3.1 and 2.1 applies. Recreation Opportunity Spectrum (ROS) experiences associated with MA 3.1 and 2.1 are "Semiprimitive Motorized" and "Roaded Natural" experiences as defined in the Forest Plan on page VI-9. The ROS is a means of expressing a range of recreation experience opportunities. The spectrum classifies recreation experiences available in the WMNF ranging from "Primitive" to "Rural". Within "Semiprimitive Motorized" and "Roaded Natural" ROS evidence of human activity (including timber harvest) is apparent and motorized access is allowed.

##### *Peaks*

Peaks that have unobstructed views of the units include Stairs Mountain and Mt. Parker. The potential units are not visible from Rocky Branch Shelter #1, Mount Pickering, Mount Langdon, Mount Crawford, Thorn Mountain, Iron Mountain, Mount Resolution or from Rocky Branch Trail. Views from these locations are obstructed by topography or by a dense forest of trees.

##### *Trails and Wilderness*

The project area includes Rocky Branch Trail and Stairs Col Trail. Rocky Branch Shelter #1 lies two miles from the trailhead on Forest Road 27. Trailhead parking for Rocky Branch Trail is on FR 27, where the planned access road for units 1-5 leaves FR 27. However, the primary access point for Rocky Branch Trail is on Route 16. Along high ridges on the perimeter of the hydrologic boundary for Rocky Branch drainage are portions of the Davis Path, Iron Mountain Trail, Mt. Parker Trail and Mt. Stanton Trail. Hikers use these trails, primarily in the summer and fall. Mountain bike use is not allowed in Wilderness areas.

The Presidential Range-Dry River Wilderness is approximately one mile west of the nearest proposed harvest unit (Unit 1). Trails listed below weave back and forth across some of the high ridges surrounding Rocky Branch. The Rocky Branch Trail is the only trail in close proximity to proposed harvest and road reconstruction activities. The first half mile of this trail is on the opposite side of Rocky Branch river from the proposed haul route for units 1-5, and thereafter at increased distance, the southern portion of thinning unit 1. Views of proposed harvest units from these trails is obstructed primarily by the ridges themselves or other adjacent ridges. In addition, views are often obstructed by a dense forest of trees along these trails.

Use levels on the portion of Rocky Branch Trail in the project area, between May and October 1992 were 1,160 people. Use levels were 728 people from June 20 to September 1, 1998.

### **3.6a Effects on hiking the Rocky Branch Trail - No Action**

This alternative would not affect hiking on the Rocky Branch trail because no management activities would occur at this time.

### **3.6b Effects on hiking the Rocky Branch Trail - Alternative 2**

There would not be any direct, indirect or cumulative effects on the physical character of Rocky Branch Trail. Rocky Branch Trailhead parking area would be affected by logging trucks passing by in route down FR 27. Truck traffic caution signs would be required along FR 27 and at the trailhead parking area to increase awareness of the potential hazard. Under Alternative 2 only, for approximately 300 feet from the trailhead on FR 27, hikers and logging trucks would be using the same section of road to cross Otis brook. Once a hiker crosses Otis Brook and continues toward the Presidential Range - Dry River Wilderness, the hiker is on the opposite side of Rocky Branch River from the logging road. Signing has been effectively used throughout the Forest.

Potential noise impacts may occur for those hiking to the Presidential Range - Dry River Wilderness on Rocky Branch Trail. This trail parallels Rocky Branch River for 2 miles before entering the wilderness. Units 1, 2, 3, 4, 5, and 6 are all proposed for fall/winter harvest. There may be some noise detected along the first mile and a half only during the fall/winter-operating season when logging is active. Use on Rocky Branch Trail is lowest during this time period. There would only be an effect if people were using the trail during logging operations. There may be short-term cumulative effects if harvest activity in Back-a-Pickering Timber Sale occurs at the same time.

Summer harvesting of units 7–9 would allow for more log truck traffic on FR 27 beginning with the spur that accesses these units down to Highway 302. This would not be a direct impact to users on Rocky Branch Trail.

Units 7 - 9 are proposed for summer/fall/winter harvest in some alternatives and would have greater potential effect on visiting recreationists. The direct effects of noise would be relatively distant, short term, and irregular. Noise from logging units 10-12 could affect some recreationists using Forest Road 27, and adjacent residences.

Forest vegetation between the trail and the river, and the noise of water running over the rocks would muffle or obscure logging noise in many of these locations. The noise potential decreases near the river, and at increasing distances from the activity area. Noise from the timber harvesting activities would be relatively undetectable from within the wilderness. Table 3-15 the relative noise impact of this alternative is displayed.

**Table 3-15: Relative Noise Impact on the Rocky Branch Trail.\***

Measurement Indicator	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Estimated Harvest Volume (MMBF)**	0	2.8	2.7	1.9	0.9
No. of Units With Summer Harvest	0	4	4	4	4
Remaining Harvest Volume in Back-a-Pickering Timber Sale (MMBF)***	0.75	0.75	0.75	0.75	0.75
Cumulative Volume of Harvest (MMBF)	0.75	3.55	3.45	2.65	1.95
Relative Noise Impact on Rocky Branch Trail****	No Change from present	Highest	Second highest	Moderate	Low

\* Used the volume of harvest to estimate the length of time and intensity of the harvesting as part of the estimate of relative noise impact on Rocky Branch Trail.

\*\* MMBF = Million Board Feet of Timber, or 2,000 cords of wood. All volume is included, although units 10, 12 and the adjacent portion of unit 11 would only affect access on Forest Road 27 as it relates to the hiking experience, and would not likely be heard from the trail.

\*\*\* Back-a-Pickering Sale units are winter logging only.

\*\*\*\* Relative Noise Impact was a combination of the amount of volume to be harvested and the season of operation. Summer operating is the season when the level of noise impact is greatest.

### 3.6c Effects on hiking the Rocky Branch Trail - Alternative 3

This alternative would have similar effects on public safety on Forest Road 27 and at the trailhead to those described for Alternative 2. Log trucks would use the (proposed) reconstructed road to haul past the trailhead and then down Forest Road 27. This potential hazard would be mitigated by posting signs to regulate traffic speeds and raise awareness of the dual use.

Noise effects of timber harvesting on the recreation experience along Rocky Branch Trail would be similar to those described for Alternative 2 except that this alternative would have a lower potential for affecting the public travelling on FR 27 because all units except unit 10 are fall/winter season, when the least amount of recreation use occurs.

### 3.6d Effects on hiking the Rocky Branch Trail - Alternative 4

Alternative 4 would have similar direct, indirect and cumulative effects on hiking Rocky Branch trail, and on safety to those described for Alternative 3. Impacts due to noise would be moderated because this alternative would harvest less volume than Alternative 2 or 3, so the duration would be less. Fewer log truck trips would be required to haul the harvest volume under this alternative than in Alternative 2 or 3.

### 3.6e Effects on hiking the Rocky Branch Trail - Alternative 5

Alternative 5 would have the least effects on safety on FR 27 because less total volume would be harvested. This alternative would not have any direct, indirect or cumulative effects on public safety at Rocky Branch Trailhead because no units would be harvested across Otis Brook.

Noise effects to hikers on Rocky Branch Trail during harvesting of units 6, 7, 8, and 9 only, would be similar to that for Alternatives 2 - 4. Unit 6 is ¼ mile and unit 9 is an eighth mile from the trail or trailhead. Overall, the duration of noise effects on Rocky Branch trail would be much less because units 1-5 are not included, and the log haul past the trailhead would not occur.

