Appendix C

Project Mitigation & Monitoring

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Standards, Guidelines & Mitigation Measures Applied to All Actions

These general mitigating measures apply to all management areas. A complete list of standard mitigation is provided in the Forest Plan and its amendments. For most activities, standard mitigations required in the Forest Plan maintain soil, water, visual and other standards. This appendix is intended to provide information on the implementation of management activities and mitigations.

Soil and Water

This project complies with State-approved "Best Management Practices" (BMP) during all activities in order to meet State water quality standards. Actual standards and guides as provided in the Forest Plan as amended exceed these standards. Protection within all streamside management zones (SMZ) is summarized in the specific areas of stream type as follows:

Perennial and Intermittent Streams Prohibitions

- Trees are not felled in stream except as necessary and prescribed for fisheries management.
- Slash is not allowed in streams.
- Rutting--a furrow, groove, or track made in the ground by the passage of a vehicle or vehicles--is not allowed. Wet weather and seasonal restrictions are provided and where damage occurs, rehabilitation is required.
- A filter strip is designated which is a minimum of 30 feet plus 1½ feet times the percent slope. Mechanized equipment activities are limited to designated stream crossings and activities that result in more than 10% soil disturbance.
- Necessary crossings built to standards in Forest service standard Specifications for Construction of Roads and Bridges.
- Filter zones are not prescribed burned. The forest plan does allow low intensity fires to back into these areas and extinguish to avoid unnecessary line construction.
- Woody understory is not removed within five feet of the bank. Streambank trees are not harvested.

Ephemeral Channels Prohibitions

- Rutting in the channel is prohibited as noted above. Wet weather and seasonal restrictions apply.
- Decks, roads, and log landings are not built in ephemeral channels except that roads can cross at designated locations.

The above standards are met through a combination of unit layout, contract specifications, and administration.

The district extends streamside management zone protection beyond standard mitigation required in the forest plan, and that shown to be effective in meeting soil and watershed protection standards. Lower impact management and different vegetative objectives are instituted within approximately two chains (132') of intermittent streams and approximately 3 chains (198') of perennial streams. The primary purpose of this mitigation is to protect riparian habitats, provide increased protection of special habitats (most sensitive plants on the Homochitto Ranger District are associated with shaded riparian zones), and to retain habitat for riparian dependent fauna. Potentially additional watershed protection is derived as an associated benefit.

Implementation of this mitigation is by prescribing a separate management prescription for streamside zones. Management prescriptions are established prior to any commitment of resources within a project area. Streamside management zone boundaries are painted or flagged during unit layout, and is readily visible as trees are marked and access is planned.

Erosion control measures and revegetation of sites with insufficient groundcover are required after harvest. This work is implemented as soon as possible after project activities. The timber sale contract will contain a clause to this effect, and certified timber sale administrators and inspectors will conduct monitoring for compliance and effectiveness of these and other site-specific soil mitigation measures. These Forest Service employees frequent the sites during and after activities, recording their findings in a "Timber Sale Spot Check" report. These records become part of the timber sale and silvicultural contracts, which are used to achieve the desired future conditions.

Visual Quality

Visually sensitive areas may require special care to reduce the visual impacts of removal. This may be accomplished by feathering edge lines between treated and untreated areas; cutting slash to lie on the ground, using a chipper/shredder, and/or removing slash; and protecting hardwood leave trees. Visual Quality Objective (VQO) is a term that describes or categorizes several levels of visual sensitivity. The most protective and least disturbing is "Retention" followed by "Partial Retention," "Modification," and "Maximum Modification."

Sites identified in the "Proposed Action" are located in an area identified as "Partial Retention," "Modification," or "Maximum Modification." Visually sensitive areas may require special care to reduce the visual impacts of removal. This may be accomplished by: feathering edge lines between treated and untreated areas; cutting slash to lie on the ground, using a chipper/shredder, and/or removing slash; and protecting hardwood leave trees. Visual Quality Objective (VQO) is a term that describes or categorizes several levels of visual sensitivity. The most protective and least disturbing is Retention, followed by Partial Retention, Modification, and Maximum modification.

