



**FOREST SERVICE HANDBOOK  
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**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 - FOREST VEGETATION RESOURCE PLANNING**

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**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

**Table of Contents**

60.1 - Authority.....	4
60.3 - Policy .....	4
60.5 - Definitions .....	5
60.6 - References .....	8
<b>61 - IDENTIFICATION OF LANDS AS NOT SUITABLE AND SUITABLE FOR TIMBER PRODUCTION .....</b>	<b>8</b>
61.1 - Lands Not Suited for Timber Production .....	8
61.11 – Lands on which Timber Production is Prohibited or Withdrawn .....	10
61.12 – Lands on which Timber Production is Not Compatible with the Achievement of Desired Conditions and Objectives.....	10
61.13 – Lands on which Technology to Harvest Timber is Not Currently Available without Causing Irreversible Damage.....	10
61.14 – Lands on which There is No Reasonable Assurance that Lands can be Adequately Restocked within Five Years of Final Regeneration Harvest.....	10
61.15 - Land that is Not Forest Land .....	11
61.2 - Lands Suited for Timber Production and Display of Suitability of Lands for Timber Production. ....	11
61.3 - Review of Lands Not Suited for Timber Production.....	12
<b>62 - Plan components FOR LANDS SUITABLE FOR TIMBER production.....</b>	<b>13</b>
<b>63 - PLAN COMPONENTS FOR TIMBER HARVEST FOR PURPOSES OTHER THAN TIMBER PRODUCTION.....</b>	<b>13</b>
<b>64 - Limitations on timber harvest. ....</b>	<b>14</b>
64.1 - No Timber Harvest for the Purpose of Timber Production on Lands not suited for timber production.....	16
64.2 – Timber Harvest Cannot Occur If It Leads to Irreversible Damage .....	16
64.3 – Timber Harvest Must Be Consistent With Other Resource Protection .....	16
64.4– Limits on Maximum Size of Created Openings .....	17
64.41 - Standards for Exceptions to Exceed Opening Size Limits .....	17
64.42 - Notification and Review to Exceed Opening Size Limits on an individual Timber Sale Basis .....	18
64.43 - Catastrophic Conditions Allow Exceeding Opening Size Limits .....	18
64.5 - Timber Harvest Limitations from the NFMA .....	18
64.51 - NFMA Limitations Applicable to All Timber Harvest .....	19
64.51a – Soil, Slope, or Other Watershed Conditions .....	19
64.51b – Assurance of Adequate Restocking Within Five Years After Harvest.....	19
64.51c – Protection of Aquatic and Riparian Resources .....	21
64.51d – Selection of Harvesting System .....	21

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

64.52 - NFMA Limitations Applicable to Even-Aged Timber Harvest .....	21
64.52a – Clearcutting and Other Even-aged Cutting Methods .....	22
64.52b – Interdisciplinary Review .....	23
64.52c - Cuts Shaped and Blended with Natural Terrain .....	24
64.52d – Maximum Size Limits.....	25
64.52e – Consistency with resource protections.....	25
64.6 - Limiting the Quantity of Timber that can be removed.....	25
64.61 - Long-term Sustained-yield Capacity .....	27
64.62 – Timber Sale Program Quantity, Planned Sale Quantity, and Quantity of Timber Sold .....	28
64.63 - Departure from Long-term Sustained-yield Capacity .....	29
64.64 - Utilization Standards .....	30
64.7 - Culmination of Mean Annual Increment of growth.....	30
<b>65 - LAND MANAGEMENT PLAN GUIDANCE .....</b>	<b>32</b>
65.1 - Proposed and Possible actions, Vegetation Management, and Timber Sale Program Quantity (TSPQ).....	32

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

This chapter provides procedural direction for the evaluation of timber and forest vegetation resources and the development of plan components in forest, grassland, and prairie, or other comparable administrative unit plans. This handbook provides guidance in a sequence that follows 36 CFR 219.11 and includes:

1. Identification of lands as not suited and suited for timber production.
2. Timber harvest for purposes of timber production
3. Timber harvest for purposes other than timber production
4. Limitations on timber harvest.
5. Proposed and possible actions including planned timber sale program, expected timber harvest levels, and probable methods of forest vegetation management practices.