Although harvest activities in units 6 - 9 may be audible for the first halfmile of the trail, increasing distance thereafter combined with the muting effects of forest vegetation and the sound of the river would dampen the noise.

### **3.6f Cumulative Effects on hiking the Rocky Branch Trail**

The only cumulative effect on safety would result from other uses on Forest Road 27 during implementation of this project. There are no other proposed timber sales in Rocky Branch drainage, or any other projects that would add measurably to the noise, or traffic in the foreseeable future. There may be minor short term cumulative effects if harvest activity in Back-a-Pickering Sale occurs at the same time.

The remaining units 1 and 2 from Back-a-Pickering Timber Sale are the only timber sale operations that could affect hikers on Rocky Branch Trail. These units are at least 1 mile away from Rocky Branch Trail.

The wilderness boundary is over one mile from Iron Maple unit 1. It is approximately three miles from Unit 1 and from the proposed haul route, to the ridgeline where Stairs Col Trail joins the Davis Path. At this point, and to the north, cumulative noise from Iron Maple and Back-a-Pickering Sales would likely be indiscernible or sound very distant.

## **3.7 Effects on dispersed recreation opportunities**

### **Issue:**

Individuals using this area for dispersed recreation (foot travel) indicated that they preferred being able to hike to remote sections on old logging roads and asked that these roads not be obstructed. Others prefer that the Forest Service allow these roads to regenerate and return to a natural condition. Some people are concerned that harvest in Unit 11 would affect the quality of experience for visitors traveling Forest Road 27 or using Rocky Branch at that location.

### **Dispersed use - Affected Environment**

Dispersed use includes all forms of foot travel and general recreating like swimming and picnicing, hunting and fishing. These activities take place randomly throughout the year, with no developed facilities, and where visitors enjoy an unmodified setting. Higher numbers of visitors are present in this project area during the summer. Use is low from November to May.

There are no designated cross-country trails in the area, however, dispersed use occurs on Jericho Road (FR 27) and Rocky Branch Trail up to Shelter #1. Rocky Branch road up to the gate at Otis Brook is open for snowmobile use.

A very limited amount of off-trail (dispersed) use on old logging roads by skiers, snowshoers, summer hikers and hunters occurs. Views from Rocky Branch, from FR 27, and from old logging roads are somewhat limited by topography, and in summer and fall by a dense forest of tree foliage.

Other uses that may occur in the project area, such as picnicing, photography, or just enjoying nature are included in this discussion of dispersed use. No river rafting, canoeing or popular swimming holes above the National Forest boundary are known to occur. Dispersed recreational swimming on Rocky Branch is intermittent.

Rocky Branch watershed has primarily been managed over time for clean water, wildlife, timber and recreation. Timber management activities generated funding for road construction. As roads were built, forest visitors used these roads to access backcountry areas to achieve solitude and to recreate. In 1974, the Presidential Range – Dry River Wilderness Area was established. The New Hampshire Wilderness Act of 1984 added 7000 acres, establishing 27,300 acre Wilderness where recreation and natural processes can occur indefinitely and where no roads or timber harvest activities would occur. This Wilderness lies adjacent, to the north and west of the Iron Maple project area.

Within the project area, manageable lands (MA 2.1 and 3.1) in HMUs 506 and 509 total 5600 acres. Of this, 814 acres have received treatment since 1986. Meanwhile, the remaining stands of timber have been growing and maturing and abandoned logging roads dating to the early 1900's have been recovering. Throughout the early 1900's and as recently as the 1960's hiking trails were built to access backcountry areas. These hiking trails have been maintained by the Forest Service, and by cooperators and volunteer groups for decades.

Throughout the 1950's through to the 1980's abundant hunting for game was found in the Rocky Branch drainage as second growth forests reached merchantability and were thinned, salvaged and clearcut. Since the late 1980's significantly less harvesting has occurred in the Rocky Branch drainage. Many of the old logging roads that were once used to access these backcountry areas have grown up and are becoming nearly impassable.

#### *Forest Protection Area*

A Forest Protection Area (FPA) has been designated along Rocky Branch River for ¼ mile on either side of Stillings road and ¼ mile either side of Forest Road 27 where they pass through National Forest. This restriction is intended to prevent continued recreational overuse of the forested areas along Rocky Branch. Use of campfires and barbecues, and camping are prohibited. Units 4, 5, 10, 11 and 12 are within the FPA.

The FPA was placed following request by adjacent private residences on Jericho Road and the Town of Bartlett. Resource concerns included soil compaction and erosion, loss of understory vegetation from trampling and firewood gathering, and improper disposal of human waste. The FPA does not restrict management activities. The units within the FPA are within MA 3.1, and are suitable for timber harvest.

### **3.7a Effects on dispersed recreation opportunities – No Action**

This alternative would not affect dispersed recreation opportunities within the project area because no management activities would occur at this time.

### **3.7b Effects on dispersed recreation opportunities – Alternative 2**

The majority of dispersed use that occurs in this project area is associated with the river corridor. Proposed harvest and road reconstruction activities in this corridor would be evident. In the short term, these effects would be more obvious, and in the long term, the areas directly effected by this alternative would appear (over time) more natural. All culverts would be removed and haul roads (5005, 5002 and 5012) returned to their existing closed condition following use. Dispersed uses would continue at similar levels to those experienced presently. Most users would recognize some changes in the short term, and yet proceed to enjoy their visit to the National Forest despite evidence that management activities have taken place.

Views from these areas where the majority of dispersed use occurs, or from old logging roads used by occasional hikers, are often obstructed by topography or by a dense forest of tree foliage in summer. Foreground views of harvest activities would be evident to hikers on skid roads, travelers on Forest Road 27 when adjacent to harvest unit 10, 11 and 12, and to visitors when within harvest units such as unit 5 near Rocky Branch Trailhead. Other than unit 10, the units in the river corridor are partial cut prescriptions designed to improve stand conditions, and would appear as healthy stands with larger tree sizes over time.

Units at higher elevations and at a distance from Rocky Branch corridor (units 2-4, 6-9 and most of unit 1) would be visited and observed much less frequently than those along the corridor. Primarily grouse and deer hunters would visit these upper elevation units, or by visitors exploring the area because it shows evidence of recent activity. Local hunters, the New Hampshire Fish and Game, and hunting organizations that have contacted us have encouraged more harvesting, especially clearcutting. These higher elevation stands sum to 279 acres of partial harvest treatments and 40 acres of clearcut. All total, 482 acres within this 8,750 acre project area would be treated in this alternative.

### **3.7c Effects on dispersed recreation opportunities – Alternative 3**

The effects of this alternative on dispersed recreation are identical to those for Alternative 2 with one notable exception. Alternative 2 proposes 1250 feet of new construction that starts between Otis Brook and Rocky Branch bridges whereas Alternative 3 proposes to reconstruct that same distance on the existing spur road that departs from the trailhead. The impacts to visitors at Rocky Branch trailhead would be less in Alternative 3 because the intensity and duration of disturbance to reconstruct that distance of existing road would be less impacting than 1250 feet of new construction under Alternative 2. All culverts would be removed and haul roads (5005, 5002 and 5012) returned to their existing closed condition following use.

### **3.7d Effects on dispersed recreation opportunities – Alternative 4**

The effects of this alternative on dispersed recreation are identical to those for Alternative 2 with three notable exceptions. Alternative 4 proposes to reconstruct the existing access road from the trailhead as opposed to constructing 1250 feet of new road, Unit 11 is omitted, and unit 10 is proposed for a group selection harvest.