Regeneration sites selected in the Proposed Action are located in an area identified as Modification or Maximum Modification. Mitigation for regeneration within these areas will be:

- Establish irregular stand shape avoiding straight lines or geometric forms except as necessary along land lines (follow natural land features).
- Reduce openings along roadways to as narrow as possible (1/4 mile preferred maximum).

Areas and stands selected for thinning have either a Modification or Maximum objective. Modification visual objective mitigation within these areas includes:

- Lop and scatter slash to within two feet of ground within 50 foot zone beyond ROW edge (in seen area). (Forest Plan 4-4)
- Direct felling cuts away from travelway or lake within lop and scatter zone and adjacent trees that may fall into lop and scatter zone.
- Log landings no closer than 200 feet from edge of travelway except where terrain or other resources dictate.

"Maximum Modification": No mitigation is required. However, slash treatment is applied to all areas adjacent to roads open to the public.

Mitigation of visual impacts will be accomplished through sale layout. The Forest Service approves locations of all landings, temporary roads, and skid trails prior to construction. This is required under the contract and implemented through required pre-entry meetings for each harvest unit, which are documented in the sale records. Certified timber sale administrators and inspectors will conduct monitoring of compliance and effectiveness of the mitigation measures listed above. These Forest Service employees frequent the sites during and after activities, recording their findings in a "Timber Sale Spot Check" report. These records become part of the timber sale and silvicultural contracts, which are used to achieve the desired future conditions.

3. In accordance with the terms of the "Memorandum of Understanding" with the State Historic Preservation Officer (SHPO), surveys for cultural resources have been conducted in all areas proposed for actions. Sites have been marked that require protection. All protected sites will appear as "Special Areas" on sale maps. Location of these sites is not public record, in accordance with the National Historic Preservation Act.

The frequent presence of timber sale administrators and inspectors insures compliance of the protection measures set forth, as well as initializing and ensuring site protection if previously undocumented archaeological or historical resources are encountered during project activities. If such undocumented cultural resources are identified, the administrator/inspector will require that all work in that area cease until the full nature and extent of the resources can be evaluated and consultation with SHPO can be completed. The timber sale contract will contain a clause to this effect to ensure the cooperation of contractors with the protection measures.

Improvements

The Forest Service approves locations of all landings, temporary roads and skid trails prior to construction. This is required under the contract and implemented through required pre-entry meetings for each harvest unit.

Erosion control measures and revegetation of sites with insufficient ground cover are required after harvest. This work is implemented as soon as possible after project activities. The timber sale contract will contain a clause to this effect.

Roads, trails, ditches, and other improvements in the project area maintained free of logs, slash, and debris. Any damage is promptly repaired. Protection of improvement is provided under the contract.

Existing roads or access ways are used whenever possible. The environmental assessment indicates that construction is typically only used to provide access where rights-of-way cannot be obtained on the historic access route. This is implemented through the planning process and documented in an environmental assessment. The timber sale contract specifies work to be done under the contract on all roads to be constructed or reconstructed. Road plans are provided as an attachment to the contract. A "plan in hand" conducted prior to the completion of the contract insures and documents that the road meets standards and the needs of the project. Engineering personnel inspect the work to insure that specifications are met and that implementation complies with the design and contract.

Contracted miles may not correspond with the amounts of construction and reconstruction identified in the environmental assessment. Typically roads are "spot reconstructed." Road lengths between reconstructed sites are maintained to a level, which would otherwise be identified as purchaser maintenance. Purchaser maintenance may include surfacing (addition of new gravel) brushing and clearing, grading, drainage improvements and additions, and other work. Reconstruction more typically refers to adjusting grade, minor relocations, replacing major crossings, and similar work. To avoid conflicts between maintenance contractors and reconstruction contractors, maintenance requirements for roads that require construction, reconstruction, or spot reconstruction are performed under the contract. The level of work remains maintenance as analyzed under Chapter 3. The contract represents only an administrative control process, and does not change the actual impacts to be analyzed.

Temporary roads are returned to forest after use as part of the project work. These actions are accomplished through the revegetation and erosion control clauses in the timber sale and silvicultural contracts, which are used to achieve the desired future conditions. Certified timber sale administrators and inspectors will conduct monitoring of compliance and effectiveness of this mitigation measure. These Forest Service employees frequent the sites during and after activities, recording their findings in a "Timber Sale Spot Check" report.

