Chapter 2: Comparison of Alternatives

2.1 Introduction

This chapter describes:

- how a range of alternatives was developed,
- alternatives analyzed in detail,
- alternatives considered but not analyzed in detail, and
- a comparison of effects and accomplishment of the purpose and need.

In accordance with the National Environmental Policy Act, a No Action Alternative is included in this analysis. This alternative is intended to serve as a control showing the environmental and social effects of taking no action, as well as to provide the deciding officer the option of taking no action at this time.

If there are unresolved issues about effects, alternatives are developed. Alternatives are used to provide the responsible official with choices for avoiding or minimizing effects. The purpose and need for action and the significant issues raised during scoping sets the range of alternatives since all alternatives must in some way meet the purpose and need.

2.2 Development of a Range of Alternatives

The implementation guidelines (40 CFR 1500) developed by the Council on Environmental Quality require that an environmental review must "...rigorously explore and objectively evaluate all reasonable alternatives." The courts have established that this direction does not mean that every conceivable alternative must be considered, but that selection and discussion of alternatives must permit a reasoned choice and foster informed public participation and decision-making.

The Whyte Forest Management interdisciplinary planning team developed a Proposed Action that would meet the purpose and need for the Project. This Proposed Action was included in the May 2006 Scoping Report. Based on additional field reviews and new information, the team modified the Scoping Report Proposed Action to better fit conditions on the ground and to better meet Forest Plan direction. The Scoping Report Proposed Action will not be analyzed in detail in this document but is considered as part of the range of alternatives considered.

Public comments received on the Scoping Report were used to identify significant issues (listed in Chapter 1 of this EA). The Scoping Report stated that significant issues will be used to develop alternatives and to disclose the effects of the alternatives analyzed. One significant issue was raised during the Scoping comment period. One additional action alternative was developed that addressed the concern raised in the significant issue and is analyzed in detail.

When developing the proposed action and alternatives, the interdisciplinary team identified standard management requirements and mitigation measures to minimize impacts on resources from the activities proposed. Standard management requirements include Forest Service policies, Forest Plan Standards and Guidelines, and Minnesota Forest Resource Council Forest

Management Guidelines. Where needed on individual units, site-specific mitigation measures are identified to further reduce effects of management activities. Unit cards contain detailed information on site-specific harvest prescription, mitigation measures, and regeneration activities. Unit cards are available at the Laurentian District office, on the internet, and by request. The enclosed map shows the location of the harvest units. Please reference Appendix A for information on the action occurring in each unit under each alternative. The map provided with the earlier Scoping Report can also be used to reference locations of specific units.

The planning team also collaborated with the Sand Lake Seven Beavers Memorandum of Understanding (MOU) parties during the development of the proposed action. The parties of the MOU are the Superior National Forest, Lake County, State of Minnesota and the Nature Conservancy. The purpose of this group is to coordinate and cooperate in a wide range of activities including sharing data, planning, monitoring, surveying, inventorying, and managing resources. District staff collaborated with the Sand Lake Seven Beavers MOU parties and St. Louis County resource managers, on vegetation management throughout the Whyte Project Area.

The Whyte Project Preliminary Effects Analysis discloses the effects of three alternatives considered in detail and four alternatives considered but not analyzed in detail. These seven alternatives provide an adequate range of alternatives and include enough information on the effects of the proposed action and alternatives, including the tradeoffs between resources, to make a fully informed decision.

2.3 Alternatives Considered in Detail

Table 2.1 shows the specific actions that would occur under each of the alternatives. The enclosed map of the project area shows the location of the treatment units and proposed road changes. Please reference Appendix A for information on the treatment definitions and a list of the treatment units that shows the type of activity that would occur in each unit under each alternative. Information on the proposed road actions and gravel pits are in Appendix B. The mitigations that would be implemented with the actions are included in Appendix C. Project monitoring is listed in Appendix D. The projects considered for cumulative effects are discussed in Appendix F. All acres and miles listed in the following table are estimates.