The effect on dispersed recreation of not treating unit 11 would be that 94 fewer acres would be treated along Forest Road 27 and Rocky Branch. This would result in no change to the character of this stand, and no evidence of harvest activities as viewed from Forest Road 27 and Rocky Branch.

The effect on dispersed recreation of implementing a group selection harvest in unit 10 would be that evidence of harvest activities would be less visually evident from Forest Road 27. This is because several small openings within the stand would be less evident than treating the entire 15 acres as a seed tree (Alternative 2) or as a Shelterwood (Alternative 3).

### **3.7e Effects on dispersed recreation opportunities – Alternative 5**

The effects of this alternative on dispersed recreation are identical to those for Alternative 2 with three notable exceptions.

This alternative omits units 1-5 so the entire area west of Otis Brook would remain unchanged. Secondly, since this area is omitted, there is no proposed road construction or reconstruction to access this area. This eliminates all road work and timber haul associated with Rocky Branch Trailhead. Third, as in Alternative 4, Unit 11 is omitted.

### **3.7f Cumulative Effect on dispersed recreation opportunities**

Cumulative effect considers effects of past, present and foreseeable activities across a larger area including adjacent private lands. Cumulative effect analysis for dispersed recreation considered the 14,450 acre Rocky Branch watershed (see Figure 15).

Outside of Rocky Branch Trailhead, there are no increased cumulative effects on dispersed recreation opportunities under any of the alternatives in this analysis because overall, the condition of forest stands and other values of the natural environment associated with dispersed recreation, are recovering from past human caused disturbance (timber management, and trail, road and bridge construction) as rapidly as new activities are taking place. Cumulatively, over time, especially regarding long term and cumulative effects of harvesting, there is a balance of new disturbance and recovery. Another example might be, a balance of effects resulting from improved trail access with the establishment of the Forest Protection Area along Rocky Branch.

Presence of trails and parking, and use levels of these existing facilities for vehicular and foot traffic, mountain biking, hunting and fishing, into and within Rocky Branch watershed would not change as a result of this action. Use levels are expected to remain constant. No upgrading of any facility other than the two roads mentioned in this document is proposed. Other than the specific logging activities associated with this project, traffic use levels on Jericho Road and cumulative human presence within Rocky Branch watershed is expected to remain at current levels, and is not expected to increase as a result of this action.

The establishment of a Forest Protection Area along Forest Road 27 and Stillings Road to reduce resource impacts occurring from overuse by forest visitors, in particular dispersed camping. Other changes in management affecting dispersed recreation include the re-routing of Rocky Branch trail to the west side of the river following construction of the two bridges at the trailhead. These two bridges were built and the railroad grade used as an access road for a timber harvest on the west side of Rocky Branch. Prior to this, hikers walked a half-mile up the east side of Rocky Branch and forded the river to

continue to shelter #1 or into the Wilderness. The former railroad logging and truck road, now widely accepted as the new trail location, eliminated a river crossing that could be dangerous in high water or in winter.

Another change indirectly affecting Rocky Branch trail, though not measurably in the project area, is the trailhead parking on Route 16. This provides a parking lot off the highway, and was constructed when Route 16 was widened about 20 years ago. It is not known if the number of users from this trailhead has increased since that time, however, it is clear that the majority of use at this trailhead is from hikers destined for high peaks and other locations north of the project area.

Considering the complete absence of any other foreseeable timber management activities within Rocky Branch drainage over the next ten years, the cumulative effects of this action are determined to be equivalent to maintaining the status quo. Low impact resource improvement projects such as minor trail relocation, or removal of fire rings and rehabilitation of undesirable dispersed sites may occur. Overall, these activities would maintain or improve dispersed recreation opportunities and the quality of experience enjoyed by forest visitors.

### **3.8 Visual Effect**

#### **Issue:**

Evidence of openings created during harvest activities may be apparent to individuals viewing the project area from adjacent peaks or in the Presidential Range – Dry River Wilderness. Foreground views may also be affected as viewed from Forest Road 27, and from visitors on foot using old logging roads for travel. Of specific concern are views from Stairs Mountain, Rocky Branch Shelter #1, Mount Pickering, Mount Langdon, Mount Parker, Mount Crawford, Thorn Mountain, Iron Mountain and from Rocky Branch Trail.

#### **Effects to Visual Quality – affected environment**

The project area is located on National Forest lands mapped as Variety Class B (common). Variety Class identifies the scenic quality of the landscape based on characteristics of land, vegetation, water, and rock ledges. Variety class B has moderate terrain with rounded hills or ridges that are not visually dominant and river valleys with moderate relief. Geologic features present are common but not outstanding in form, color or shape. Vegetation cover and pattern and water features exhibit common characteristics. Refer to Forest Plan Chapter VII-I for detailed description of these levels.

The project area is mapped as Sensitivity Level 2 (Average), based on moderate use and level of national importance. Sensitivity level 2 for the Rocky Branch area because use levels are below 50 to 150 vehicles per day, and trails receive between 200 and 1500 users per season.

The Forest Plan (Chapter VII-I-2) suggests that management activity in the project area should meet Visual Quality Objectives (VQO's) of Partial Retention from middleground viewpoints (between a 1/4 mile to 3-5 miles from the viewer) and a VQO of Retention for foreground views from Iron Mountain and from Rocky Branch Trail. Partial Retention means that management activities may be evident but remain subordinate to the characteristic landscape. Retention means that management activities are not

evident to the casual Forest visitor. These Forest Plan guidelines are used to evaluate planned changes to scenery.

The physical appearance of the land in and around the project area is primarily mature northern hardwoods with a strong softwood component crowning the upper slopes of Iron Mountain and other high peaks in the surrounding area. Softwoods are interspersed with hardwoods in the valley bottoms. Evidence of older openings from past management activities on National Forest, from a recent clearcut on private land on Iron Mountain, and textural changes from partial harvests or from older clearcuts on National Forest land are apparent on the landscape. These openings and textures range in size from five to forty acres. The views of the project area from peaks and along river and road corridors are a mosaic of continuous forest with textural variety resulting from changes in stand type and age. These textural changes appear natural except where a defined edge or perimeter has resulted. Iron Mountain, Whites Ledge and Stairs Mountain are the only nearby peaks accented with granite ledges, while other mountains and ridges in the area including Mount Resolution, Mount Stanton, Mount Pickering, and Mount Langdon, have thick conifer stands present that obstruct views of the project area. Whites Ledge on Mount Stanton views south.

**3.8a Visual Effect – No Action**

This alternative would not effect views from Stairs Mountain, Mt. Parker, Iron Mountain or foreground views from Rocky Branch trail or Forest Road 27 because no management activities would occur at this time.

**3.8b Visual Effect – Alternative 2**

Even-aged management would result in openings in the tree canopy from the viewpoints discussed in the Affected Environment section above. Table 3-16 displays a concise review of possible visual impacts for units seen from these viewpoints and the corresponding visual quality objective (VQO) as outlined in the Forest Plan.

**Table 3-16: Unit (opening) Viewed from known Viewpoints \***

<b>Viewpoints</b>	<b>Distance Zone</b>	<b>Visible Opening</b>	<b>VQO</b>
Mt. Parker	Middleground 2.5 Miles	Unit 7: 7 to 13 acres Unit 8: 3 to 5 acres Unit 9: 7 to 10 acres	Partial Retention
Stairs Mt.	Middleground 3.5 Miles	Unit 8: 6 to 9 acres	Partial Retention
Iron Mt.	Foreground .5 Miles	None	Retention
Forest Road 27	Foreground	Unit 10: 15 acres	Retention

- Field observation from viewpoints was completed in 2001-2002.
- The proposed openings (units 7-10) are not visible from Mt. Resolution, Mt. Langdon or from the 4 shelters in the vicinity.