**60.1 - Authority**

The following law and regulation set forth the requirements for Forest Service planning:

Renewable Resource Planning Act of 1974 as amended by the National Forest Management Act of 1976, 16 U.S.C. 1600 et seq. This act as amended sets forth the requirements for plans (for the National Forest System). See FSM 1920 for specific requirements.

Title 36, Code of Federal Regulations, Part 219—Planning, Subpart A—National Forest System Land Management Planning (36 CFR part 219), published in the Federal Register on April 9, 2012 (77 FR 21162). This regulation provides direction on land management planning procedures on National Forest System (NFS) lands.

**60.3 - Policy**

Harvest of timber on NFS lands occurs for many different reasons, including ecological restoration, community protection in wildland urban interfaces, habitat restoration, protection of municipal water supplies, and to contribute to economic sustainability through the production of timber, pulp for paper, specialty woods for furniture, and fuel as a renewable energy source. Timber harvest, whether for wood production, restoration, or other reasons supports local employment and provides payments by way of 25-percent payments (Payments to States) in many counties throughout the country.

Use this chapter in concert with Title 36, Code of Federal Regulations, part 219 (36 CFR part 219), the National Forest Management Act Title 16 U.S.C. sections 1604 and 1611, FSM 1900, and FSM 1920 (NFMA). Timber resource planning objectives, policies, and responsibilities are found in FSM 2410. Guidance on the development of plan components for vegetation is found throughout Chapter 20 of FSH 1909.12 and specifically for timber in section 27.22f.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

This chapter provides guidance for developing land management plans, rather than guidance for individual projects. All projects and activities must be consistent with applicable plan components.

Compile all data consistent with the reporting requirements of the official Forest Service applications, the Timber Information Manager (TIM) and the Forest Service Activity Tracking System (FACTS), to report timber resource activities and timber sale accomplishment.

**60.5 - Definitions**

Culmination of mean annual increment of growth. See Mean Annual Increment of growth.

Even-aged stand. A stand of trees composed of a single age class (36 CFR 219.19).

Even-aged system. A planned sequence of treatments designed to maintain and regenerate a stand with predominantly one age class. The range of tree ages is usually less than 20 percent of the rotation. Treatments include clearcutting, seed-tree, shelterwood, and coppice regeneration methods.

Final regeneration harvest. Timber harvest designed to regenerate a timber stand or release a regenerated stand. A final regeneration harvest could be a clearcut, removal cut of a shelterwood or seed tree system, or selection cut.

Forest land. Land that is at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for non-forest uses. Land developed for non-forest use includes areas for agricultural crops, improved pasture, residential or administrative areas, roads of any width and adjoining road clearing, and powerline clearing of any width (36 CFR 219.19).

Fuelwood. Wood used for conversion to some form of energy.

Growing stock. All trees growing in a forest or in a specified part of it, usually commercial species, meeting specified standards of size, quality and vigor, and generally expressed in terms of number or volume.

Land that may be suitable for timber production. A preliminary classification in the process of determining lands that are suited for timber production. It excludes NFS lands that have been classified as not-suitable for timber production based on the factors identified in 36 CFR 219.11 (a)(1)(i, ii, iv, v and vi) and precedes evaluation of CFR219.11 (a)(iii) which identifies suitability based on objectives and desired conditions established by the plan for those lands.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

Long-term sustained-yield capacity (LTSYC). The LTSYC is the amount “which can be removed from [a] forest annually in perpetuity on a sustained-yield basis” described in 36 CFR 219.11(d)(6).

