

CHAPTER 2

ALTERNATIVES

Introduction

Chapter 2 is intended to present the alternatives in comparative form, sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (National Forest Management Act, 40 CFR 1502.14). It includes a discussion of how the alternatives for Analysis Unit 22 were developed, a description of each alternative considered in detail, and a comparison of how these alternatives relate to the significant issues. It also identifies the “Proposed Action” as the preferred alternative. Maps of the alternatives can be found in Appendix B.

Some of the information in Chapter 2 is summarized from Chapter 3, “Affected Environment and Environmental Consequences”. Chapter 3 summarizes the scientific basis for establishing base lines and measuring the potential environmental consequences of each of the alternatives. For a full understanding of the effects of the alternatives, readers will need to consult Chapter 3.

Development of Alternatives

While still meeting the stated “Purpose and Need” (see Chapter 1), the “Proposed Action” and each alternative presented in this environmental analysis provide a different response to the significant issues for Analysis Unit 22. Each of these alternatives represents a site-specific proposal developed through Interdisciplinary Team evaluation. Identification of management actions such as regeneration, thinning, and prescribed burning are made using resource data from silvicultural prescription plans, topographic maps, aerial photos, and data that is available in the geographic information system (GIS).

The Interdisciplinary Team used information from the analysis of scoping comments in conjunction with the knowledge of stand data for the project area to formulate different alternative approaches (frameworks). For example, if a project issue involved a concern over the use of herbicides, then an alternative that used no herbicides was developed. Preliminary analysis and management direction were used to further refine the alternatives described in this chapter.

This chapter provides descriptions of alternatives to the “Proposed Action”. Tables exhibiting a comparison of the activities and a comparison of the effects by each alternative are included in this chapter as well. During the examination of the Analysis Unit 22 Project, other alternatives were identified but not considered in detail. These alternatives are also discussed in this chapter.

Direction Common to All Alternatives Analyzed in Detail

For the “Proposed Action”, which includes the use of herbicides, regeneration treatments using the clearcut with reserves methods consist of either loblolly or shortleaf pine as the dominant tree species ($\geq 70\%$ cover) or pine as the dominant tree species (51-69% cover) with hardwoods contributing the rest of the basal area. The stand scheduled for irregular seed-tree consists of loblolly pine as the dominant tree species ($\geq 70\%$ cover). And the stand prescribed for the group-selection regeneration treatment consists of loblolly pine (51-69% cover) with scattered hardwoods occupying the rest of the stand. These stands are between 60 and 90 years old.

For alternatives with herbicides, applications are made after harvest and once again in three years. Herbicides would be used in a manner consistent with the direction identified in the Final Environmental Impact Statement for Vegetation Management in the Coastal Plain Piedmont. Herbicide treatments would include the hand tool application of Oust[®], Garlon 3A[®] and 4[®], Velpar[®], and Arsenal[®] for the purposes of release and site preparation.

Prescribed burning would take place only in those stands planned for clearcut with reserves and seed-tree regeneration methods. In these clearcut with reserve and seed-tree areas, the selection priority of pines for retention is as follows: 1) longleaf, 2) shortleaf, and 3) loblolly. Existing conditions are such that natural longleaf and shortleaf pines capable of producing seeds would be left. The objective is to maintain a mixed pine forest type with longleaf and shortleaf pine targeted for restoration.

In all action alternatives, areas proposed for thinning are predominant loblolly pine stands. Within sawtimber thinnings that prescribe fire, the objective is to grow a mixed pine forest type with longleaf pine targeted for restoration. Outside of the prescribed burn area, the emphasis would be for the management of a pine or pine-hardwood forest type. The removal of timber products may require three or more sales. No sale would exceed 5 million board feet (MMBF).

Approximately 127 acres of late seral forest have been designated in the Analysis Unit 22 Project Area. No harvests are planned in late seral stands. Late seral stands for compartment 279 are included in adjacent project areas. Minimum Forest Plan guidelines for each compartment are met. Prescribed burning would occur on approximately 12 acres in the late seral areas. Burning has been a historically common occurrence across the South, and fire is a natural component of the ecosystem of some late seral stands. Historic records indicate that fire was most likely a periodic event in the project area

Alternatives Analyzed in Detail

The “Proposed Action” and four alternatives are considered in detail. Alternative 1 is the “No Action” alternative under which the Analysis Unit 22 Project Area would have no management actions at this time and would remain subject to natural changes only. Alternative 2 (“Maximum Regeneration”), Alternative 3 (“Proposed Action Without the Use of Herbicides”), and Alternative 4 (“Thinning Only”) represent different means of satisfying the “Purpose and Need” than the “Proposed Action” by responding with different emphasis to the significant issues discussed in Chapter 1. Color maps of all alternatives considered in detail are provided in Appendix B of this document.