As displayed in Table 3-16, each of the proposed units (openings) meet Partial Retention from these viewpoints. Applicable VQO Guides for even-aged management are listed in the Forest Plan, Appendix C6, pages VII-C-17 and VII-C-18.

Effects on views were determined from field observations. Viewpoints from Iron Mountain are to the south and are obstructed in a downward direction towards units 10-12 by the sloping rock slab. Units 1-9 are to the west of the viewshed and are not viewed from the viewpoint on Iron Mountain.

A VQO of Partial Retention from middleground viewpoints within the analysis area is met because harvest activities would appear relatively small from the viewpoints that can see these units. Viewpoints from Stairs Mountain and Mt. Parker would see three new openings (Units 7, 8, 9) at mid-elevation on the side of Iron Mountain. Each of these openings is below size limitation standards in the Forest Plan.

A VQO of Retention for foreground views from Rocky Branch Trail would be maintained. Harvest Unit 5, and the half-mile of reconstructed road to access units 1-4 are adjacent to Rocky Branch, but are buffered for the most part by the forest stand along Rocky Branch. Unit 5, and the other units 1-4 are partial cut units, where a significant basal area (70-80 BA) is to be left. Hikers on the trail, which is on the logging road and railroad grade referred to above, would not see these activities. There is enough distance between Rocky Branch trail and the river, and a buffer on the other side of the river adjacent to Unit 5, that the casual observer would not notice any activity. These units are proposed for fall and winter logging only so the number of visitors is low during logging.

Only when on old logging roads proposed for use in this project, or within areas where harvest activities have occurred would foreground views of harvest activities be evident to the dispersed recreation user. This would include units adjacent to Forest Road 27. Units 11 and 12 may appear somewhat less natural for a period of years, due to the skid roads observed from close distance. Treatments in Unit 10 would be more obvious from Forest Road 27 due to the open condition that would result from the harvest and burn prescribed under all action alternatives.

Visual effects on the landscape from middleground and distant views as relates to partial harvest prescriptions (shelterwood, thinning, and single-tree selection) would be short-term textural changes in the forest canopy. These changes in texture are not considered negative visual effects in any of the alternatives.

### **3.8c Visual Effect – Alternative 3**

The visual effects of this alternative are identical to those for Alternative 2 with two notable exceptions. Alternative 2 proposes feet of new construction that starts between Otis Brook and Rocky Branch bridges whereas Alternative 3 proposes to reconstruct the existing spur road that departs from the trailhead. The impacts to visual quality at Rocky Branch trailhead would be less in Alternative 3 because the intensity and duration of disturbance would be less than that proposed under Alternative 2. Other foreground views from Rocky Branch Trail would be as described for Alternative 2 above.

Unit 10 is proposed for a shelterwood leaving 20 to 30 Basal Area per acre, as opposed to a seed tree prescription in Alternative 2. This would leave more trees, but the stand would appear substantially open after treatment. The other unit prescriptions are the same as in Alternative 2, including thin and single tree selection prescriptions that would not be visible because 80 to 100 feet of basal area per acre

is left. This basal area leaves significant canopy closure. There are no views from Iron Mountain into the harvest units.

### **3.8d Visual Effect – Alternative 4**

The effects of this alternative on visuals are identical to those for Alternative 2 with three notable exceptions. Alternative 3 proposes to reconstruct the existing access road from the trailhead as opposed to constructing 1250 feet of new road, unit 11 is omitted, and unit 10 is proposed for a group selection harvest.

The visual effect at the trailhead would be as discussed for Alternative 3 above. The effect of omitting unit 11 from the alternative would reduce the visual effects from Forest Road 27. The effect of prescribing group selection openings rather than clearcuts for units 7-9 would be a different pattern of openings on the landscape. The openings would appear more numerous, but smaller.

A group selection treatment for unit 10 might obscure the unit somewhat as seen from Forest Road 27. In the winter however, the small openings would be visible behind the buffer. The small openings would appear as small clearcuts behind the buffer.

Group selection openings (on 55 acres) would appear as a series of small openings in the canopy as viewed from Stairs Mountain and Mt. Parker. This alternative least effects middleground and distant views from Stairs Mountain and Mt. Parker because the harvest openings are smaller and total less acreage. The prescriptions in Alternative 4 meet the visual quality objectives for Retention and Partial Retention.

### **3.8e Visual Effect – Alternative 5**

The effects of this alternative on dispersed recreation are identical to those for Alternative 2 with three notable exceptions.

This alternative omits units 1-5 so the entire area west of Otis Brook would remain unchanged. Secondly, since this area is omitted, there is no proposed road construction or reconstruction to access this area, and thus no impacts to visuals at the Rocky Branch Trailhead. Third, as in Alternative 4, Unit 11 is omitted.

### **3.8f Cumulative effect on Visuals**

Cumulative effect considers effects of past, present and foreseeable activities across a larger area including adjacent private lands. Cumulative visual effects analysis for this project considers the Rocky Branch watershed as the analysis area. (see figure 15).

Forest data and field observations indicate that even-aged and uneven-aged timber management has been accomplished in the past in this project area and has met Forest Plan standards and guides.

There are increased cumulative visual effects as a result of this action, commensurate with the effects described above for each alternative. Because the condition of forest stands are recovering from past management activities as rapidly as new activities are taking place, (as described in the previous

cumulative effects section for dispersed recreation), the cumulative effect over time is a net improvement in visual quality of the landscape over the last twenty years.

However, a particular view of the side of Iron Mountain from Stairs Mountain or Mount Parker may appear as an increase in impact in the short term.

While the units in this project cannot be seen from Iron Mountain, cumulatively, Iron Mountain views part of a ten acre recent seed tree unit in Back A Pickering sale.

**Table 3-17** Comparison of Alternative Effects on Visual Character

Measurement	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Acres of group selection*	0	0	0	55	0
Acres of new openings created**	0	55	55	11	55
Number of Units with Visible Openings***	0	4	4	4	4

\*Of the acres provided for group selection, only about twenty percent of these acres would actually be harvested, in ¼ to 1/2 acre small group openings.

\*\*Clearcut, seed tree, and shelterwood prescriptions in different alternatives would result in substantially open conditions for units with these treatments. In all alternatives, proposed treatment includes a prescribed burn within unit 10.

\*\*\*Number of units in each alternative that would have visible openings as seen from Mt. Parker and Stairs Mountain, or as foreground views from Forest Road 27.

### 3.9 Effects to adjacent landowners

#### Issues:

- *Property owners on Jericho Road expressed concern about the frequency, intensity and duration of noise, and concerns for safety regarding log haul on Jericho Road.*
  - *Another individual expressed concern that proposed road reconstruction and pre-haul maintenance may lead to increased accessibility and compromise the security of local residences on Jericho Road.*

#### Affected Environment - adjacent landowners

Harvest units within Iron Maple Project area are adjacent to several private landowners. Residences occupied year-round on Jericho Road may be affected by harvest activities, and log haul on Jericho Road (Forest Road 27). Private residences across Rocky Branch on Stillings Road and those at the end of Iron Mountain Road are primarily occupied in summer and fall. Three residences on Stillings road are immediately adjacent to harvest unit 11. Those on Iron Mountain road are not adjacent to harvest units.