Mean annual increment and culmination of mean annual increment of growth. The mean annual increment of growth is the total increment of increase of volume of a stand (standing crop plus thinnings) up to a given age divided by that age. The culmination of mean annual increment (CMAI) of growth is the age in the growth cycle of an even-aged stand at which the average annual rate of increase of volume is at a maximum. In land management plans, the mean annual increment of growth is expressed in cubic measure and is based on the expected growth of stands, according to intensities and utilization guidelines in the plan (36 CFR 219.19).

Non-forest Land. Lands that do not meet the definition of forest land.

Planning Horizon. The overall time period that spans all activities covered in the analysis or plan and all future conditions and effects of proposed actions that would influence the planning decisions. The planning horizon for analysis purposes indicates the length of time needed to achieve desired conditions.

Planned Sale Quantity (PSQ). The portion of the Timber Sale Program Quantity (TSPQ) that is the quantity of timber planned for sale that meets applicable utilization standards. The PSQ is used to evaluate the relationship between the planned timber sale program and the long term sustained yield capacity. Like the TSPQ, the PSQ includes volume from timber harvest for any purpose from all lands in the plan area and is consistent with the plan components. The PSQ is based on the fiscal capability and organizational capacity to achieve the desired conditions and objectives in the plan for the plan period.

Restocked. The condition to be achieved after a disturbance that has substantially altered the existing stocking. “Adequately restocked” indicates a minimum stocking level to be achieved consistent with the desired conditions and objectives of an area including those for ecological integrity.

Rotation. The number of years (including the regeneration period) required to establish and grow timber under even-aged management system to a specified condition or maturity for regeneration harvest.

Salvage harvest. The removal of dead trees or trees damaged or dying because of injurious agents other than competition, to recover economic value that would otherwise be lost.

Stand. A contiguous group of trees sufficiently uniform in age class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit, such as mixed, pure, even-aged, and uneven-aged stands.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

**Stocking.** An indication of growing space occupancy relative to a pre-established objective based on plan defined desired conditions for the stand or area. Common indices of stocking include the number of trees by size and spacing, percent occupancy, basal area, relative density or crown completion factor.

**Suitability of lands.** Specific lands within a plan area are identified as suited for various multiple uses or activities based on the desired conditions applicable to those lands. The plan will also identify lands within the plan area as not suited for uses or activities that are not compatible with desired conditions for those lands (36 CFR 219.7(e)(1)(v)). The terms suitable and not suitable can be considered the same as suited or not suited respectively.

**Timber harvest.** The removal of trees for wood fiber use and other multiple-use purposes (36 CFR 219.19).

**Timber production.** The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use (36 CFR 219.19).

**Timber sale program quantity (TSPQ).** The estimated output of timber and all other wood products from the plan area displayed as an average annual cubic foot number for a decade. The TSPQ includes volume that meets utilization standards (Planned Sale Quantity) such as sawtimber, pulpwood or other material commonly sold as well as other woody material such as fuelwood, firewood or other woody material that is also expected to be available during the plan period. The TSPQ includes volume from timber harvest for any purpose from all lands in the plan area and is consistent with the plan components. The TSPQ is based on fiscal capability and organizational capacity to achieve the desired conditions and objectives in the plan for the plan period.

**Two-Aged System.** A planned sequence of treatments designed to regenerate or maintain a stand with two age classes. Cuts in two-aged systems are a form of even-aged management.

**Uneven-aged Stand.** A stand of trees of three or more distinct age classes, either intimately mixed or in groups.

**Uneven-aged system.** A planned sequence of treatments designed to regenerate or maintain a stand with three or more age classes. Treatments include single-tree selection, and group selection regeneration methods.

**Utilization standards.** Utilization standards are specifications for merchantable forest products offered in a timber sale. Utilization standards identify timber that is included in the long term sustained yield capacity and planned sale quantity.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING****60.6 - References**

1. FSM 1900 – Planning. Provides the foundation for all planning in the Forest Service and addresses long-term and short-term strategic, tactical, and project planning to ensure integration and coordination at all levels and within all organizational units.
2. FSM 1920 – Land Management Planning. Provides for integrated resource planning through development, amendment, and as appropriate, revision of land management plans, hereinafter referred to as plans.