Alternative 5: The “Proposed Action”

The emphasis of this alternative is to restore stands to a healthy state of mixed pine and mixed pine hardwood using clearcut with reserves regeneration and seed tree regeneration management actions. Thinnings are intended to help promote resistance to the southern pine beetle.

Alternative 5 would be accomplished through a combination of acres of clearcut with reserves regeneration and cuts using seed tree regeneration on approximately 79 acres. Herbicides would be applied to regeneration cut stands to control understory vegetation. Thinning would occur on 552 acres with 402 acres of sawtimber thinning and 150 acres of first thinnings. Prescribed burning would occur on approximately 348 acres of sawtimber-thinned stands. There would be .9 miles of road maintenance and 9.4 miles of road reconstruction in addition to 2.1 miles of temporary roads. There would be approximately 1.4 miles of road constructed along with 4 right of ways. A total volume of 18,582 CCF would be harvested. Approximately 157 acres would be planted to longleaf pine at a spacing of 8X8 or 680 trees per acre. The remaining acres regenerated and not in the burn plan or in unsuitable soil types would be regenerated to loblolly pine by natural regeneration or planting to a spacing of 10X10 or 435 trees per acres. Site preparation would be accomplished through the use of prescribed burns, herbicides and mechanical means such as the use of chainsaws.

Summary of the “Proposed Action” (Table 2.1)

Treatment	Burn	No Burn	Total	Volume
Seed-tree Regeneration	79	---	79	3,136
Clearcut w/reserves (Longleaf regeneration.)	157	---	157	6,123
Clearcut w/reserves (Pine-hdwd regeneration.)	---	56	56	2,184
Sawtimber Thinning	348	54	402	6,030
First Thinning	0	150	150	1,050
Late Seral	12	115	127	---
Road Construction			1.4	
Road Reconstruction			9.4	
Road Maintenance			.9	
Temporary Roads			2.1	

Alternative 1: No Action

The emphasis of this alternative is to propose no management actions to promote healthy forest stands. There would be no seed tree regeneration, thinning, or herbicide application. It does not preclude management activities in Analysis Unit 22 at some time in the future. The choice of the No Action alternative represents a conscious decision to defer regeneration and saw-timber thinnings for this entry. Separate analysis of minor actions and other actions not connected to this entry could be considered. The Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14d) requires that a "No Action" alternative be analyzed in every EA. This alternative represents the existing condition against which all other alternatives are compared. There would be approximately 127 acres of late seral stands. The Alternative 1 (Existing Condition) map shows the distribution of vegetation associated with no new timber harvest.

Alternative 2: The “Maximum Regeneration”

The intent of this alternative is to restore stands to a healthy state of mixed pine and mixed pine hardwood using regeneration with clearcut and seed tree management actions at a level beyond the preferred alternative (Alternative 5—Proposed Action). Alternative 2 represents the maximum reasonable harvest level allowable within the constraints of the Forest Plan.

Alternative 2 would be accomplished through regeneration cuts using clearcut with reserves on approximately 360 acres and seed trees on one forest stand covering approximately 79 acres. Herbicides would be applied to regeneration cut stands to control understory vegetation. Thinning would occur on approximately 524 acres with 374 acres of sawtimber thinning and 150 acres of first thinnings in pulpwood stands. Prescribed burning would occur on approximately 320 acres of sawtimber thinned stands while approximately 46 acres of first thinnings would be burned. Site preparation for reforestation would also consist of both herbicide and mechanical treatments to reduce competition for new seedlings. Approximately 256 acres would be planted to longleaf pine at a spacing of 8X8 or 681 trees per acre. The remaining acres regenerated and not in the burn plan would be planted to loblolly pine at a spacing of 10x12 or 363 trees per acre. There would be 9.9 miles of road reconstruction, 1.4 miles of road construction, and .9 miles of road maintenance. A total of 20,398 CCF would be harvested.