*Iron Mountain Road*

Units 6 - 8 are one quarter (unit 8) to one half (unit 9) mile from seasonal residences at the end of Iron Mountain Road. Noise from harvest activities in these four units may be heard, especially during the summer when the greatest use of these residences occurs. Terrain features and distance to these residences, and the presence of dense forests would muffle the noise to a large degree.

No timber haul would occur on the Iron Mt. Road in any of the alternatives.

**Figure 16 - Adjacent Residences**

### *Jericho Road*

Jericho Road becomes Forest Road 27 at the National Forest boundary and is the only haul route for this project. Jericho Road and FR 27 have historically been used to haul timber. Numerous timber sales within Rocky Branch watershed have hauled on Jericho Road over the last 50 years. Jericho Road is open year round for public access and is regularly maintained to provide for public and administrative access. There would be no change in public access resulting from this proposed action. Forest Road 27 is maintained for vehicular access to Otis Brook Bridge, 2.1 miles from the Forest boundary. The town of Bartlett is responsible for road maintenance of Jericho Road below the Forest boundary.

Periodic road maintenance of Forest Road 27 is required due to normal recreational and administrative use. Pre-haul maintenance proposed in the action alternatives would be similar to the periodic maintenance on that road. Maintenance includes grading roadways, cleaning culverts, removing downed trees and limbs and brushing roadsides. Pre-haul maintenance or log haul on Jericho Road would not change accessibility or security of residences from current conditions.

Depending on restrictions such as limited season of harvest, and depending on the volume in the selected alternative, the duration of haul could be from two to four years. This is typical for timber sale contracts on the White Mountain National Forest.

Winter logging units 11 and 12 would be less impacting (from a noise standpoint) to adjacent residences, because fewer people are likely to be out of doors or have windows and doors open in comparison to summer and fall.

### *Stillings Road*

Seasonal residences (primarily summer and fall occupancy) at the end of Stillings Road on the opposite side of Rocky Branch, are in the vicinity of proposed units 10 - 12. Stillings road would not be used for log haul under any of the alternatives.

Winter logging units 10-12 would be less impacting, because few people are likely to be in residency in comparison to summer and fall.

### **3.9a Effects to adjacent landowners - No Action**

The No Action alternative would have no direct, indirect or cumulative effects on residents adjacent to the project area, or on Jericho Road, or on safety or security to residents, since all harvest activities and connected actions would be deferred.

### **3.9a Effects to adjacent landowners - Alternative 2**

#### *Jericho Road*

Considering the standard contract clause in the timber sale contract that warning signs, and the other requirements for all motorists requiring compliance with existing motor vehicle laws and regulations, no substantial safety concerns out of the ordinary would be expected on Jericho Road as a result of this alternative.

Alternative 2 would produce the greatest volume of the alternatives, and has the highest percentage of units for which summer harvesting would be allowed, and thus more log trucks on Jericho Road in the summer. As for intensity, one could expect up to four log trucks per day to enter and exit past these residences. Limitations on season of haul or local jurisdictional road closures on Jericho Road might extend the contract in this alternative to three or more years.

Concerning safety on Jericho Road this alternative includes an estimated 700 round trips with log trucks. However, all legal requirements, local and state traffic laws, and local ordinances would be obeyed. Jericho Road and FR 27 would be adequately posted per contract requirements to notify the public that log trucks may be using the road.

There would be no change to accessibility or security of residences on Jericho Road from current conditions.

#### *Stillings Road*

Harvesting in units 11 and 12 during the winter would have minimal effects in terms of noise at residences along the last half-mile of Stillings road because they are generally unoccupied during the winter. Residences on Stillings Road more than a half-mile from proposed units would not see harvest activities, and would not likely be affected by noise of logging during winter operations. Fall operations may impact some residents within a half-mile of proposed units where noise may be audible. Logging of unit 10 would be audible at residences on Stillings Road at residences, because summer logging is allowed in Unit 10.

#### *Iron Mt. Road*

Summer residences at the end of Iron Mountain Road may hear some noise from summer or fall harvest in units 6-8. They would not likely hear harvest activities in any of the other units. The level of noise for unit 8, at a quarter mile distance to the residences, and for unit 6 at one half mile distance to these residences, would limit the intensity of noise. The duration for harvest for these 72 acres is unknown, but is likely to require a full season to complete. Logging noise from units 6-8, which are on opposite sides of a ridge from the residences, would most likely be muffled by terrain and by vegetation.

### **3.9c Effects to adjacent landowners - Alternative 3**

#### *Jericho Road and Stillings Road*

Alternative 3 would have the same effects on residences on the Jericho Road and Stillings Road as described for Alternative 2, because the units would receive the same harvest prescription (except unit 10) and season of harvest in this alternative as in Alternative 2. The overall intensity for residents would be slightly less than Alternative 2 concerning log haul on Jericho Road since this alternative would harvest 0.1 million board feet less than Alternative 2.

Concerning safety on Jericho Road, this alternative includes an estimated 675 round trips with log trucks. However, all legal requirements, local and state traffic laws, and local ordinances would be obeyed. Jericho Road and FR 27 would be adequately posted per contract requirements to notify the public that log trucks may be using the road.

There would be no change to accessibility or security of residences on Jericho Road from current conditions.

#### *Iron Mt. Road*

Logging noise audible at residences at the end of Iron Mt. Road for this alternative would be identical to those for Alternative 2. Summer and fall logging in units 6-8 may be heard at the residences, however any noise would be largely muffled by terrain and vegetation considering the distance of activities from these residences (1/4 to 1/2 mile).

### **3.9d Effects to adjacent landowners - Alternative 4**

#### *Jericho Road*

Logging in units 10 and 12 would be audible to Jericho Road residents in the vicinity of these units. The group selection prescription for unit 10 would result in less logging noise since only 20 percent of the unit would be treated this entry. The overall intensity of this alternative would be less since it harvests 1.9 million board feet. This reduction in estimated harvest volume results from the different prescriptions for the units and the omission of unit 11.

Concerning safety on Jericho Road, this alternative includes an estimated 475 round trips with log trucks. However, all legal requirements, local and state traffic laws, and local ordinances would be obeyed. Jericho Road and FR 27 would be adequately posted per contract requirements to notify the public that log trucks may be using the road.

There would be no change to accessibility or security of residences on Jericho Road from current conditions.

#### *Stillings Road*

Alternative 4 would have less effect on residences on Stillings road in the fall because unit 11 is omitted. There is no effect anticipated in winter from harvest of Units 10 and 12 to Stillings road residences. Summer and fall logging in unit 10 under this alternative, and activities in unit 12 if logged in the fall, would be heard at residences on Stillings road.

#### *Iron Mt. Road*

The logging noise effects for Alternative 4 would be less than those described for Alternative 2 since this alternative proposes group selection harvest in units 7 and 8. Duration of harvest for these units would be less because only twenty percent of these units would be treated.

### **3.9e Effects to adjacent landowners - Alternative 5**

#### *Jericho Road*

Logging in units 10 and 12 would be audible to Jericho Road residents in the vicinity of these units. The seed tree prescription for unit 10. The overall intensity of this alternative would be less since it harvests 0.9 million board feet. This reduction in estimated volume results from omitting unit 11 and units across Otis Brook.

Concerning safety on Jericho Road, this alternative includes an estimated 225 round trips with log trucks. However, all legal requirements, local and state traffic laws, and local ordinances would be obeyed. Jericho Road and FR 27 would be adequately posted per contract requirements to notify the public that log trucks may be using the road.

There would be no change to accessibility or security of residences on Jericho Road from current conditions.