**61 - IDENTIFICATION OF LANDS AS NOT SUITABLE AND SUITABLE FOR TIMBER PRODUCTION**

The general requirement of the rule regarding the suitability of lands for a use or uses is at section 219.7 (c) of the rule:

**(2) In developing a proposed new plan or proposed plan revision, the responsible official shall . . .**

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**(viii) Identify the suitability of areas for the appropriate integration of resource management and uses, with respect to the requirements for plan components of §§ 219.8 through 219.11, including identifying lands which are not suitable for timber production.**

When the responsible official develops or revises a land management plan the responsible official shall review lands within the plan area to identify their suitability for timber production. For a plan amendment, the responsible official may conduct a review of lands suitable for timber production if relevant to the issues of the amendment. The results of this review should be summarized in a table based on section 61, exhibit 01, in the plan or an appendix to the plan.

Identifying lands in the plan area as suited or not suited for timber production requires a specific process set out in the subsections of this section.

**61.1 - Lands Not Suited for Timber Production**

Section 219.11 (a)(1) of the planning rule lists six factors to be used to identify lands in the plan area that are not suited for timber production. This section presents the planning rule factors, and next to each a cross-reference to the subsection of this section that contains more detail on the factor.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING****219.11 Timber requirements based on the NFMA.**

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**(a) *Lands not suited for timber production.* (1) The responsible official shall identify lands within the plan area as not suited for timber production if any one of the following factors applies:**

**i. Statute, Executive order, or regulation prohibits timber production on the land;** (sec. 61.11)

**ii. The Secretary of Agriculture or the Chief of the Forest Service has withdrawn the land from timber production;** (sec. 61.11)

**iii. Timber production would not be compatible with the achievement of desired conditions and objectives established by the plan for those lands;** (see sec.61.12)

**iv. The technology is not currently available for conducting timber harvest without causing irreversible damage to soil, slope, or other watershed conditions;** (see sec. 61.13)

**v. There is no reasonable assurance that such lands can be adequately restocked within 5 years after final regeneration harvest; or** (see sec. 61.14)

**vi. The land is not forest land.** (see sec. 61.15)

To identify lands not suited for timber production, the following two-step process should be used:

1. Identify lands that are not suited for timber production based on legal and technical factors i, ii, iv, v and vi, further described in 61.11, 61.13-15. The remaining lands that are not removed at this step are lands that may be suited for timber production.
2. From the lands that may be suited for timber production, identify the lands that are suited for timber production based on their compatibility with the land area's desired conditions and objectives (sec. 61.2). After lands suited for timber production have been identified, the remaining lands that may be suited for timber production are identified as not suited for timber production since timber production is not compatible with the land area's desired conditions and objectives (36 CFR 219.11(a)(1)(iii)).

The plan must identify the lands that are suited and not suited for timber production using an exhibit as shown in exhibit 01. Keep details on the criteria used, methods, and lands identified in the planning record and summarize this information in an appendix to the environmental impact statement or appropriate environmental documentation for a plan amendment. Information developed in the planning process on lands suited and not suited for timber production should be

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

developed with sufficient detail in the planning record to be compatible with the national land suitability classification system for timber production.

**61.11 – Lands on which Timber Production is Prohibited or Withdrawn**

Timber production may be prohibited on certain lands by statute, Executive order, or regulation, or where the Secretary of Agriculture or the Chief of the Forest Service has withdrawn the land from timber production (see 36 CFR 219.11(a)(1)(i-ii) and FSM 1921.12). Examples include units of the National Wilderness Preservation System, research natural areas, and other designated areas (see 36 CFR 219.19 and FSH 1909.12, ch. 20) where timber production is specifically prohibited. Identify these lands as lands not suited for timber production.