Threatened or Endangered Species

Potential effects on threatened or endangered species are assessed in the Biological Evaluation. Monitoring included a survey of all suitable habitats on an approximately 10-year interval to determine if undiscovered clusters are present, annually monitoring, conducting a population census, and performing maintenance at all known locations, banding fledglings to the extent possible, and tracking banded fledglings to the extent possible. Monitoring is completed through sale administration (oversight of timber sale administrators and inspectors, and documentation) to ensure that the mitigation measures written into the Environmental Assessment and any contracts takes place.

Unit Location and Size

Correct unit location and size are determined by surveying areas with global positioning system (GPS) units or string box after layout. Differences in location and size are analyzed. Several factors affect implementation size.

- Mitigation acres: Coordination, such as streamside zones, is included within the stands and total stand acres. This is estimated at 15%-20% for stands over 20 acres. Adjustments in treated acres could have a 5% error.
- Topological displacement: When compared to photos, there is considerable displacement of features such as streams and ridges, when compared to the base layer data from the United States Geological Survey topographical map. Until ortho-photos or other technology is available on the District, the base layers are the only means of passing information to layout personnel or the public. An example of the magnitude of this error is provided by analysis of a large lake currently under construction. The District Computed acreage of the lake using topographical elevations from our GIS layers (USGS Topography). The shoreline analysis indicated a lake acreage of approximately 1200 acres. A controlled cadastral survey was performed to identify the exact shoreline location for clearing the lakebed. The acreage calculated from this controlled survey was just under 1000 acres. The USGS topography lines generated an error of about 20%. An acreage error of + or – 20% would be within the expected range of a site specific project where a known area was being analyzed.
- Man made feature displacement: When compared to photographs, there is considerable displacement of man made or drawn features such as roads and stand lines. The primary basis for this is that the topographical maps show roads down centers of ridges. Stand lines are placed at center of ridges or down drainages. Topographical line displacement as noted above adds error. Also, features with substantial on-the-ground curvature are relatively straight on the maps, and a pencil line width is approximately 66 feet or one chain.
- Thinning reductions due to need: Many stands prescribed for thinning have uneven density distribution. If dense clumps are distributed over much of the stand, the entire stand acres are included in the estimate. However, during layout, areas may be found that can be excluded. This is an administrative rather than environmental decision. Activities cannot exceed total stand acres.

Reducing the acreage does not necessarily affect forest product estimates, which are based upon actual counts of trees to be thinned based upon field inventory. Thinning is a forest health treatment. The desired future condition is fully met if all areas needing thinning receive the treatment. Thinning a smaller area does not affect a finding of no significant impact on a larger area.

The second and third error noted above can add or subtract considerable acreage depending upon the size, shape, and boundary features of a stand. Very small stand (20 acres or less) are more affected because small shifts produce a large percentage. Errors from 10% to 25% are reasonable depending upon size and shape. The benefit of using topographical features is that even though there may be displacement between the map and ground, roads, streams, well-defined ridges, and drainages can all be easily and reliably be identified on the ground. Both managers and the public can use the maps to locate the actual treatment area. The area analyzed is the identifiable land area between these identifiable features. Even though the acres may vary somewhat, the analysis considers the treatment area. In a large project with a number of units, displacement compensates. Plus or minus 10% would be a reasonable error in estimating forested track size.

To effectively implement and track the mitigations listed above, which are associated with contract requirements, the timber sale contract contains specific language requiring protection as noted above as well as other measures as needed. These requirements are reviewed with the purchaser during the required pre-entry meeting at the beginning of each sale and again at pre-entry meetings for each harvest unit. Implementation monitoring is through sales administration to insure compliance, and documented on "Timber Sale Spot Checks" and timber sale inspection reports.

Residual Trees

In typical thinnings, trees can be designated in a manner that will provide access for equipment. Since the trees to be removed in this project are down or damaged, long length will be limited to 40 feet to reduce the potential for skidding damage to residual trees. Damage or removal of a protected tree is forbidden, and penalties for such action are included in the timber sale contract. This requirement will be placed in the timber sale contract, and enforced by the sales administrator. Documentation will be recorded in the diaries prepared at each site visit, and filed in the sale folder.