Summary for the “Maximum Regeneration” Alternative (Table 2.2)

Treatment	Burn	No Burn	Total	Volume
Seed-tree Regeneration	79	---	79	3,136
Clearcut w/reserves (for longleaf regen.)	256	---	256	10,112
Clearcut w/reserves (for pine-hdwd regen.)	---	104	104	4,108
Sawtimber Thinning	321	53	374	5,610
First Thinning	0	150	150	1,050
Late Seral	12	115	127	---
Road Construction			1.4	
Road Reconstruction			9.9	
Road Maintenance			.9	
Temporary Roads			3.1	

Alternative 3: The “Proposed Action Without the Use of Herbicides”

This alternative is the same, as proposed action except there would no herbicide applications. The emphasis of this alternative is to restore stands to a healthy state of mixed pine and mixed pine hardwood using regeneration with seed tree management actions without the use of herbicides. Thinnings are intended to help promote resistance to the southern pine beetle. The group selection method of uneven aged regeneration would produce conditions that would reduce resistance to the southern pine beetle. Approximately 157 acres would be planted to longleaf pine at a spacing of 8X8 or 680 trees per acre. The remaining acres regenerated and not in the burn plan or in unsuitable soil types would be regenerated to loblolly pine by natural regeneration or planting to a spacing of 10X10 or 435 trees per acres. Site preparation would be accomplished through the use of prescribed burns and mechanical means such as the use of chainsaws.

Summary for the “Proposed Action/No Herbicides” (Table 2.3)

Treatment	Burn	No Burn	Total*	Volume
Seed-tree Regeneration	79	---	79	3,136
Clearcut w/reserves (for longleaf regen.)	157	---	157	6,123
Clearcut w/reserves (for pine-hdwd regen.)	---	56	56	2,184
Sawtimber Thinning	348	54	402	5,603
First Thinning	0	150	150	1,050
Late Seral	12	115	127	---
Road Construction			1.4	
Road Reconstruction			9.4	
Road Maintenance			.9	
Temporary Roads			2.1	

Alternative 4: The “Thinning Only”

The emphasis of this alternative is to thin stands to help promote healthy trees resistant to the southern pine beetle. There would be 482 acres of sawtimber thinning and 290 acres of first thinning. There would be no clearcut with/reserves or seed tree regeneration and no herbicide applications. A total volume of 11,265 CCF would be harvested. No reforestation or site preparation treatments are planned with this alternative.

Summary for the “Thinning Only” (Table 2.4)

Treatment	Burn	No Burn	Total	Volume
Seed-tree Regeneration	---	---	---	---
Clearcut w/reserves (for longleaf regen.)	---	---	---	---
Clearcut w/reserves (for pine-hdwd regen.)	---	---	---	---
Sawtimber Thinning	566	115	681	10,215
First Thinning	45	105	150	1,050
Late Seral	12	115	127	---
Road Construction			1.4	
Road Reconstruction			9.0	
Road Maintenance			.5	
Temporary Roads			1.9	

Alternatives Not Analyzed in Detail

The following were not considered practical enough to be chosen as alternatives.

Uneven-aged Management

Uneven-aged management, for the whole project area, was considered but then eliminated from further consideration. It was decided that it would not meet the need for ensuring the forest health conditions needed to sustain healthy stands. Both the single-tree selection and the group-selection methods of uneven aged regeneration would produce conditions that would reduce resistance to the southern pine beetle. This alternative does not meet direction outlined in the Forest Plan.

The desired future condition, as stated in Chapter 1, page 3, calls for a steady-state forest of relatively balanced age classes interspersed with patches of older seral stages and unregulated areas. The forest would be relatively intensively managed with small pine sawtimber poles and large hardwood sawtimber as the end product objective. Uneven-aged management would create a wide mix of age classes. Since the majority of the regenerated stands in Analysis Unit 22 are currently loblolly pine, it would be difficult to impossible to convert stands to mixed pine or mixed pine-hardwood, which is a specific objective of this Environmental Assessment (see Chapter 1, Purpose and Need).

No Harvest, Restoration Only

In response to public comments, an alternative was developed which would allow for the salvage of pine beetle-infested trees and the restoration of these areas without conducting a timber sale. Restoring the native longleaf pine on sites now occupied by loblolly pine requires that the overstory trees be felled to reduce loblolly seeding and provide the sunlight necessary for longleaf seedling development. Reduction of southern pine beetle risk also involves the felling of trees. To evaluate this option we assumed a cost of \$150 per thousand board feet to fell the trees, dispose of them with a whole-tree chipper, and spread the chips evenly through the stands. Multiplying this by the approximate 9,996 MBF in the Proposed Actions produces a cost of \$1,499,400. This cost would fall entirely upon the tax payers of the United States, as would the cost of cultural treatments needed to meet the propose of the project.

These cultural treatments, such as site preparation and planting, are generally funded by the Knutson-Vandenburg Fund, which uses moneys from a timber sale to reforest the sale area. The Homochitto National Forest is not currently allocated that much money for ecosystem restoration on a project-by-project basis. Such an alternative may also be outside the intent of the law, since both the National Forest Management Act and the Resource Planning Act provide utilization

language for timber harvested on the National Forests. For these reasons, this alternative was considered unreasonable and was eliminated from further analysis.