**61.12 – Lands on which Timber Production is Not Compatible with the Achievement of Desired Conditions and Objectives**

The responsible official shall review the desired conditions and other plan components, including those developed in accordance with 36 CFR 219.8-10 and FSH 1909.20, for lands that may be suitable for timber production. If timber production would not be compatible with one or more desired conditions or other plan components, then those lands are not suitable for timber production. See section 61.2 for further discussion on lands suitable for timber production.

**61.13 – Lands on which Technology to Harvest Timber is Not Currently Available without Causing Irreversible Damage**

The responsible official should develop criteria to identify lands that are not suited for timber production because technology to harvest timber without causing irreversible damage is not currently available. Relevant information such as soil maps, geological maps, and remote sensing products as well as information from the Terrestrial Ecological Unit Inventory (TEUI) or the Soil Resource Inventory (FSM 2550), may be used to assess soil vulnerability to physical, chemical, and biological damage. The information can be used to determine where it is not possible to carry out timber harvest activities without irreversible resource damage to soil, slope, or other watershed conditions.

**61.14 – Lands on which There is No Reasonable Assurance that Lands can be Adequately Restocked within Five Years of Final Regeneration Harvest**

The responsible official should identify criteria for what constitutes adequate restocking after final regeneration harvests to identify lands not suited for timber production. The responsible official should identify lands, which would not have a reasonable assurance of achieving such adequate restocking.

The responsible official should base the criteria for adequately restocked stands, and reasonable assurance of achieving this adequately restocked condition, on existing technology and knowledge. Best available scientific information and professional experience provide the basis

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

for determining whether the practices that could be used on the land are likely to achieve adequate restocking of the area. Reasonable assurance applies to average and foreseeable conditions for the area and does not constitute a guarantee that reforestation would be successful. Relevant information such as most recent soil maps, geological maps, TEUI and monitoring results may be used to identify lands within the planning area where there is no reasonable assurance that the land can be adequately restocked within five years after final regeneration harvest.

**61.15 - Land that is Not Forest Land**

The responsible official should identify non-forest lands within the plan area. Non-forest lands are those lands that do not meet the definition of forest land. These lands are less than 10 percent occupied by forest trees of any size or that formerly had such tree cover and is currently developed for non-forest uses. Land developed for non-forest use includes areas for agricultural crops, improved pasture, residential or administrative areas, improved roads of any width and adjoining road clearing, and powerline clearing of any width (36 CFR 219.19). Lands that were formerly occupied by tree cover, but that do not presently have tree cover, should be identified as nonforest unless the land will be naturally or artificially regenerated into forest cover in the future. Mapping should be consistent with regional mapping standards. Canopy cover of live forest trees at maturity occupying an area may be used to estimate if an area is at least 10 percent occupied by forest trees (FSM 1905). For mapping purposes or calculating land area, unimproved roads, trails, intermittent or small perennial streams, and clearings in forest areas may be included as forest land if they are less than 120 feet in width.

**61.2 - Lands Suited for Timber Production and Display of Suitability of Lands for Timber Production.**

After the step one identification of lands that may be suitable for timber production (sec. 61.1), the second step is to determine which of these lands are suited for timber production based on compatibility with desired conditions and objectives. In this determination, consider timber production to be compatible with the desired conditions and objectives of the plan, if all five of the following criteria apply:

1. Timber production is a primary or secondary use of the land.
2. Timber production is anticipated after desired conditions have been achieved.
3. A flow of timber can be planned and scheduled on a reasonably predictable basis.
4. Regeneration of the stand is intended.
5. Timber production is compatible with the other desired conditions or objectives for the land designed to fulfill the requirements of 36 CFR 219.8-10.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

If any of these criteria do not apply to the land, then timber production is not compatible with the desired conditions and objectives, and the land should be identified as not suited for timber production.

Exhibit 01 is a display that should be used to show a tally of the lands suited and not suited for timber production. Responsible officials may show a further breakdown of suitability classifications within this table.