Table 2.1 Comparison of Alternatives Considered in Detail

	Alternative 1	Alternative 2	Alternative 3
Vegetation Management	**Acres**	**Acres**	**Acres**
Create young aspen, paper birch, jack pine, balsam-fir/spruce, and black spruce forest through a variety of even-aged management treatments such as clearcut with reserves, overstory removal, and shelterwood harvest.	4414	0	3985
Increase the amount of white pine through two-aged management treatments including shelterwood with reserves.	428	0	428
Increase the amount of white pine by converting upland brush and poor quality aspen stands.	156	0	156

Table 2.1 Comparison of Alternatives Considered in Detail			
	Alternative 1	**Alternative 2**	**Alternative 3**
Vegetation Management	**Acres**	**Acres**	**Acres**
Increase the amount of jack pine through a clearcut with reserves on non-jack pine sites followed by site preparation and seeding or planting jack pine.	32	0	32
Enhance riparian habitat by planting longer-lived tree species and releasing existing long-lived tree species adjacent to streams and lakes	241	0	241
Enhance yellow birch forest through site preparation to encourage regeneration of over-mature stand.	29	0	29
Improve the quality of red pine, white spruce, upland black spruce, sugar maple, and northern white cedar-aspen/birch stands through a variety of intermediate treatments such as thinning, group selection, variable gap dynamics, and shelterwood with canopy gaps.	3639	0	2943
Improve Nabokov Blue butterfly habitat by eliminating brush through mechanical or prescribed burning methods.	2	0	2
Restore the ecological effects of fire in older red pine forest through underburning.	50	0	50
Total Acres of Vegetation Management	8991	0	7865
Fire Regime Condition Class	**Acres**	**Acres**	**Acres**
Restore and/or maintain fire regime condition classes through vegetation management.	8989	0	7863
Road Management	**Miles**	**Miles**	**Miles**
Add existing unauthorized road to the managed system to provide adequate access to lands that are in need of management.	2	0	2
Decommission unauthorized road.	20	0	20
Use previously-used temporary road corridors to access vegetation management units.[1]	48	0	44
Construct new temporary roads to access vegetation management units.[1]	17	0	15
Gravel Pits	**Number**	**Number**	**Number**
Approve management plans for gravel extraction	5	0	5

[1]All temporary roads would be decommissioned upon completion of management activities.

Alternative 1: Proposed Action

The proposed action was developed by the project interdisciplinary team and follows the Forest Plan objectives for Landscape Ecosystem (LE) and Management Area (MA) goals and objectives. The proposed action also incorporates the Forest Plan standards and guidelines. Forest Plan direction provides a framework within which to manage vegetation by considering multiple-use and other resource desired conditions. This proposed action is a modified version of the proposed action included in the Scoping Report. Some of the proposed treatment units included in the

Scoping Report have been dropped from the Proposed Action following additional field reviews, and some prescriptions have been modified to better address conditions on the ground and to respond to new information.

This alternative was developed in collaboration with the State of Minnesota, Lake County, St. Louis County, and the Nature Conservancy. In particular, agency resource staff collaborated where larger-sized patches of both young and mature vegetation could be created or maintained across land ownership boundaries. Some of the stands proposed for harvest are located adjacent to either recently harvested areas or areas planned to be harvested in the near future, on other ownership. This would result in increasing the size of patches and reducing habitat fragmentation.

Alternative 2: No Action

Under the no action alternative no new management actions would be proposed at this time. Existing management actions such as previously approved timber sales or road projects would be allowed to continue. Natural succession processes would take place. Current road use would continue. Selection of this alternative would not preclude future management actions in the project area. The purpose of the No Action Alternative is to provide a baseline to show the difference in effects between the action alternatives and no action.