Natural Regeneration of Longleaf Pine

Regeneration by natural methods requires an adequate seed source to be successful. Longleaf pine in Analysis Unit 22 lacks the needed concentration of available seed source to make natural regeneration a viable alternative. With the present dominant species (loblolly pine), attempting to establish longleaf in the regeneration areas would result in failure. Since natural methods would not achieve the desired future conditions of restoring a longleaf component to the forest, this alternative was considered unreasonable and was not developed in detail.

Comparison Table of Activities (Table 2.5)

Category	Unit of Measure	Alt. 1	Alt. 2	Alt. 3	Alt.4	Alt. 5
<i>Regen. w/Seedtree</i>						
No Burn with Herbicide	Acres	--	79	--	--	79
No Burn without Herbicide	Acres	--	--	79	--	--
Harvest Volume	CCF	--	3,136	3,136	--	3,136
# Harvest Stands	Each	--	1	1	--	1
<i>Clearcut w/Reserves</i>						
		Alt. 1	Alt. 2	Alt. 3	Alt.4	Alt. 5
No Burn with Herbicide	Acres	--	104	--	--	56
No Burn without Herbicide	Acres	--	--	56	--	--
Prescribed Burning	Acres	--	256	157	--	157
Harvest Volume	CCF	--	13,509	8,366	--	8,366
# Harvest Stands	Each	--	8	4	--	4
<i>Sawtimber Thinning</i>						
No Prescribed Burning	Acres	--	53	54	566	54
Prescribed Burning	Acres	--	321	348	115	348
Harvest Volume	CCF	--	5,610	6,030	10,215	6,030
# Harvest Stands	Each	--	6	7	11	7
<i>First Thinning</i>						
No Prescribed Burning	Acres	--	150	150	150	150
Prescribed Burning	Acres	--	0	0	0	0
Harvest Volume	CCF	--	1,050	1,050	1,050	1,050
# Harvest Stands	Each	--	3	3	3	3
Total Volume						
<i>Site Preparation</i>						
Burning		--	256	157	--	157
Chainsaw		--	--	56	--	--
Hand Directed Pesticides		--	104	--	--	56
<i>Roads</i>						
Road Reconstruction	Miles		9.9	9.4	9.0	9.4
Road Maintenance	Miles		.9	.9	.5	.9

*DFC – Desired Future Condition Although the acres and miles have changed, the actual stands, roads, and their locations on the ground have not. All acres and miles are approximate.

Issues to be Analyzed

The activities included in the “Proposed Action” were described in Chapter 1. The “Proposed Action” addresses the “Issues and Concerns” identified in Chapter 1 as follows:

Issue 1. Soil Disturbance

Soil disturbance would be mitigated through proper sales administration and logging restrictions. Mitigation measures concerning soil productivity, including erosion, compaction, fire and soils, and cumulative effects, can be found in Appendix C of this document. Impacts related to soil productivity as a result of the “Proposed Action” are addressed in Chapter 3.

Alternative 1 has no timber harvest or new road construction and in comparison with the other alternatives has no adverse effects to soil productivity. All action alternatives incorporate and apply Forest Plan standards and guidelines for soils. Skid trails, log roads, and decking areas are reviewed and approved by timber sale administrators. Whenever possible, skidding and decking would be limited to designated routes on ridge tops and gentle sideslopes. Harvest activities are restricted during the wet season as most soils in the forest are more prone to erosion, rutting and compaction during heavy rainfall events. Further restrictions may be needed if rainfall is excessive during logging operations. To reduce compaction and impede soil erosion, all skid trails, bunching areas, temporary roads, and most level D roads would be revegetated and closed after the close of the sale. Soil disturbance issues are handled both by forest wide standard mitigation and by analyzing the effects on all action alternatives.

The alternatives differ in the total amount of timber harvested, by timber harvest methods and by whether or not herbicides would be used to control understory vegetation. All action alternatives would reconstruct over 9 miles of new road and all action alternatives contain the same burn block boundary, which encompasses a total of approximately 1,553 acres within the analysis area. Alternatives 2, 3, and 5 have the same amount of seed tree regeneration (79 acres), while Alternatives 1 and 4 have no seed tree regeneration. Approximately 360 acres in alternative 2 would be regenerated by the clearcut with reserves compared to approximately 256 acres in Alternatives 3 and 5. Sawtimber thinning and first thinning are the same for all action alternatives. There would be no herbicides applied to regenerated stands under Alternative 3, while herbicides would be applied under Alternatives 2 and 5. Alternative 4 would be thinned only (566 acres of sawtimber and 115 acres of first thinning). There would be no stand regeneration and there would be no herbicides applied under Alternative 4.