**61 - Exhibit 01**  
**Timber Production Suitability Classification**

<b>Land Classification Category</b>	<b>Acres</b>
1. Total National Forest System lands	1,000,000
2. Lands not suited for timber production due to legal availability or technical considerations (sections 61.11, 61.13, 61.14, and 61.15).	350,000
3. Lands that may be suited for timber production (line 1 minus line 2)	650,000
4. Lands suited for timber production (sec. 62.2).	400,000
5. Lands not suited for timber production because timber production is not compatible with the desired conditions and objectives established by the plan (sec. 61.12) (line 3 minus line 4)	250,000
6. Total lands not suited for timber production (sec. 61.1). (line 2 plus line 5)	600,000

Land identified as not suited for timber production in row 2, should not also be included in row 5.

**61.3 - Review of Lands Not Suited for Timber Production.**

**The responsible official shall review lands identified in the plan as not suited for timber production at least once every 10 years or as otherwise prescribed by law, to determine whether conditions have changed so that they have become suitable for timber production. As a result of this 10-year review, the plan may be amended to identify such lands as suitable for timber production if warranted by changed conditions. (36 CFR 219.11 (a)(2))**

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

The responsible official should determine the nature of this review. If the results of the review would lead to a change in the amount or location of lands suitable for timber production, the responsible official will determine the appropriate mechanism to change the plan.

**62 - PLAN COMPONENTS FOR LANDS SUITABLE FOR TIMBER PRODUCTION**

**A plan that identifies lands as suitable for timber production must include plan components, including standards or guidelines, to guide timber harvest for timber production or other multiple use purposes on such lands. (36 CFR 219.11 (b))**

The need for plan components to guide timber harvest on lands suitable for timber production will primarily be driven by the desired conditions, objectives and other plan components developed to meet the requirements of 36 CFR 219.8 – 219.10 and FSH 1909.12, chapter 20, or by information provided through public and governmental participation. Plan components, including standards or guidelines that guide timber harvest activity, must at a minimum include the limitations on timber harvest as described in section 64 (36 CFR 219.11(d)). On lands suitable for timber production, plan components may apply to all timber harvest including harvest for timber production or for multiple use; or plan components may apply separately to these harvests, as appropriate to each purpose. Plan components related to harvest in order to protect other multiple use values may apply to both lands suitable for timber production and lands that are not suitable for timber production, where appropriate (sec. 63).

**63 - PLAN COMPONENTS FOR TIMBER HARVEST FOR PURPOSES OTHER THAN TIMBER PRODUCTION**

Plans that anticipate situations where timber harvest may be used as a tool for purposes other than timber production should provide appropriate plan components that allow and control the application of such timber harvest. Such plan components must identify the lands to which they apply. These lands may be forest types, management or geographic areas, lands suited or not suited for timber production, or other criteria. On the lands that are not suited for timber production, plan components can only allow timber harvest to occur in order to protect other multiple use values and for salvage, sanitation or public health or safety, as provided by the rule at 36 CFR 219.11(c):

***(c) Timber harvest for purposes other than timber production. Except as provided in paragraph (d) of this section, the plan may include plan components to allow for timber harvest for purposes other than timber production throughout the plan areas, or portions of the plan areas, as a tool to assist in achieving or maintaining one or more applicable desired conditions or objectives of the plan in order to protect other multiple-use values, and for salvage, sanitation, or public health or safety. Examples of using timber harvest to protect***

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

**other multiple use values may include improving wildlife or fish habitat, thinning to reduce fire risk, or restoring meadow or savanna ecosystems where trees have invaded. (36 CFR 219.11)**

It is important to identify appropriate plan components that establish the reasons for timber harvest for purposes other than timber production, especially for lands not suited for timber production. Desired conditions describe the conditions that the harvest is intended to achieve. Objectives identify the desired rate of progress in achieving desired conditions and provide a basis for timber harvest activities. The term “suitability of lands” clarifies the types of timber harvest activities allowed or not allowed on certain lands to achieve desired conditions. Standards and guidelines provide guidance to ensure that these activities are consistent with achieving the desired conditions of the plan and other requirements of the planning rule.