#### *Stillings Road*

Alternative 5 would have less effect on residences on Stillings road than Alternatives 2 or 3 because unit 11 is omitted. It would have a similar effect to Alternative 4 because the duration of harvest for the seed tree is comparable to that for a shelterwood. There is no noise effect anticipated during winter harvesting of Units 10 and 12 to Stillings road residences. Summer or fall logging in unit 10, and activities in unit 12 if logged in the fall, would be heard at residences on Stillings road.

### Iron Mt. Road

The logging noise effects for Alternative 5 would be the same as those described for Alternative 2 and 3, because this alternative proposes the same harvest in units 6 - 8.

### 3.9f Cumulative Effects to adjacent landowners

Currently, only Back-A-Pickering Timber Sale, south and west of Rocky Branch is operating in the vicinity of this project. Back A Pickering sale has been hauling down Stillings Road, and has nearly completed activities in the units that haul down Stillings road. The remaining three units (45 acres) would be hauled down Jericho Road. Therefore, noise effects to any residences from Back A Pickering will soon conclude, except for the remaining volume to be hauled down Jericho Road. Logging activities at Back A Pickering are not audible from Iron Mountain, and the three remaining units are not thought to be audible from any residences at either location.

No other vegetation management projects are planned in the reasonably foreseeable future within Rocky Branch. Some harvest activities may be audible at Iron Mountain from a vegetation management project to be planned within Meserve Brook drainage that may occur in about five years. It is unlikely that both projects would be operating at the same time. Meserve brook drainage has it's own road system so each project would haul down different roads. A project in Meserve Brook would not be audible from or affect residences or recreating public within Rocky Branch.

### 3.9g Comparison of Effects to Adjacent Landowners

**Table 3-18:** Comparison of Effects for Jericho Road and Iron Mountain Residents

Measurement Indicator	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
MBF harvested in units 6-8	0	527	527	287	527
Season of harvest for units 6-8	None	Summer, fall or winter			
Amount of log truck traffic on Jericho Road resulting from harvesting	None*	700 trips on Jericho Road	675 trips on Jericho Road	475 trips on Jericho Road	225 trips on Jericho Road
Cumulative log truck traffic on Jericho Road *	187	887 trips on Jericho Road	862 trips on Jericho Road	662 trips on Jericho Road	412 trips on Jericho Road

\* All Alternatives include cumulative effects of Back-a-Pickering sale volume to be hauled down Jericho Road. An additional 187 loads are predicted for Jericho Road from 750 MBF in the remaining Back A Pickering sale units.

### 3.10 Heritage Resources

#### Issue:

- Effects of proposed harvest on local heritage resources such as the former Littlefields place, Otis Farm, and the associated cellar hole and apple orchard.

### **Affected Environment - Heritage Resources**

The Iron-Maple project area was not heavily settled prior to the establishment of the National Forest, although the remains of one homestead (cellar holes and rock walls) can be found near Otis Brook. An old road up Rocky Branch and Otis Brook, and over the height of land to Jackson, NH existed in the 1800's and early 1900's. This road is difficult to find, and has been impacted by logging activities dating back to the early 1900's. There is also evidence of an iron mine well up on the slopes of Iron Mountain. This mine was abandoned several decades ago, and has not been maintained.

The upper reaches of Rocky Branch drainage were purchased in 1907 by Conway Lumber Company and were railroad logged. A fire began in dried logging slash in 1912 and burned the upper portion of Rocky Branch watershed along with thousands of stacked logs that were to be floated down Rocky Branch during spring runoff. Remaining evidence of this early logging is old logging roads and skid trails, and the railroad grade used for Forest Road 27, which extends up to Rocky Branch Shelter #1.

During the 1930's the CCC (Civilian Conservation Corps) existed on National Forest land west of the current Birch View subdivision. The access to the camp was over a town road from Intervale to Bartlett on the north side of the Saco River. Over the years, parts of this road have eroded and washed into the Rocky Branch.

Mount Parker Shelter and the original Rocky Branch Shelters were built by the CCC's.

A survey for cultural resources done in 1996 for the project area found no prehistoric sites. (District Archeological Para-Professional, Project File)

#### **3.10a Effects on Heritage Resources under all Alternatives**

The project area was surveyed by a cultural resource Para-professional in 1996 and 1997.

There are no known Heritage Resource sites eligible for the National Register of Historic Places within or adjacent to the proposed activity area. There are no known pre-historic sites within or adjacent to the proposed activity area.

All known historic sites (a cellar hole) within unit 1, and northeast of units 2 and 3 (Otis Farm orchard, cellar hole and rock wall), would be protected from disturbance and avoided during harvest operations. Because these sites would be protected, there would be no effect to known heritage sites under any of the alternatives.

Considering implementation of mitigation measure #20, any cultural resource discovered during sale activities requires immediate cessation of operations and notification of the Forest Service. Cultural resource specialists would evaluate the site and recommend measures needed to protect it from disturbance.

#### **3.10b Cumulative Effects on Heritage Resources under all Alternatives**

Since no direct or indirect effects to heritage resources, and no prehistoric sites are known to be within or adjacent to proposed harvest units, no cumulative effects to cultural resources would occur under any of the alternatives.

### **3.11 Economics**

#### **Affected Environment - Economics**

The project area is located in the Towns of Bartlett and Jackson in Carroll County, New Hampshire. From an economic and social standpoint the project area is closely connected to Conway and the Mount Washington Valley including the incorporated towns of Conway and Hart's Location. Timber product industries, tourism, and recreation of all types on the National Forest bring people and generate economic activity to the area.

Local tourism includes a wide variety of activities and support (infra-structure) for these activities including destination resorts, motels, hotels, restaurants, outlet shopping, supply stores, outfitter and guides, rentals, and a wide spectrum of services associated with people and industry (jobs) linked to use of the National Forest. National Forest lands are an integral part of the economic life of these communities, both as a destination point for outdoor recreational activities, and as a scenic backdrop for many, including those participating in activities on private lands, where the views of the National Forest add to the quality of the experience.

Local employment is largely centered around retail, tourism and service, with a smaller but important amount of employment in light manufacturing, building, and road construction and forest industries. Forest Plan direction is to identify opportunities for local communities to enhance self-sufficiency and a feeling of social well-being (Forest Plan, page III-28).

Regional and local economies rely to a degree on forest industries. Forest products jobs in the region north of the project are among the highest-paying jobs in that area. The pulp mill located in Berlin NH, and a number of other sawmills and forest product manufacturers within close proximity to this project have shown interest in sale offerings recently. Local and regional purchasers compete for timber from a variety of sources including private lands, state and town forests, and the White Mountain National Forest. Steady demand for timber products is reflected in timber sale bids, and indicates strong competition for timber, whether private or from public lands. Typically, average bid prices for National Forest timber equal or exceed those received on private land. This is especially true for sawlog products, because private landowners often convert trees to money soon after a stand becomes merchantable. Providing some volume on a sustained basis stabilizes local markets. Providing National Forest timber creates jobs in harvesting, manufacturing, and marketing and provides payment of yield taxes and other taxes to the Towns of Bartlett and Jackson. Additional revenue from a sale provides for on site sale area improvement funds and potentially, revenue to the US Treasury.

For example, in 2001, Alternative 5 of the original Iron Maple Project bid (but was not awarded due to litigation) for \$168.00 per thousand board feet (MBF), and would have generated approximately \$15,120.00 in taxes to Bartlett and Jackson. The alternatives for Iron Mountain Project might provide benefits as shown below.