In terms of soil erosion, compaction, and nutrient loss, Alternative 4 would result in lower adverse effects than Alternatives 2, 3, and 5. In Alternatives 2, 3, and 5, protective canopies are removed by seed tree regeneration harvest methods and more litter displacement occurs than in thinning only. Forest canopies help to protect soils from the erosive effects of rain and runoff. Alternative 4 would retain more forest canopy by only removing a portion of the stands through thinning. Additionally, Alternatives 2, 3, and 5 would have more potential to compact soils than Alternative 4 since more machinery used in seed tree regeneration than in thinning. Alternative

2 would have greater impacts to soils than Alternatives 3 and 5. Alternative 3 would likely result in less erosion and soil compaction than Alternative 5 as there would be more understory vegetation in Alternative 3 than Alternative 5. Alternatives 2 and 5 would receive a herbicide application which would reduce understory vegetation. Understory vegetation helps to protect soils from erosion. All alternatives would be impacted the same in terms of nutrient loss caused by fire, as all action alternatives burn the same amount of acreage.

Issue 2. Water Quality

Water quality would be mitigated by the extra measures taken to prevent soil movement into intermittent and perennial streams. Detailed risk assessments, including surface and subsurface off-site movements, may be found in Appendix A, Section 4 of the Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont. Mitigation measures involving sedimentation and herbicide application rates can be found in Appendix C and Appendix G of this document. These application rates are based according to guidelines set by the Nuclear Regulatory Commission and the Environmental Protection Agency.

The issue of wetlands, floodplains, and riparian areas has been addressed in the Forest Plan, in Amendment 6 to the Forest Plan; in the Final Environmental Impact Statement, Vegetation Management in the Coastal Plain/Piedmont; and in Executive Orders 11988 (floodplains) and 11990 (wetlands). Mitigation measures for protecting these areas are based on the National Forests in Mississippi's "Management Guidelines for Streamside Areas" and are discussed in Appendix C of this document. Impacts related to water quality as a result of the "Proposed Action" can be found in Chapter 3.

Alternative 1 has no timber harvest or new road construction and in comparison with the other alternatives has no adverse effects to the existing water quality. All action alternatives incorporate and apply Forest Plan standards and guidelines for streamside areas. Streams within all action alternatives should be adequately protected from sedimentation and off-site effects by mitigation practices. Prescribed burning is prohibited in streamside areas. Mechanized equipment is generally prohibited within 33 feet of either side of the stream and exposure of more than 10% of mineral soil within 33 feet of either side of the stream is also prohibited.

Streamside buffer zones are reviewed and monitored by timber sale administrators. Whenever possible, buffer zones would be expanded to mitigate possible negative impacts from occurring. Harvest activities are restricted during the wet season as more sedimentation is likely to occur during heavy rainfall events. Water quality issues are handled by forest wide standard mitigation on all action alternatives.

Management actions such as timber harvest, road construction, and prescribed fire may result in increased sedimentation. Sedimentation may increase when vegetation is removed and bare ground is exposed. Alternative 4 would result in lower adverse effects than Alternatives 2, 3 and 5. In Alternatives 2, 3, and 5, seed tree regeneration cuts remove more vegetation and expose

more bare ground than Alternative 4. Additionally, Alternatives 2, 3, and 5 would cause more disturbances to the ground from machinery than Alternative 4, which may cause increases in sedimentation. Alternative 2 would cause more potential sedimentation than Alternatives 3 and 5. Alternative 3 would likely result in less sedimentation than Alternative 5 as there would be no removal of the understory vegetation caused by herbicide applications that would be used in Alternative 5. Alternative 5 would receive a herbicide application which would reduce understory vegetation.

In terms of water quality, Alternatives 2 and 5 would cause the potential of toxic herbicides reaching streams. Alternative 2 would cause more potential impacts than Alternative 5, as more herbicide would be applied, approximately 190 acres under Alternative 2, and approximately 118 acres under Alternative 5. People visiting the National Forest may be exposed to more herbicide under Alternative 2 than Alternative 5. Alternatives 3 and 4 have no herbicide applications.

All alternatives would be impacted the same in terms of sedimentation caused by fire as all action alternatives burn the same amount of acreage.

Issue 3. Air Quality

Smoke management and air quality procedures would be practiced in accordance with the Clean Air Act, the State Implementation Plan, and the Southern Forestry Smoke Management Guidebook. Further discussion of the effects of prescribed burning on air quality can be found on Page II-54 of the Final Environmental Impact Statement for Vegetative Management in the Coastal Plain/Piedmont, Volumes 1 and IV-106, 113. Impacts related to air quality as a result of the “Proposed Action” can be found in Chapter 3.