Alternative 3

This alternative was developed in response to a significant issue raised during the public scoping period. The Minnesota County Biological Survey (MCBS) expressed a concern that harvest within some of the higher-ranked MCBS sites would decrease the biological diversity of those sites. The planning team developed an alternative that followed the MCBS recommended action (or no action), for management in the units they identified. See Table 2.2 for the list of units and the specific differences between Alternative 1 and Alternative 3.

Alternative 3 would treat 1,128 fewer acres than Alternative 1, and would use a variable retention harvest instead of a clearcut with reserves harvest on 175 acres. This issue will be used to disclose the differences in effects between alternatives.

Table 2.2 Vegetation Management Differences Between Alternatives 1 and 3

Unit #s	Acres	MCBS Site and Ranking	MCBS Issue	Indicator	Alternative 1, Proposed Action	Alternative 3
190-192	251	Marble Beaver River - High	Quality of large, undisturbed mature patch	●Patch size (acres) ●Treatment within the patch (acres), ●Rare species, and ●Description of biological changes to mature patch	Variable Retention	No action
268-274	529	Marble Kit Creek - High	Quality of large, undisturbed, mature patch	●Patch size (acres) ●Treatment within the patch (acres), ●Impacts to Canada yew and oak, and ●Description of biological changes to	Group selection	No action

Table 2.2 Vegetation Management Differences Between Alternatives 1 and 3						
Unit #s	**Acres**	**MCBS Site and Ranking**	**MCBS Issue**	**Indicator**	**Alternative 1, Proposed Action**	**Alternative 3**
				undisturbed patch		
250, 258-260	175	Marble Kit Creek - High	Native plant community and disturbance regime	●Changes to native plant community, ●Changes to micro-climate, and ●Cedar regeneration	Clearcut with reserves and manage for aspen	Variable retention.
7	52	Seven Beavers – Ranking in Progress	Fragmentation of bog complex and impacts to older growth stages	Changes in older growth stages as measured by species composition and age class.	Shelterwood with canopy gaps and plant white pine.	No action
33-40	296	Wet Foot Hills - Ranking in Progress	Fragmentation of site	Amount of fragmentation as measured by acres of young patch, miles of edge, and edge density	clearcut 33, 34, 37, & 38; thin 35 & 36; overstory removal 39 & 40. Intent of clearcuts is to create larger-sized patches of young forest in collaboration with TNC.	No action

2.4 Alternatives Considered But Eliminated From Detailed Study

Alternative 4, Initial Proposed Action

The planning Team developed a proposed action early in the planning process to meet the Purpose and Need. This alternative included more than 300 treatment units on approximately 12,000 acres. After additional field review and preliminary effects analysis, some of these units were dropped from further consideration and others were modified to better meet either Management Area direction or to address a resource concern. It is important to include this as an alternative considered but eliminated from detailed study because it shows the process the interdisciplinary planning team used to develop a proposed action that limits adverse effects to the extent practical, addresses resource concerns during project development, and implements the Forest Plan. This alternative proposed a greater amount of regeneration harvest than Alternatives 1, 3, or 5. For instance, this alternative originally included mostly clearcut harvest within several units in the Eligible Wild, Scenic, and Recreational River corridor and Riparian Emphasis Management Area. While this type of management is allowed, the planning team deferred some units and modified the treatment of some other units because it would better meet the Eligible Wild, Scenic, and Recreational River and Riparian Emphasis Management Area direction. (See Forest Plan pp. 3-16 through 3-20) The project record contains additional information on these and other changes made to the initial proposed action.