#### **Economic Effects - Project Costs and Benefits**

In general terms, the direct costs of planning, preparing, and administering timber sales are approximately equal to the revenues received. In 1997 the WMNF received income for timber sold

equal to about 90% of what it cost to operate the timber management program *and* to share in the costs of running the overall Forest [WMNF, 1997 TSPRS Report (Timber Sale Program Information Reporting System)]. In more recent years this figure has approached 100%. The following analysis shows the direct costs and benefits for this project; it does not incorporate overall WMNF Timber Program costs and benefits.

Congress has directed the Forest Service to look at other factors besides making a profit when selling timber. The Forest Service considers the needs of wildlife habitat diversity, ecosystem viability, soils, water, and recreationists. When this is done, the decisions that are made frequently result in higher costs to prepare the timber for sale or lower revenues because of restrictions on logging practices.

The following discussion is a specific breakdown of cash flow for the Iron Maple Project. It is based solely on the estimated monetary transactions that are related directly to the Proposed Action and its alternatives. Those transactions include the estimated costs of the project and the estimated revenue distributions to federal and local governments that are triggered through timber sale receipts.

**Step 1 - Timber Selling Value, or Stumpage Value.** All financial transactions begin with the selling value of the timber. This is the amount that the government can expect private parties to bid for the proposed timber sale. Selling value is established through competitive bidding. The selling value used for this analysis is \$168.00 per thousand board feet (MBF), which is the average stumpage value offered for the original Iron Maple Project bid (but was not awarded due to litigation). Estimated selling values are as follows:

**Table 3-19: Estimated Stumpage Value**

<b><u>Alternative</u></b>	<b><u>Volume</u></b>	<b><u>Value</u></b>
<b>Alternative 1</b>	Zero MBF	\$ Zero
<b>Alternative 2</b>	2,800 MBF	\$470,400
<b>Alternative 3</b>	2,700 MBF	\$453,600
<b>Alternative 4</b>	1,900 MBF	\$319,200
<b>Alternative 5</b>	900 MBF	\$151,200

**Step 2 - Yield or Severance Tax.** A ten percent tax on timber selling value (Step 1, above) is levied by the towns in which the timber sale occurs. Yield taxes are collected directly from the timber sale purchaser. They are not deducted from Federal revenues. However, it is reasonable to attribute the local tax revenue to the federal project. Timber sale bidders certainly consider their local tax obligations when they bid on federal timber. Towns can use yield tax revenues for any purpose. Yield tax revenues are as follows:

**Table 3-20: Yield or Severance Tax**

<b>Alternative 1</b>	\$ Zero
<b>Alternative 2</b>	\$47,040
<b>Alternative 3</b>	\$45,360
<b>Alternative 4</b>	\$31,920
<b>Alternative 5</b>	\$15,120

**Step 3 - Twenty-Five Percent Fund and Total Local Revenue.** This fund was established by Congress in the Act of May 23, 1908 and ammended in 2001. Twenty-five percent of all gross revenues on National Forest lands (including timber receipts from Step 1) are returned to the state for support of public schools and roads. The state redistributes these funds to local governments whose jurisdictions include National Forest lands based on the amount of National Forest land in each local jurisdiction. The modification of the act in 2001 gave the states an option on how these payments were calculated, based on a three year average or an annual basis. For purposes of this cost comparison we used 25% of the project selling values. The estimated yield tax, 25% fund and total local government revenues are as follows:

**Table 3-21: Estimated Local Revenues**

<b><u>Alternative</u></b>	<b><u>Yield Tax \$</u></b>	<b><u>25% Fund \$</u></b>	<b><u>Total Local Revenue</u></b>
<b>Alternative 1</b>	\$ Zero	\$ Zero	\$ Zero
<b>Alternative 2</b>	\$47,040	\$117,600	\$164,640
<b>Alternative 3</b>	\$45,360	\$113,400	\$158,760
<b>Alternative 4</b>	\$31,920	\$79,800	\$111,720
<b>Alternative 5</b>	\$15,120	\$37,800	\$52,920

**Step 4 - Net Federal Timber Sale Receipts.** When twenty-five percent fund distributions to local communities (Step 3) are deducted from the selling value (Step 1) the difference is the net federal timber sale receipts. Notice again that yield taxes are levied against the timber sale purchaser, they are not deducted from federal receipts. Net Federal receipts are as follows:

**Table 3-22: Estimated Net Federal Timber Sale Receipts**

<b><u>Alternative</u></b>	<b><u>25% Fund</u></b>	<b><u>Net Receipts</u></b>
<b>Alternative 1</b>	\$ Zero	\$ Zero
<b>Alternative 2</b>	\$117,600	\$352,800
<b>Alternative 3</b>	\$113,400	\$340,200
<b>Alternative 4</b>	\$79,800	\$239,400
<b>Alternative 5</b>	\$37,800	\$113,400

**Step 5 - Project Planning, Preparation, and Contract Administration Costs.** Funds have already been expended in support of this project including ongoing stand inventories (annual program), and on the preliminary design and the analysis documented in this Environmental Assessment. These expenditures are irreversible and cannot be recovered or changed by any of the choices among current project alternatives. Planning costs are \$84,000 based on an average cost of \$30.00 per MBF for a Proposed Action of 2,800 MBF. The same planning cost is incurred no matter which alternative is selected. If an "action" alternative is selected, the timber sale would be prepared on-the-ground for selling. Preparation work includes harvest area layout, tree marking, timber appraisal and contract preparation. Preparation work costs approximately \$20.00 per MBF. When timber sale contracts are awarded to a successful bidder, an administrator is assigned to the project. Administrators manage all aspects of the contract including logging operations and erosion control, with costs of approximately \$15.00 per thousand board feet. All costs are based on Fiscal Year 2003 budget information.

**Table 3-23: Estimated Timber Project Costs**

<u>Alternative</u>	<u>Plan</u>	<u>Prep</u>	<u>Admin</u>	<u>Total</u>
Alternative 1	\$84,000	\$ Zero	\$ Zero	\$84,000
Alternative 2	\$84,000	\$56,000	\$42,000	\$182,000
Alternative 3	\$84,000	\$54,000	\$40,500	\$178,500
Alternative 4	\$84,000	\$38,000	\$28,500	\$150,500
Alternative 5	\$84,000	\$18,000	\$13,000	\$115,000

**Step 6 - Net Federal Revenues.** The total costs outlined in Step 5, above, for project planning, sale preparation, and contract administration can then be deducted from the net Federal receipts (Step 4) to yield the net Federal revenue. Net Federal revenues are as follows:

**Table 3-24: Estimated Net Federal Revenues**

<u>Alternative</u>	<u>Net Federal Receipts</u>	<u>Total Costs</u>	<u>Net Federal Revenue</u>
Alternative 1	\$ Zero	\$84,000	\$ -84,000
Alternative 2	\$352,800	\$182,000	\$170,800
Alternative 3	\$340,200	\$178,500	\$161,700
Alternative 4	\$239,400	\$150,500	\$88,900
Alternative 5	\$113,400	\$115,000	\$ -1,600

**Step 7 - Total Public Revenue.** The sum of all revenues to local and Federal government that originate directly from this project includes yield taxes and twenty-five percent fund distributions from Steps 2 and 3, and net Federal revenue from Step 6. Total public revenues are as follows:

**Table 3-25: Estimated Iron Maple Project Public Revenue**

<b><u>Alternative</u></b>	<b><u>Total Local Revenue</u></b>	<b><u>Net Federal Revenue</u></b>	<b><u>Total Public Revenue</u></b>
<b>Alternative 1</b>	\$ Zero	\$ -84,000	\$ -84,000
<b>Alternative 2</b>	\$164,640	\$170,800	\$335,440
<b>Alternative 3</b>	\$158,760	\$161,700	\$320,460
<b>Alternative 4</b>	\$111,720	\$88,900	\$200,620
<b>Alternative 5</b>	\$52,920	\$ -1,600	\$51,320

**3.11a Effects on economics – Alternative 1**

This alternative would not create jobs or generate revenue for local governments since no timber would be harvested. This alternative would not meet the goal of providing a sustained level of forest products. There would be no economic benefit realized by the US Treasury, the timber sale purchaser and employees, the towns of Bartlett and Jackson, Carroll County, or the State of New Hampshire. Total direct costs would be \$84,000 related to the cost of this environmental analysis. Local governments would not receive the approximately \$164,200 in timber yield taxes and 25% Funds associated with Alternative 2.