There is concern that management actions may negatively affect the air quality in the project area. Alternative 1 would not change the existing local air quality. Alternative 2-5 would have the greatest impact on air quality. All alternatives would have similar impacts from equipment usage and prescribed burns. All action alternatives would apply standard forest wide mitigation to protect air quality. State regulations and Federal laws that already exist govern this issue. Prescribed burns are conducted in compliance with the State of Mississippi air quality standards. Prescribed burns occur only when state issued permits are available. The permit system insures that total area pollutant outputs do not exceed the potential for dispersion of effects based on atmospheric conditions. These measures minimize impacts to local air quality and consider regional conditions. No part of the project area is expected to exceed air quality standards (NAAQS) or regulations established by the Clean Air Act of 1970.

Issue 4. Vegetation

The issue of old growth has been addressed in the Forest Plan (Forest Plan page 4-6). It requires that 2½% to 5% of each compartment be established as late seral. Providing some early seral habitat (even-aged management regeneration areas) in each entry would continue to diversify the age class structure across Analysis Unit 22 and across the Forest as a whole. Restoration activities associated with the “Proposed Action” would regenerate stands according to the desired future condition and terrain for the particular area and, in some cases, the previous forest type. Restocking guidelines can be found in Appendix C of this document. Pine monocultures are also prevented through the clearcut with reserves and seed-tree regeneration methods as sufficient space is also left between the reserve clumps and seed trees in order to create openings for pine regeneration yet maintain hardwoods and stand diversity.

Under the “Proposed Action”, the preservation of understory diversity, particularly that of softmast species, is outlined in the herbicide contracts and abided by the contractor and herbicide application crews. Early successional understory species, such as *Rubus spp.* and perennial grasses, would be prolific until being shaded out by the regenerating stand. Further discussion of the impacts of the “Proposed Action” on vegetation can be found in Chapter 3.

In terms of species composition, Alternative 1 would retain the existing forest stand types. With no management activities applied to forest stands in Alternative 1, the natural processes of tree growth would occur. If stands are not thinned, trees become less vigorous and more prone to disease and pine beetle attack. Whole stands could die which would result in no species composition. Even if stands do not succumb to diseases, late seral stands are subject to natural death of individual trees. The loblolly pine species has an average life span of 80 years. As trees die, openings are created in the forest and it is likely that many new trees would begin to sprout. However, without vegetation management such as prescribed fire and herbicides, understory vegetation increases. Understory vegetation competes with trees for sunlight, water, and nutrients. Again, trees are subject to death from the understory competition. Due to the constant management of timber stands since the 1930's, it would be difficult to predict the successfulness of a stand without applying vegetative control.

Issue 5. Forest Health

The “Proposed Action” would benefit forest health by removing trees from overstocked locations, thereby, reducing the risk of southern pine beetle infestation as outlined in the Environmental Impact Statement for Southern Pine Beetle Suppression. Diseased or damaged trees not expected to survive until the next entry would also be removed. By reducing stand density, this removal of trees would enhance diameter growth, as well (Smith, 1986).

Furthermore, herbicidal and other site-preparatory treatments associated with the “Proposed Action” would prevent the large-scale introduction of exotic species. The only partial cut at risk to blowdown would be the seed-tree regeneration method, and the residual trees are large enough

that windfirmness should not be a problem. Impacts related to Forest health as a result of the “Proposed Action” can be found in Chapter 3.

Forest health would be improved by removing trees from overstocked locations. Diseased or damaged trees not expected to survive until the next entry will be removed. Basal area will be reduced to a medium or low health risk level (risk due to infestation by southern pine beetle). Without regeneration of older forest stands, southern pine beetle potential could be more problematic, since 10-12% of the analysis area would still be at an age of high southern pine beetle risk, even with reduced basal area.

Alternatives 2, 3 and 5 would likely result in more species composition than Alternative 4, but all alternatives were developed to reduce the threat from Southern Pine Beetle. All alternatives except for alternative 4 include regeneration, which is intended primarily to remove mature loblolly pine and replace it with mixed pine. Because Alternative 2 has more regeneration than Alternatives 3 and 5, it is likely that more stands would be converted to mixed pine than in Alternatives 3 and 5. All alternatives include the use of prescribed fire, which will reduce the amount of ground fuels.

Issue 6. Threatened, Endangered, and Sensitive Species

Currently, according to the Biological Evaluation for Analysis Unit 22, only one threatened, endangered, and sensitive species (Red-cockaded woodpecker) exist in the Project Area. In addition, there are several state and Forest Service sensitive plants that occur within the analysis unit. These plant species would be protected by streamside management zones as they are associated with moist and streamside habitats. No management activities associated with the “Proposed Action” would occur within these areas. For further explanation of threatened, endangered, and sensitive species and the impacts of the “Proposed Action”, see Chapter 3 and the Biological Evaluation located in Appendix D of this document.