Alternative 5, Scoping Report Proposed Action

The Proposed action included in the Scoping Report proposed treating approximately 10,264 acres. This alternative is no longer being considered because after additional field reviews and obtaining new information, some stands have been dropped or the prescriptions modified because of on-the-ground conditions. This alternative shows the continuing process of developing an alternative that meets Forest Plan direction, follows Forest Plan standards and guidelines, and addresses specific resource concerns. For instance, this alternative proposed thinning in stands with a basal area that is currently at the desired level, clearcutting stands where most of the overstory has already died and site preparation activities are more suited, or would require long access roads for small treatment areas. (See "Change to Proposed Action between Scoping and Preliminary EA", August 10, 2006)

Alternative 6, Additional Roads to remain open for motorized use

The 1854 Authority asked the planning team to specifically review roads proposed to be closed to determine if any could remain open after harvest so tribal members would have motorized access to recently harvested areas. Tribal members use this area for moose and deer hunting and use motorized access to these areas. They asked specifically about access off the Stony River Grade.

The interdisciplinary team reviewed the road access opportunities along the Stony Grade. The project does not propose closing the only Forest Service-administered system road off the Stony Grade. This existing system road would be used to access harvest units 132 – 135 and would remain open for use after harvest. Three other harvest units are located adjacent to the road and would be accessed via a temporary road. The Forest Plan provides clear direction that temporary roads are not open for public use and are to be closed upon completion of management actions. Because the units are adjacent to the road, they can be accessed via foot with minimal effort. No other temporary or system road changes are proposed along the Stony Grade. A large amount of land along the road is under other ownership and while the planning team is not aware of other new roads on other ownership, it does limit the opportunities to provide access on federal land.

The 1854 Authority mentioned a short spur of old railroad track located at the junction of Forest Highway 11. The planning team contacted 1854 Authority to clarify their need for this section of road proposed to be decommissioned. They indicated they can complete the winter track survey work by utilizing the existing road and snowmobile trail and do not need the old railroad grade. Therefore, the old railroad grade is proposed to be decommissioned under both action alternatives.

Alternative 7, Harvest within RARE II/Roadless Area Conservation Rule Areas

An area around Phantom Lake was included in the final nation-wide inventory of roadless areas in a process called Roadless Area Review and Evaluation (RARE II). Phantom Lake was also included in the Forest Service Roadless Area Conservation Rule (RACR).

Based on the Roadless Area analysis conducted during the Forest Plan revision process, the Phantom Lake area did not meet plan revision criteria and was subsequently removed from the Roadless Area Inventory. This was primarily because it did not meet the inventory criteria for semi-primitive acres (only 1000 acres semi-primitive). (FEIS Volume II Appendix C p. C-7). The forest Plan designated this in the General Forest Management Area. The Scoping Report Proposed Action proposed managing vegetation in this area following the Forest Plan direction.

A recent court case (United States District Court, Northern District of California, No. C05-03508 EDL consolidated with No. C05-04038 EDL (September 19, 2006) reinstated the Roadless Rule.

Because of this recent court decision, the proposal to manage the vegetation on approximately 856 acres within the Phantom Lake Roadless Area is being deferred from consideration at this time. The proposal to decommission the unauthorized road in the Roadless Area will remain in Alternatives 1 and 3.

2.5 Comparison of Alternatives

Comparison of How Alternatives Meet Purpose and Need

Table 2.1 shows a comparison of the three alternatives presented in this preliminary effects analysis. The following tables show how each alternative addresses the purpose and need listed in Chapter 1.

1. Create young forest to move the area towards the long-term Landscape Ecosystem objectives in the Forest Plan for age class composition and management indicator habitats. In particular create young forest in the aspen and birch forest types in the upland LEs (MIH 4) and black spruce in the lowland LEs (MIH 9).

Table 2.3 Acres of Young Forest and Acres of MIH 4 and MIH 9 Resulting From Project

	Alternative 1	Alternative 2	Alternative 3
Acres of young forest*	4,466	0	3,985
Acres of Young Aspen and Birch Forest (MIH 4)	3,403	0	3,134
Acres of young Black Spruce (MIH 9)	560	0	491

*Includes all clearcuts with reserves, shelterwood, and 156 acres of upland brush converted to white pine.