There would be no truck traffic impacting the residents or motorists in the area nor would there be any noise disturbance resulting from skidders, chain saws or other logging equipment.

**3.11b Effects on economics – Alternative 2**

This alternative would result in the availability of approximately 2,800 MBF of timber for harvesting, manufacturing, and marketing jobs. Given the numbers in the analysis above, this alternative might provide gross receipts to the US Treasury of \$170,800, and the 10% Timber Yield Tax and 25% fund would distribute about \$164,640 to the Towns of Bartlett and Jackson.

**3.11c Effects on economics – Alternative 3**

This alternative would result in the availability of approximately 2,700 MBF of timber for harvesting, manufacturing, and marketing jobs. Given the numbers in the analysis above, this alternative might provide gross receipts to the US Treasury of \$161,700, and the 10% Timber Yield Tax and 25% fund would distribute about \$158,760 to the Towns of Bartlett and Jackson.

**3.11d Effects on economics – Alternative 4**

This alternative would result in the availability of approximately 1,900 MBF of timber for harvesting, manufacturing, and marketing jobs. Given the numbers in the analysis above, this alternative might provide gross receipts to the US Treasury of \$88,900, and the 10% Timber Yield Tax and 25% fund would distribute about \$111,720 to the Towns of Bartlett and Jackson.

### **3.11e Effects on economics – Alternative 5**

This alternative would result in the availability of approximately 900 MBF of timber for harvesting, manufacturing, and marketing jobs. Given the numbers in the analysis above, there would be no economic benefit realized by the US Treasury. Cost of the environmental analysis would exceed receipts by \$1,600. The 10% Timber Yield Tax and 25% fund would distribute about \$52,920 to the Towns of Bartlett and Jackson.

### **3.11f Cumulative effects - economics**

The cumulative effect of this proposed timber sale would result in providing a source of quality hardwood sawlogs and other forest products on a sustained basis. Whole tree logging is not proposed so increased revenues from potential bidders interested in chipping treetops and branches are forgone. Employment in harvesting, manufacturing, transportation, and support positions would contribute to maintaining local, state, and federal economies. Experience has indicated there is and would continue to be increased demand for timber produced from the National Forest in addition to timber harvested on other private timber sales.

Providing timber from the White Mountain National Forest does not have an adverse impact on private timber landowners nor reduce bid prices for private timber. There is no indication that White Mountain National Forest timber sales influence private landowners to harvest pulp versus sawtimber, nor to apply clearcut versus uneven age harvests on their lands.

The annual timber accounting report for the White Mountain National Forest indicates that the timber sale program has a positive economic benefit locally and in terms of revenue to local, state and federal governments.

### **3.12 Environmental Justice**

Environmental Justice means that, to the greatest extent practicable and permitted by law, all populations are provided the opportunity to comment before decisions are rendered on, are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionately high or adverse manner by government programs and activities affecting human health or the environment.

One goal of Executive Order 12898 is to provide to the greatest extent practicable, the opportunity for minority and low-income populations to participate in planning, analysis, and decision making that affects their health or environment, including identification of program needs and designs.

This proposed action has been conducted under Departmental regulation 5600-2, December 15, 1997, including the Environmental Justice Flowchart. The proposed action, its purpose and need, and area of potential effect have been clearly defined. Scoping under the National Environmental Policy Act, and the comment periods under 36 CFR 215 have afforded the public ample opportunity to comment on the proposed action.

The activities proposed in the action alternatives pose no human health hazards or significant negative environmental effects regardless of socio-economic group. The revenue generating opportunities associated with this project occur in Rocky Branch watershed and may extend well beyond the nearby

towns of Bartlett, Jackson and Conway. Revenues from this project may provide funding for needed public services in Bartlett and Jackson. There would be no change in socioeconomic or environmental conditions within Rocky Branch watershed or within these towns under any of the Alternatives.

The action alternatives might provide some job opportunities and contribute to the 25% fund. Although there would be some changes in the forested landscape, dramatic changes in social conditions are not expected (Forest Plan, IV-52 to IV-55, IV-65 to IV-66).

Recreation occurring in Rocky Branch watershed would continue without measurable interruption. No measurable change to local economies would result from this action. Recreating public would likely continue using Rocky Branch and other adjacent drainages as previously. At most, a very minor and temporary displacement of use might occur at Rocky Branch trailhead. However, this effect does not affect any public sector, low income population or minority group preferentially or in a discriminatory manner.

The proposed action has no adverse effect on minority or low income populations and does not propose actions that would cause disproportionately high or adverse human health or environmental effects on minority populations or low-income populations. Extensive scoping and comment periods did not reveal any issues associated with the principles of Environmental Justice. All interested and affected parties have continued opportunity to be involved in the comment and decision process.

## Chapter 4

### List of Preparers and Agencies Consulted

#### Interdisciplinary Team

Project Coordinator/Writer/NEPA.....	Rod Wilson, Saco Ranger District
Wildlife Biologist .....	Kathy Starke, Saco Ranger District
Soils Scientist.....	Steve Fay, White Mountain National Forest
Hydrologist .....	Livia Crowley, White Mountain National Forest
Harvest Operations.....	Ken Jeager, Saco Ranger District
Layout Forester .....	Edgar Cormier Saco Ranger District
Layout Forester .....	Keith Konen, Saco Ranger District
Archeological Paraprofessional/Silviculturist .....	Don Marks, Saco Ranger District
Landscape Architect.....	L'Tanga Watson, White Mountain National Forest
Forest Engineer Technician .....	Jay Sylvester, White Mountain National Forest

#### Forest Service Consultants

Assistent Ranger/Ecosystems Team Leader .....	Rick Alimi, Saco Ranger District
District Ranger .....	Terry Miller, Saco Ranger District
Assistent Ranger/Recreation.....	Dean Yoshina, Saco Ranger District
Archeologist.....	Karl Roenke, White Mountain National Forest
Research Hydrologist.....	James Hornbeck, Northeastern Forest Experiment Station Durham, NH

#### Other Agencies Consulted

New Hampshire Natural Heritage Inventory .....	Dan Sperduto, Ecologist
New Hampshire Dept. of Fish and Game .....	Kristine Bontaites, Wildlife Biologist
New Hampshire Dept. of Fish and Game .....	John Lanier, Wildlife Biologist
U.S. Fish and Wildlife Service .....	Susi von Oettingen & Michael J. Bartlett

# Appendix

## Iron Maple 2 Project

### Environmental Assessment

Appendix A	Biological Evaluation
Appendix B	Habitat Management Unit (HMU) Summary Tables
Appendix C	Management Indicator Species Table
Appendix D	Management Systems and Harvest Methods
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