Chapter 2 - Alternatives

INTRODUCTION

This chapter describes and compares the alternatives considered for the Armuchee Ridges Thinning & Restoration project. It includes a description of the alternative development process, including how public comments help formulate alternatives, alternatives considered but eliminated from detailed study and alternatives considered in detail.

Alternatives were designed with an interdisciplinary team approach considering the size and scope of the project, the purpose and need, unresolved public issues, and the expected environmental impacts. This chapter also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public.

All data values provided in this document are estimated based on the best available data at the time of this analysis.

ALTERNATIVE DEVELOPMENT PROCESS

Scoping

Scoping is the process of gathering comments about a site-specific proposed federal action to determine the scope of issues to be addressed and for identifying the unresolved issues, which are related to a proposed action (40 CFR 1501.7).

In November 2005, the Forest initiated an effort to identify opportunities across the Conasauga Ranger District, previously known as the Armuchee-Cohutta Ranger District, which would be consistent with vegetation management objectives identified in the Chattahoochee-Oconee National Forests Land and Resource Management Plan (Forest Plan). Referred to as the Armuchee-Cohutta Large Scale Assessment (LSA), this effort focused on identifying forest health and vegetation restoration activities.

The public was invited to participate in the LSA process in April 2006. Several public meetings were held, including field trips. Interest generated at the field trips resulted in additional trips to Experimental Forests to discuss topics such as oak regeneration, silvicultural treatments, riparian area management, prescribed fire, and water quality. Additional public meetings were held in September 2006 to present the results of the LSA.

The opportunities identified in the LSA were scoped to the public as the Armuchee-Cohutta Thinning and Restoration projects in December 2006. Eleven (11) responses were received as a result of the scoping process.

Issues Used to Formulate Alternatives

The purpose of soliciting comments during the scoping period is to determine whether there are any significant issues based on the proposed action. An issue is generally a point of discussion, considered in determining the final unresolved issues. Not all issues are significant issues.

Issues are significant because of the extent of their geographic distribution, the duration of their effects, or the intensity of interest or resource conflict. Once identified, the significant issues are used to formulate alternatives, prescribe mitigation measures, or analyze the environmental effects. Identified significant issues determine the scope (40 CFR 1508.25) of the environmental analysis. The disposition of comments received during the scoping period is found in Appendix 4. The unresolved issue is described below.

Issue: Harvesting of Mature Oak

Issue Statement: Harvesting as proposed would remove mature oaks causing an impact to wildlife habitat by reducing hard mast production.

Background: Fruits and nuts from trees provide important forage for wildlife species and are referred to as mast. Oak trees are an important source of hard mast in the Armuchee Ridges project area. This project includes proposals to restore species such as longleaf pine and shortleaf pine, which are not tolerant of shade. In order to achieve restoration objectives, mature oak trees would need to be removed because they create shade. Concerns were raised that harvesting as proposed would remove enough mature oak to impact mast production, which would have a negative impact on wildlife habitat.

Measurement: Changes in mast production (pounds/acre)

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

During initial planning and scoping, several alternatives to the Proposed Action were suggested and considered. The following is a summary of alternatives considered by the interdisciplinary team but eliminated from detailed study, along with the rationale for dismissal.

A. Scoping Proposal: In December 2006, the Conasauga Ranger District released a scoping letter for the "Armuchee Ridges Thinning and Restoration Project". The letter requested input on projects designed to improve forest health, restore native vegetation communities, and improve wildlife habitat over the next 5-10 years on the Armuchee and Cohutta Units of the Conasauga Ranger District. The entire original proposal was not brought forward in this EA to simplify cumulative effects analysis and to allow for further review of the Cohutta Unit projects. The District Ranger determined that the projects in the original proposal that were dropped from this analysis because they are not ripe for decision. Therefore, the original proposal was eliminated from detailed study.

B. Harvesting, But Retaining Mature Oak in Restoration Units: An alternative that would alter the scoping proposal so that no mature oak would be harvested in the stands proposed for longleaf, shortleaf and oak oak/pine restoration was considered. It was determined that this type of silviculture treatment on these sites would not move the stands towards the restoration

objectives, generally due to impacts on the growth and establishment of the planted seedlings. This alternative was eliminated from detailed study because restoration efforts without harvesting oaks on these sites to create an open canopy for restoration would be unsuccessful and impractical.

ALTERNATIVES GIVEN DETAILED STUDY

The following section gives a description of each alternative given detailed study, including a description of features common to alternatives. The numbers of acres or miles identified for activities have been identified from mapping and should be considered estimates based on available data. Maps of each action alternative are in Appendix 2 – Alternative 2, and Appendix 3 – Alternative 3.