Table 2.3 shows that Alternative 1 would create more acres of young forest, more acres of young aspen and birch forest and more acres of young black spruce forest than Alternative 3, although both create young forest. Alternative 2 would not provide any young forest.

2. Increase the amount of white pine and jack pine on appropriate sites to move towards meeting the vegetation composition objectives.

Table 2.4 Acres of White Pine and Jack Pine Resulting From Project

	Alternative 1	Alternative 2	Alternative 3
White Pine Conversion*	584	0	534
Diversity Planting**	404	0	295
Jack Pine Conversion	32	0	32

*Includes shelterwood with reserves harvest and reforestation.
**Diversity planting includes primarily white pine with red pine, white spruce, cedar, and red oak. Acres include restoration planting, natural and diversity plant regeneration, and 10 acres per stand treated in Natural Regeneration with Riparian Planting and Site Preparation with Riparian Planting treatment prescriptions.

Table 2.4 shows that Alternative 1 would convert the most acres to white pine and would diversity plant more acres than Alternative 3. Alternatives 1 and 3 convert the same number of acres to jack pine. See Chapter 3 Section 3.8 and Appendix F for information on how each Landscape Ecosystem would be affected.

3. Enhance riparian forest habitat through planting and where needed, creating conditions that are more suitable for planting long-lived species such as white pine, white and black spruce, tamarack, and red oak.

Table 2.5 Acres of Riparian Habitat Improvement			
	Alternative 1	Alternative 2	Alternative 3
Riparian Habitat Improvement	241	0	241

Table 2.5 shows that both action alternatives would improve the same number of acres of riparian habitat. No riparian habitat would be improved under Alternative 2.

4. Enhance the growing conditions in red pine, maple, and white spruce stands by conducting intermediate treatments, such as thinning and selection harvest.

Table 2.6 Acres of Enhanced Growing Conditions in Red Pine, Spruce, and Maple Stands			
	Alternative 1	Alternative 2	Alternative 3
Enhanced Red Pine	858	0	796
Enhanced White Spruce	557	0	467
Enhanced Maple	2,100	0	1,385

Table 2.6 shows that Alternative 1 would enhance more acres of red pine, white spruce, and maple than would Alternative 3. Alternative 2 would not enhance any red pine, spruce, or maple stands.

5. Reduce fragmentation and create larger-sized patches of young forest by harvesting adjacent to recently harvested areas. These large patches will be coordinated with other landowners.

Tables 2.7 through 2.10 display the changes that would occur to the amount of fragmentation. Fragmentation is measured by the management indicator habitats (MIH) 11, 12, and 13. The MIHs measure the amount of edge, amount of interior forest habitat, the number of 300-acres patches, and the average patch size.

Table 2.7 Indicators for MIH 11 – Acres of Upland and Lowland Edge Habitat*					
	Forest Plan direction	Existing Condition (2006)	Alternative 1 (2014)	Alternative 2 (2014)	Alternative 3 (2014)
Upland Edge Habitat	Reduce the amount of forest edge while retaining a range of small patches and edge habitat	23	22	23	21
Lowland Edge Habitat		26	25	30	26

*Based on stands 0-19 years old.

Table 2.7 shows that Alternatives 1 and 3 would reduce the amount of upland and lowland edge through management actions. This would happen as a result of creating some larger-sized patches of young forest and harvesting adjacent to recently harvested stands. Alternative 2 would not reduce edge habitat.