Prescribed Burning

Prior to conduction a prescribed burn, a burn plan is developed and documented by the district Fire Management Officer. This plan identifies areas to be protected, parameters under which a burn can be initiated, and contingency plans, as well as other specific data and requirements. This plan is reviewed and signed prior to ignition. The burn plan and firing parameters must comply with the requirements of the State of Mississippi Forestry Commission, and no prescribed burns are initiated without first obtaining a burning permit from the State. Inherent in the permitting system is the protection of air quality

standards and public safety. The district Fire Management Officer, through post-burn checks to ensure that the desired results are achieved, carries out implementation monitoring of prescribed burning. Close compliance with standards is assured through supervision and review of performance.

Implementation, Validation, and Project-specific Effectiveness Monitoring

Monitoring activities are divided into several broad categories: Forest Plan monitoring, routine implementation monitoring, validation monitoring, and project-specific effectiveness monitoring. The National Forest Management Act requires that National Forests monitor and evaluate their forest plans (36 CFR 219.11). The Forest Plan (Chapter 5) includes the monitoring and evaluation activities to be conducted as part of Forest Plan implementation. Monitoring requirements in Chapter 5 of the Forest Plan would be met under all alternatives.
Validation monitoring is considered longer-term research data collection to verify if implementation and effectiveness monitoring assumptions remain valid; no validation monitoring is scheduled for this proposal.

Routine implementation monitoring is conducted as part of the administration of a timber sale contract. Trained timber sale administrators and road inspectors ensure that standards and guidelines are being met. Trained State and federal wildlife biologists and botanists would accomplish plant and wildlife monitoring. Soil Scientists would monitor soils and soil properties including productivity. Monitoring would ensure that the appropriate standards and guidelines and mitigation measures are followed to protect water quality, heritage resources, wildlife habitat, and other natural resources.

Monitoring actions that will be developed within this project will gauge the success of implementation actions and identify the effectiveness the actions and mitigation that is completed. Most activity will be documented concurrent with monitoring during the administration of the contract by the sale administrators, contract officer representatives (CORs), and inspectors.

Prior to implementing regeneration, actual harvest areas, exclusive of external coordination such as SMZ areas, is measured by GPS or string box survey. This area is compared to the analyzed acreage in accordance with OIG guidelines, and based upon the above, expected variations. Greater differences in acreage are reviewed to determine the cause. The governing consideration is the area within identified ground features, and allocation to streamside zones and other special protection areas within those specific features. In the absence of regeneration or well-defined thinning areas, generalized area estimates are considered adequate for this project.

The district has conducted water quality and aquatic habitat monitoring of a number of major streams on an approximately 5-year interval for the past 10 years. Data indicates the presence of multiple management indicator species in all monitored streams. These streams are representative of most streams on the Homochitto National Forest and

provide information that can be compared to activities within the watershed and accurately assess the potential for maintaining water quality and aquatic habitat.

Avian management indicator species are monitored annually through a series of breeding bird survey listening points. The total number of listening points is approximately 260 for the District. In a typical year, 160 to 180 points are surveyed. Points are representative of all habitat types and are well distributed across the District. The District conducts an annual turkey brood survey by recording employee sightings. Records are maintained on the district. Northern bobwhite and Eastern wild turkey research is ongoing on the District. Information is analyzed for trends that might lead to declines or listing. Annual surveys represent implementation monitoring. Substantial information is also available from breeding bird survey routes in the vicinity of the Homochitto National Forest.

A continuous monitoring record is maintained for each RCW cluster. All habitat within a project area is inventoried for undiscovered clusters each time a proposal is expected to remove trees associated with habitat. This continuous monitoring program represents implementation monitoring. Annual monitoring records are maintained and the results reported in the annual Monitoring and Evaluation Report for the National Forests in Mississippi. This is a published document made available to the public upon request.

Additional validation monitoring is not being identified for this project at this time. Should issues arise during review of the environmental assessment or if concerns arise at a later date that would be recognized as a need for long-term research, this type of monitoring may be considered.