#### **64 - LIMITATIONS ON TIMBER HARVEST.**

The timber requirements at 36 CFR 219.11(d)(1-7) requires that plans must have plan components for limitations on timber harvest, regardless of the purpose of the harvest:

**Whether timber harvest would be for the purposes of timber production or other purposes, plan components, including standards or guidelines must ensure the following. . .**

Sections 64.1 to 64.7 describe the methods for plans to address each of the seven requirements in 36 CFR 219.11(d) and contain the full planning rule text of each requirement. The requirements are based on both the planning rule and NFMA. Requirement § 219.11(d)(5), references two sections of NFMA that reference nine other requirements.

Because these requirements overlap, in exhibit 01 the table is provided to summarize each requirement and indicate within this chapter where appropriate guidance is to be found on how plans can meet the requirement. The table is organized in three sections for requirements applicable to all timber harvest, requirements applicable to only even-aged timber harvest, and the limitation on volume that can be sold. Exhibit 01 also references the sections of United States Code that contain the NFMA requirement and the sections of the planning rule related to the requirement. Section 64 of this chapter covers each of these requirements in the same sequence as the planning rule. If a NFMA requirement and a rule requirement overlap, only one subsection provides guidance and the other section provides a cross reference.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

**64 - Exhibit 01**

**Reference Table for required plan components that limit timber harvest**

<b>Ch. 60 Section</b>	<b>Requirement Summary</b>	<b>Section of U.S. Code</b>	<b>Section of 219.11</b>
	<b>Requirements for all timber harvest</b>		
64.1	No harvest for purposes of timber production on lands not suited for timber production.	1604 (k)	(d)(1)
64.2	Timber harvest would occur only where soil, slope, or watershed conditions would not be irreversibly damaged.	1604 (g)(3)(E)(i)	(d)(2)
64.3	Timber harvest would be carried out consistent with the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources.	1604 (g)(3)(F)(v)	(d)(3)
64.51b	Timber harvest will be harvested only where there is assurance that such lands can be adequately restocked within five years after harvest	1604 (g)(3)(E)(ii)	(d)(5)
64.51c	Timber will be harvested only where protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water	1604 (g)(3)(E)(iii)	(d)(5)
64.51d	Timber will be harvested only where the harvesting system is not selected primarily because it will give the greatest dollar return or unit output of timber.	1604 (g)(3)(E)(iv)	(d)(5)
	<b>Requirements for only even-aged timber harvest</b>		
64.4, .41-.43	Limits to the maximum size for openings that may be cut in one harvest operation and exceptions.	1604 (g)(3)(F)(iv)	(d)(4)
64.52a	Clearcutting will be used only where determined to be the optimum method.	1604 (g)(3)(F)(i)	(d)(5)
64.52a	Other cuts to regenerate an even-aged stand of timber will be used only where determined to be appropriate.	1604 (g)(3)(F)(i)	(d)(5)
64.52b	Evenaged regeneration cutting will be used only where the interdisciplinary review has been completed.	1604 (g)(3)(F)(ii)	(d)(5)
64.52c	Evenaged regeneration cutting will be used where cuts are shaped and blended with the natural terrain	1604 (g)(3)(F)(iii)	(d)(5)
64.7	Even-aged stands shall generally have reached culmination of mean annual increment to regeneration harvest and exceptions	1604 (m)	(d)(7)
	<b>Limitation on volume that can be sold</b>		
64.6, .61-.63	The sale of timber from each national forest shall be limited to a quantity equal to or less than a quantity which can be removed from such forest annually in perpetuity on a sustained-yield basis and exceptions (departures, decade, salvage and sanitation harvests)	1611 (a&b)	(d)(6)

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING****64.1 - No Timber Harvest for the Purpose of Timber Production on Lands not suited for timber production**

**... (1) No timber harvest for the purpose of timber production may occur on lands not suited for timber production. (36 CFR 219.11(d))**

To meet this requirement, plans should have standards that no timber harvest for the purpose of timber production may occur on lands not suited for timber production. This requirement does not prevent plans from having plan components that allow timber harvest on lands that are not suited for timber production in order to protect other multiple-use values, and for salvage, sanitation, public health, or safety (see 36 CFR 219.11(c) and sec. 63).