A. No Action Alternative

The National Environmental Policy Act (NEPA) requires that an EA include a "no action" alternative to serve as a baseline to compare action alternatives. This alternative provides the decision-maker with a clearer basis for a reasoned choice among the alternatives studied in detail. It responds to the interest of individuals who do not want vegetation management to occur on National Forest lands and only want nature to influence change in the project area. It is based on the premise that ecosystems change, even in the absence of active management.

With the No Action Alternative, timber harvest and silvicultural treatments would be deferred until a later entry. Existing trends would be expected to continue. However, ongoing Forest Service permitted and approved activities would continue in the Armuchee Ridges project area.

Management activities such as road maintenance, fire suppression, hunting, fishing, and camping would continue to occur within the project area. Table 3.1 in Chapter 3 displays ongoing and reasonably foreseeable future actions that would be expected to occur under this alternative.

B. Proposed Action - Alternative 2

(1) **Restoration of mountain longleaf pine and shortleaf pine forests**

Approximately 623 acres would be restored to mountain longleaf pine and 30 acres restored to shortleaf pine under the Proposed Action. An estimated 2.5 miles of temporary road would be needed to provide harvesting and planting access for these stands. Table 2-1 summarizes the mountain longleaf and shortleaf pine proposals for Alternative 2, identifying specific locations.

Vegetation management treatments in these stands would involve harvesting to open up the stand canopy and allow for successful site preparation and planting increasing the successful establishment of mountain longleaf and/or shortleaf pine. Some residual hardwood trees would be retained within the treated areas to provide species diversity within the future stand and to provide a source of mast for wildlife. The featured hardwoods to be retained are oak and hickory.

After harvest in these stands and prior to planting, a growing-season prescribed burn (or site prep burn) would occur to prepare the site for planting, again either mountain longleaf or shortleaf pine, depending on the site suitability.

Approximately 3 years after planting, a dormant-season prescribed burn would occur in the stands selected for restoration of mountain longleaf to release the seedlings. Following a similar time interval of 3 years after planting, the stands restored to shortleaf would be released through mechanical methods, possibly using chainsaws or brush saws to reduce competing vegetation that is inhibiting the growth of the shortleaf pine.

Prescribed burns would take place every 3 to 5 years in these stands to restore the natural fire intervals found in the mountain longleaf and shortleaf pine ecosystems.

2. Restoration and maintenance of oak or oak/pine forests

Restoration of oak or oak/pine forests would take place on an estimated 520 acres and maintenance of oak or oak/pine forests would take place on 156 acres. An estimated 2.1 miles of temporary road would be needed to allow harvesting access for these stands. Table 2-1 summarizes the oak or oak/pine forest restoration and maintenance proposals for Alternative 2.

The stands identified for restoration of oak or oak/pine forests are primarily occupied by planted loblolly and natural Virginia pine, but also have a strong component of oaks. The desired condition is to transition these stands to an oak or oak/pine forest by reducing the density of loblolly and Virginia pine, and then introducing shortleaf pine into the stands by planting. This treatment would require harvesting using commercial thinning on an estimated 492 acres and then planting the areas with adequate canopy openings to shortleaf pine seedlings. One stand of 18 acres has been identified as too small in diameter for commercial thinning, requiring a pre-commercial thinning treatment on 10 acres; and a non-commercial thinning on the remaining 8 acres of older, non-merchantable trees.

Three years following the successful establishment of shortleaf seedlings a mechanical release would be planned, using hand tools. Once the shortleaf trees can withstand fire, usually around 6 to 8 years of age, a dormant season burn will help reduce competition and begin to restore the fire tolerant species associated with oak/oak-pine ecosystem. Prescribed burns would take place every 3 to 5 years thereafter, in these stands to continue the restoration of this native ecosystem.

Maintenance of oak/pine forests are identified for stands that have a good balance of oak and pine but contain loblolly and Virginia pine as opposed to shortleaf pine. This would be accomplished by commercially thinning an estimated 26 acres, and pre-commercially thinning 129 acres.

3. Pine thinning

Pine thinning would take place to improve the health of trees in over-crowded stands to decrease the risk of insect and disease infestation, particularly southern pine beetle. Stands targeted for

this treatment have a high component of loblolly pine and/or Virginia pine and range in age from 6-85 years. This would accomplished by reducing the stocking levels by 25-50%.