Issue 7. Management Indicator Species

The “Proposed Action” management activities would benefit all forms of wildlife. Most early seral management indicator and game species, particularly whitetail deer, would benefit from the availability of browse within the regeneration areas. These regeneration areas would also provide cover and bedding. Mid to late seral management indicator and game species would also benefit from the execution of the “Proposed Action”. Management actions would maintain and improve the habitat for these wildlife species through the thinning of older stands and the preservation of late seral stands in each compartment.

In terms of fragmentation, Analysis Unit 22 is already in a state of fragmentation based upon the extensive privately owned land located within the Project Area. Within the Analysis Unit, management activities generally occur in one concentrated area. The “Proposed Action” with its

approximately 292 acres of regeneration activities would, for a short time, further fragment the Project Area. Concerning the issue of open roads, only those through-roads needed for public travel would be maintained after the “Proposed Action” management activities had been implemented. The “Proposed Action” and its impact upon management indicator species are further discussed in the Chapter 3 of this document.

In terms of disturbance to nesting birds, timber harvest may disrupt nesting forest birds, including Neotropical migrants, by scaring off adults or directly destroying nests, eggs, or nestlings. Alternative 4 would result in fewer disturbances to nesting birds than Alternatives 2, 3 and 5. Alternatives 3 and 5 would have fewer disturbances than Alternative 2. Herbicides applied under Alternatives 2 and 5 may impact nesting birds with Alternative 2 having a greater potential than Alternative 5. Alternative 3 has no herbicide applications.

In terms of game species, management actions may affect populations of game species (deer, turkey, squirrel, quail, and ducks) in demand by the hunting public. Alternatives 2, 3, and 5 would benefit game species associated with early seral or edge habitat more than Alternative 4. Because Alternative 4 is intended to create a healthy mature forest, this alternative would benefit species associated with mature habitat more than Alternatives 2, 3, and 5. For a more detailed analysis, see Chapter 3.

Issue 8. Local Economics

The “Proposed Action”, through its management activities, would create business for those industries associated with the harvest and manufacture of wood products. The “Proposed Action” would also generate a large number of timber-related employment opportunities. Other than Alt. 2, the “Proposed Action” would return more to the county in the form of funding for schools and roads due to the amount of timber that would be harvested. Management activities associated with the “Proposed Action” are such that harvest levels would be close to sustained yield levels. Further discussion and the impacts of the “Proposed Action” on economics can be found in Chapter 3.

Issue 9. Recreation

Visual concerns along paved travel routes within the project area are minor and include numerous waste piles, the “Proposed Action” management activities within this area would be minor. Further mitigation to preserve the visual qualities of this area will be conducted according to streamside management zones and will be addressed in Chapter 3 of this document.

There is concern that management actions may change recreational settings within the project area. Recreational opportunities may decrease, change, or disappear. Alternative 1 would not change the current recreational settings or opportunities. Alternative 2 would have the greatest impact on recreational settings and opportunities due to the maximum amount of regeneration

cuts in this alternative. Regeneration cuts can change recreational settings drastically. Alternatives 3 and 5 would have similar effects as Alternative 2, but to a lesser degree. Alternative 4 would have the least impacts, as this alternative would thin only. Thinning would not change recreational settings as drastically as regeneration cuts. Recreation issues are handled by forest wide standard mitigation on all action alternatives.

Issue 10. Heritage Resources

A cultural resource reconnaissance report has been completed for Analysis Unit 22. Findings in the project area included a cemetery and several small sites. The Forest Archaeologist and the State Historic Preservation Officer both concluded that these areas be protected from management activities associated with the “Proposed Action”. Heritage resources are addressed in detail in Chapter 3 of this document.

Issue 11. Public Health and Safety

Mitigation measures involving herbicide application rates can be found in Appendices C and G of this document. These application rates are based according to guidelines set by the Nuclear Regulatory Commission and the Environmental Protection Agency. Impacts upon public health and safety resulting from the “Proposed Action” can be found in Chapter 3.

Issue 12. Civil Rights and Environmental Justice

The United States Department of Agriculture, Forest Service is a diverse organization committed to equal opportunity in employment and program delivery. The United States Department of Agriculture prohibits discrimination on the basis of race, color, national origin, sex, religion, age, disability, political affiliation and familial status. Impacts related to civil rights and environmental justice as a result of the “Proposed Action” are addressed in Chapter 3.