Table 2.8 Indicators for MIH 12 - Acres of Mature Interior Forest Habitat					
	Forest Plan direction for Spatial Zone 1	Existing Condition (2006)	Alternative 1 (2014)	Alternative 2 (2014)	Alternative 3 (2014)
Mature Interior Forest	Maintain or increase the amount of mature interior forest habitat	6,553	5,969	6,850	6,114

Table 2.8 shows there would be a decrease in the amount of interior forest as a result of management action. Alternative 1 would decrease the amount of interior forest by approximately 9 percent, Alternative 2 would result in an increase of 1 percent, and Alternative 3 would result in a 7 percent reduction in interior forest. The reduction in interior forest is the result of harvesting stands over approximately 20 acres in size. Stands less than 20 acres in size are generally not large enough to provide interior forest conditions. Stands larger than 20 acres also might not provide interior forest conditions if they are more linear in shape. While the Forest Plan shows an objective to maintain or increase the amount of mature interior forest, there is also an objective to increase patch size and to provide young forest. The Whyte Project includes actions that would increase patch size and create young forest (see Table 2.10) and this means there would be a reduction in the amount of mature interior forest. Under Alternatives 1 and 3 there would be an increase in the amount of young interior forest and this young forest would eventually grow into better quality interior habitat in the future. These large young patches would provide better quality interior forest than if young patches are not created. The Forest Plan FEIS shows a 9 percent decrease in the mature upland patches by the second decade from the existing condition. (FEIS p. 3.3.2-5)

Table 2.9 Indicators for MIH 13- Patches of Upland Mature Forest Greater than 300 Acres					
	Forest Plan direction for Spatial Zone 1	Existing Condition (2006)	Alternative 1 (2014)	Alternative 2 (2014)	Alternative 3 (2014)
Number of patches greater than 300 acres	Maintain or increase the acres and number of 300 acre patches	18	18	18	18
Acres of forest in patches greater than 300 acres		10,550	10,550	10,550	10,550

Table 2.9 shows there would be no change in the number of patches greater than 300 acres or in the acres of forest in the 300 acre patches.

Table 2.10 Patch Size of Young Forest Aged 0-19 on NF Land and Number of Young Patches Created that are Adjacent to Existing and Planned Young Patches on Other Ownership					
	Forest Plan direction for Spatial Zone 1	Existing Condition (2006)	Alternative 1 (2014)	Alternative 2 (2014)	Alternative 3 (2014)
Average size of young patches* (acres)	Increase the average size of temporary openings	35	45	Not Applicable	44
Number of young patches created that are adjacent to existing young patches on other ownership		Not applicable	56	0	49
Number of young patches created that are adjacent to planned young patches on other ownership		Not applicable	27	0	23

*Does not include acres of existing or planned young forest on other ownership.

Table 2.10 shows that the average size of young forest patches increases under both of the action alternatives. Alternative 1 would result in a slightly greater increase in patch size than Alternative 3. Alternative 2 would not create any young patches and therefore would not directly increase or decrease patch size. Alternative 1 would also create more young patches that are adjacent to either existing young patches or planned young forest, than would Alternative 3.

6. Improve the fire regime condition class ratings through moving the Project Area towards the LE objectives.

Table 2.11 Fire Regime Condition Class			
	Alternative 1	Alternative 2	Alternative 3
Acres of restored and/or maintained condition class	8,989	0	7,934

Table 2.11 shows that Alternative 1 restores or maintains more acres in Condition class 1 or 2 than does Alternative 3. Alternative 2 does not restore any acres.

7. Provide for sustainable forest products.

Table 2.12 Volume of Timber Harvested			
	Alternative 1	Alternative 2	Alternative 3
Millions of Board Feet (MMBF)	36	0	32

Table 2.12 shows that Alternative 1 would create more volume than would Alternative 3. Alternative 2 would not provide any forest products.

8. Provide an adequate transportation system for managing the National Forest lands. Road management plans will include managing gravel pits.

Table 2.13 Roads and Gravel Pits			
	Alternative 1	Alternative 2	Alternative 3
Miles of Unauthorized Roads Added to Managed Road System	2	0	2
Miles of Unauthorized Roads Decommissioned	24	0	24
Gravel Pits Approved for Use	5	0	5

Table 2.13 shows that Alternative 1 and 3 would add the same roads to the managed road system, would decommission the same roads, and manage the same gravel pits. Alternative 2 would not result in any changes to the road system.

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