Commercial thinning of pine stands, through a timber sale, would take place on an estimated 5,427 acres. Approximately 18.6 miles of temporary road would be needed to allow harvest access for these stands. Pre-commercial thinning of stands with tree diameter less than commercial size (5 inches diameter at 4.5 feet high in pine, 6 inches in hardwood) will occur on about 350 acres. Stands identified for pre-commercial thinning will have stocking reduced through mechanical means and the stems will be left on site. Table 2-1 summarizes the pine thinning proposals for Alternative 2.

4. Riparian Hardwood Restoration

The Forest Plan has a specific goal under the topic Old Growth (page 2-17, Goal 21) that states, "Restore formerly existing old-growth community types (composition, not structure) where ecologically appropriate." Of the nine old growth community types identified in the Plan, Eastern riverfront forest is under-represented in the Ridge & Valley Ecological Section on the Chattahoochee-Oconee National Forests in Georgia. A stand along East Armuchee Creek, about 54 acres in size, was infested by southern pine beetle several years ago killing the mature yellow pines in the stand. The resulting stand contains a mix of upland hardwood and bottomland hardwoods, and offers an excellent opportunity to select desirable bottomland hardwood species and restore this valuable habitat and native forest community in the project area. Table 2-1 summarizes the riparian hardwood restoration proposal for Alternative 2.

Restoration of the native community will take time with this initial step requiring a non-commercial thinning of upland hardwoods to release targeted species such as box elder, maple, river birch, hornbeam, hickory, ash, butternut, black walnut, sweetgum, yellow poplar, blackgum, sycamore, black cherry, water oak, black willow and elm. The East Armuchee Creek site is heavy with briars and other thick undergrowth, thus a prescribed burn would take place to allow for physical access into the site to allow cutting of undesirable species.

Table 2-1: Alternative 2 - Summary of Proposed Treatments by Stand

Comp	Stand	Acres							Comments
		Comm. Thin	Regen. Harvest	Precom Thin	Noncom Thin	Growing Burn	Mech. Release	Dorm. Burn	
Mountain Longleaf or Shortleaf Pine Restoration									
922	27		37			37		37	Longleaf Restoration
923	14		35			35		35	Longleaf Restoration
924	18, 19, 43		54			54		54	Longleaf Restoration
932	11		57			57		57	Longleaf Restoration
933	1, 7, 12		176			168		168	Longleaf Restoration
935	18, 35		153			145		145	Longleaf Restoration
946	5, 7, 8, 17		111			111		111	Longleaf Restoration
946	29		30			30	30	30	Shortleaf Restoration
	Total	0	653	0	0	637	30	637	

Comp	Stand	Acres							Comments
		Comm. Thin	Regen. Harvest	Precom Thin	Noncom Thin	Growing Burn	Mech. Release	Dorm. Burn	
Oak and Oak/Pine Restoration or Maintenance									
916	16	14							Maintenance
917	32	12							Maintenance
917	22			13					Maintenance
939	9, 39			77					Maintenance
952	21, 25			40					Maintenance
917	8				8	8		8	Restoration
918	56			180				180	Restoration
922	35	56				56		56	Restoration
927	28	42				42		42	Restoration
927	4			10				10	Restoration
935	7	25				25		25	Restoration
943	4, 27	199				199		199	Restoration
	Total	348	0	320	8	330	0	520	
Pine Thinning									
915	2, 7, 10, 11, 16, 24	288							
916	4, 6, 13, 20, 21, 22, 23, 29, 35, 36, 38	802							
917	1, 3, 10, 11, 13, 14, 17, 34	125							
917	12, 19, 21			30					
918	15, 34, 35, 37	187							
922	29			32					
923	16, 17	59							
924	12, 13, 14, 22, 36, 39	476							
925	1, 3, 11, 11, 12,15, 16, 17, 22, 28, 31, 35, 44	932							
927	3, 7, 9, 10, 11,	437							

Comp	Stand	Acres							Comments
		Comm. Thin	Regen. Harvest	Precom Thin	Noncom Thin	Growing Burn	Mech. Release	Dorm. Burn	
	14, 17, 36, 37								
928	2, 6, 21, 26, 32, 38, 41, 44	313							
928	43			13					
929	7, 8, 11, 12	159							
931	1, 3, 4, 5, 8, 9, 10, 11, 12, 15, 17, 18, 19, 21, 22, 24, 25, 26, 28, 32, 34, 35, 39, 42, 44	855							
932	4, 7, 17	174							
932	12			37					
933	21, 31, 49, 50, 54	126							
933	10, 19, 23, 47, 52, 53, 54			221					
939	38	30							
940	4, 7, 9, 17	134							
943	8, 23, 31	54							
946	16, 27, 30, 40	176							
946	42			17					
952	7, 9, 11	100							
	Total	5427	0	350	0	0	0	0	
Riparian Hardwood Restoration									
925	7				54	54			SPB = Suppression of briars and brushy undergrowth to have physical access to trees
Totals by Treatments Proposed- Alternative 2									
	Total	5775	653	670	62	1021	30	1157	

Multiple timber sales would be the result of implementation of Alternative 2. Table 2-2 summarizes the anticipated entry years for timber sales for Alternative 2.