Comparison Table of Effects (Table 2.6)

Issue	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
<i>Compliant with Forest Plan</i>	No	Yes	Yes	Yes	Yes
1. Soil Disturbance					
Majority of the soils have high compaction potential	None	Yes	Yes	Yes	Yes
Increase in Erosion	None	1,132 tons	914 tons	440 tons	914 tons
2. Water Quality					
% Increase in sedimentation above PreEuropean baseline	378%	389.2%	388.8%	388.8%	388.8%
Impacts from Herbicides after mitigation	None	Low	Low	Low	Low
3. Air Quality					
Meets NAAQS	Yes	Yes	Yes	Yes	Yes
4. Vegetation					
% Analysis area in 0-10 age class in 5 years.	9%	22%	18%	9%	18%
Unfragmented acres 40+ years	857	547	698	857	698
Volume Harvested	0	23,305	18,582	11,265	18,582
Change in regen over last decade	0	+31 ac	-114 ac	0 ac	-114 ac
5. Forest Health					
SPB Risk to Stands after Treatment	High	Low	Low	Low	Low
Acres of Prescribed Fires affecting Treatment Units	0	560	519	519	519
6. TES Species					
<i>Impacts Redcockaded Woodpecker Habitat</i>	No	No	No	No	No
<i>Consistent with Louisiana Black Bear Management Handbook</i>	No	Yes	Yes	Yes	Yes
<i>Additional habitat for the Bachman Sparrow</i>	No	Yes	Yes	Yes	Yes
<i>Provides suitable habitat for the Javelin Crayfish</i>	Yes	Yes	Yes	Yes	Yes
<i>Provides suitable habitat for the Pearl Blackwater Crayfish</i>	Yes	Yes	Yes	Yes	Yes
7. Management Indicator Species					
Percent Habitat change to MIS Late Seral Habitat Species					

Issue	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
<i>Pileated Woodpecker</i>	(0)%	(-23)%	(-16)%	(0)%	(-16)%
<i>Red-cockaded Woodpecker</i>	(0)%	(-23)%	(-16)%	(0)%	(-16)%
<i>Fox Squirrel</i>	(0)%	(0)%	(0)%	(0)%	(0)%
<i>Pine Warbler</i>	(0)%	(-30)%	(-21)%	(0)%	(-21)%
<i>Gray Squirrel</i>	(0)%	(+2) %	(+2) %	(0)%	(+2) %
<i>Screech Owl</i>	(0) %	(0) %	(0) %	(0) %	(0) %
<i>Hooded Warbler</i>	(0) %	(0) %	(0) %	(0) %	(0) %
Percent Habitat change to MIS Early Seral Habitat Species					
<i>Bachman's Sparrow</i>	0	(+322%)	(+163)%	0	(+163)%
<i>E. Meadowlark</i>	0	(-44%)	(-56)%	0	(-56)%
<i>American Kestrel</i>	0	(+1400%)	(+364)%	0	(+364)%
<i>Rufous-sided Towhee</i>	0	(0)	(0)	0	(0)
Percent Habitat change to MIS Game Species					
<i>Whitetail Deer</i>	0	(+44%)	(+1)%	0	(+1)%
<i>Bobwhite Quail</i>	0	(-44%)	(-56)%	0	(-56)%
<i>Eastern Wild Turkey</i>	0	(-23%)	(-23)%	0	(-23)%
8. Local Economics					
County Returns	0	\$381,233	\$281,221	\$104,406	\$246,063
#Jobs that increase revenue to Local Businesses	0	212	169	102	169
Cost/Benefit Ratio	0	2.62	2.5	2.47	2.11
9. Recreation					
Increase Hunting Opportunities	None	Yes	Yes	Yes	Yes
Number of roads corridors affected by scenery change	0	3	3	1	3
10. Heritage Resources					
Stands with cultural sites	N/A	4	4	4	4
11. Public Health and Safety					
<i>Mitigation would be applied to keep herbicide applications from occurring near water</i>		Yes	Yes	Yes	Yes
12. Civil Rights					
Mgt. Actions Fairly Distributed	Yes	Yes	Yes	Yes	Yes
13. Minerals					
Impacts to Mineral Sites	No	No	No	No	No

Other Relevant Relationships (Table 2.7)

Issue	Proposed Action	No Action	No Herbicides	Thinning Only	Max Regen
Consistent w/ Forest Plan	Yes	No	Yes	Yes	Yes
Consistent with NFMA	Yes	No	Yes	Yes	Yes
Consistent with VMEIS	Yes	No	Yes	Yes	Yes
Consistent with RPA	Yes	No	Yes	Yes	Yes