Table 2-2: Alternative 2 Timber Sale Entry Schedule

Year	Sale Name	Acres	Compartments
2008	Dry Slough	1124	922, 931, 932
2009	North Pocket	983	917, 927, 928, 929, 939
2010	Taylor Ridge	1094	932, 933, 935, 946
2011	Furnace Valley	539	915, 916, 917
2012	E. Arm. Creek	686	925
2013	E. Strawberry Mtn.	1246	918, 923, 924, 925
2014	Furnace Creek	561	916
2015	Hidden Creek	727	928, 940, 943, 952
	Total	6960	

Alternative 3- Minimized Harvest of Mature Oak

The intent of Alternative 3 is to address the public issue relating to harvesting of mature oaks in the project area. The mountain longleaf and shortleaf restoration and the oak-oak/pine restoration and maintenance proposals have the potential to remove mature oak trees from the stands in order to meet restoration or maintenance objectives. The objective of the pine thinnings is to remove of a portion of the pine component in the stands, not mature oak; although an incidental number of mature oak would be expected to be harvested during thinning activities as part of logging operations. In addition, the hardwood restoration proposal would not result in a large portion of mature oak being removed from the stand.

To reduce the harvesting of mature oaks, Alternative 3 would treat the stands identified for pine thinning and the stand identified for riparian hardwood restoration as described under Alternative 2- Proposed Action. Stands proposed for restoration of longleaf pine, shortleaf pine, and oak oak/pine would be dropped. Alternative 3 would include an estimated 5,428 acres of commercial thinning, 350 acres of pre-commercial thinning, and 54 acres of riparian hardwood restoration. Approximately 18.6 miles of temporary road would be included under Alternative 3. Table 2-3 summarizes the activities proposed by stand for Alternative 3.

Table 2-3: Alternative 3 - Summary of Proposed Treatments by Stand

Comp	Stand	Acres							Comments
		Comm. Thin	Regen. Harvest	Precom Thin	Noncom Thin	Growing Burn	Mech. Release	Dorm. Burn	
Pine Thinning									
915	2, 7, 10, 11, 16, 24	288							
916	3, 4, 6, 13, 20, 21, 22, 23, 29, 35, 36, 38	802							
917	1, 3, 10, 11, 13, 14, 17, 34	125							
917	12, 19, 21			30					
918	15, 34, 35, 37	187							
922	29			32					
923	16, 17	59							
924	12, 13, 14, 22, 36, 39	476							
925	1, 3, 11, 12, 15, 16, 17, 22, 28, 31, 35, 44	932							
927	3, 7, 9, 10, 11, 14, 17, 36, 37	437							
928	2, 6, 21, 26, 32, 38, 41, 44	313							
928	43			13					
929	7, 8, 11, 12	159							
931	1, 3, 4, 5, 8, 9, 10, 11, 12, 15, 17, 18, 19, 21, 22,	855							

Comp	Stand	Acres							Comments
		Comm. Thin	Regen. Harvest	Precom Thin	Noncom Thin	Growing Burn	Mech. Release	Dorm. Burn	
	24, 25, 26, 28, 32, 34, 35, 39, 42, 44								
932	4, 7, 17, 18	174							
932	12			37					
933	21, 31, 49, 50, 54	126							
933	10, 19, 23, 47, 52, 53, 54			221					
939	38	30							
940	4, 7, 9, 17	134							
943	8, 23, 31	55							
946	16, 27, 30, 40	176							
946	42			17					
952	7, 9, 11	100							
	Total	5428	0	350	0	0	0	0	
Riparian Hardwood Restoration									
925	7				54	54			SPB = Suppression of briars and brushy undergrowth to have physical access to trees
Total by Treatment Proposed- Alternative 3									
	Total	5428	0	350	54	54	0	0	

Multiple timber sales would be the result of implementation of Alternative 3. Table 2-4 summarizes the anticipated years for entry years for timber sales proposed in Alternative 3.

Table 2-4: Alternative 3 Timber Sale Entry Schedule

Year	Sale Name	Acres	Compartments
2008	Dry Slough	974	922, 931, 932
2009	North Pocket	923	917, 927, 928, 929, 939
2010	Taylor Ridge	693	932, 933, 935, 946
2011	Furnace Valley	539	915, 916, 917
2012	E. Arm. Creek	686	925
2013	E. Strawberry Mtn.	1012	918, 923, 924, 925
2014	Furnace Creek	561	916
2015	Hidden Creek	536	928, 940, 943, 952
	Total Acres	5924	

COMPARISON OF ALTERNATIVES

Table 2-5 summarizes and compares the effects of the alternatives considered in detail in the environmental assessment. Chapter 3 of this document contains a detailed discussion of these potential impacts by resource.

Table 8. Comparison of Alternatives

Item	Measurement	Alt 1: No Action	Alt 2: Thinning and Restoration (Proposed Action)	Alt 3: Thinning Only
Water Quality	Miles of Temp. Road Construction	0	23.2	18.8
	Number of Log Landings	0	232	198
Vegetation	Acres of Pine Stands Improved Health	0	5775	5775
	Acres of Oak/Oak-Pine Improved Health	0	156	156
	Acres of Mtn. Longleaf Restored	0	623	0
	Acres of Shortleaf Restored	0	30	0
	Acres of Oak/Oak-Pine Restored	0	520	0
	Ac. Riparian Restoration	0	54	54

Features & Mitigation Measures Common to All Action Alternatives

For each alternative and the proposed action, all applicable standards in the current Forest Land and Resource Management Plan would be applied. Examples of mitigation

- Each of the action alternatives requires temporary road construction, as follows: Identify existing access routes used in prior harvest operations, utilize to the extent possible to minimize construction of new routes. Temporary roads generally require about 18 to 20 foot of cleared vegetation and a finished road surface width (i.e. flat surface) of 12 to 14 feet. The grade of the road would typically be limited to less than 10 percent grade, and special approval would be required for any temporary roads exceeding 10 percent grade. Contract provisions would specify that the roads must be located in areas that require the least amount of cutting and would remain open for administrative purposes for the shortest amount of time possible to achieve project objectives. All temporary roads would be constructed and maintained with applicable Best Management Practices, and decommissioned by installing drainage structures and seeded after project implementation.

Mitigation measures to be applied for each alternative to minimize detrimental disturbance to soils in the project area include the following:

- For all timber management and silvicultural activities, Georgia's Best Management Practices for Forestry (BMPs) will be followed and all appropriate Forest Plan standards and guidelines will be applied. Timber harvesting, proposed in action alternatives, requires implementation through a Forest Service Timber Sale Contract which contains provisions to protect resources.

- Log landing and skid trail locations would be evaluated and approved by the Forest Service prior to harvesting in order to ensure that they are located in proper locations for drainage and away from sensitive soils or riparian areas.

- Skidding and decking would be limited to designated and approved routes along ridges and gentle slopes to protect sensitive soils.

- Operate ground-based equipment when soils are dry. Assess soil moisture during harvest operations to determine periods when equipment operations should be halted to minimize compaction and rutting.

- Skid trails, log landings, temporary road, or other areas of bare soil, would be seeded and fertilized as soon as practical after harvest activities have been completed to restore vegetation cover and reduce erosion. Install water bars on designated skid trails and temporary roads at the completion of the project to minimize erosion.

- Compacted soils on skid trails, temporary roads, and log landing would be ripped or tilled in areas of detrimental soil compaction to maintain soil quality standards and increase water infiltration.

- Sensitive soils discovered during layout of the timber sale units would be protected by restricting access or activities in these areas.

- In areas of past harvest, temporary roads and skid routes would be re-established on previous locations where possible, rather than constructing new ones. These roads and trails will be treated, during and after use, to restore hydrologic function and soil productivity. These access routes will be closed following the completion of timber harvest activities, unless needed for reforestation treatments.

- Soils with a moderate to severe soil compaction ratings will receive site preparation treatments when soils are dry. Soils are considered dry when rutting and/or equipment slippage is minimal.

Mitigation measures to protect heritage resources include:

- Historic properties and a minimum 50 ft protective buffer would be marked on-the-ground and excluded from project activities. Mitigation measures for previously recorded and newly recorded sites would be determined through SHPO and THPO consultation.

- All protected historic properties within the project's Area of Potential Effect will be monitored to ensure and document the effectiveness of mitigation measures.