**64.2 – Timber Harvest Cannot Occur If It Leads to Irreversible Damage**

**... (2) Timber harvest would occur only where soil, slope, or other watershed conditions would not be irreversibly damaged; (36 CFR 219.11(d))**

To meet this requirement, plans should have standards to ensure that a project decision to harvest timber may only be made when it is determined the project would not cause irreversible damage to soil, slope, or watershed condition. A standard stating that no timber harvest could occur on lands where technology to harvest timber is not currently available without causing irreversible damage (see sec. 61.13) would partially meet this requirement by removing these lands from potential harvest. Plans should also have standards that the timber harvest practices and technology will only be applied if the harvest would not cause irreversible damage to soil, slope or other watershed conditions. These standards may require a site-specific finding that the timber harvest would not cause irreversible damage.

**64.3 – Timber Harvest Must Be Consistent With Other Resource Protection**

**... (3) Timber harvest would be carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources. (36 CFR 219.11(d))**

Plan components designed for the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources as required in 36 CFR 219.11(d)(3) provide the framework to ensure that timber harvest meets this requirement. The responsible official should review plan components developed to protect soil, watershed, fish, wildlife recreation and aesthetic resources to determine if a timber harvest that would be consistent with those plan components would also meet this requirement. If not, additional plan components must be developed to ensure that all harvests meet this requirement.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING****64.4– Limits on Maximum Size of Created Openings**

**... (4) Where plan components will allow clearcutting, seed tree cutting, shelterwood cutting or other cuts designed to regenerate an even aged stand of timber, the plan must include standards limiting the maximum size for openings that may be cut in one harvest operation according to geographic areas, forest types or other suitable classifications. Except as provided in paragraphs (d)(4)(i) through (iii) of this section, this limit may not exceed 60 acres for the Douglas-fir forest type of California, Oregon, and Washington; 80 acres for the southern yellow pine types of Alabama, Arkansas, Georgia, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Oklahoma, and Texas; 100 acres for the hemlock-Sitka spruce forest type of coastal Alaska; and 40 acres for all other forest types. (36 CFR 219.11(d))**

To meet this requirement, plans must have standards that establish size openings no larger than that allowed by the regulation except as described in § 219.11(d)(4)(i-iii) and explained in sections 64.41–64.43). See also NFMA at 1604(g)(3)(F)(iv)).

**64.41 - Standards for Exceptions to Exceed Opening Size Limits**

**(i) Plan standards may allow for openings larger than those specified in paragraph (d)(4) of this section to be cut in one harvest operation where the responsible official determines that larger harvest openings are necessary to help achieve desired ecological conditions in the plan area. If so, standards for exceptions shall include the particular conditions under which the larger size is permitted and must set a maximum size permitted under those conditions. (36 CFR 219.11(d)(4))**

Plans may specifically allow for larger openings than those described in the planning regulation. If creating such exceptions, the standard limiting the size of created openings must clearly describe the particular conditions for the exception including the desired ecological conditions that the exception intends to achieve. If the exception would also exempt a larger opening from other plan components, then those plan components must be identified in the exception; otherwise the larger opening is expected to be consistent with all other applicable plan components. Such an exception should be described in the standards that limit the size of openings described in section 64.4

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING****64.42 - Notification and Review to Exceed Opening Size Limits on an individual Timber Sale Basis**

**(ii) Plan components may allow for size limits exceeding those established in paragraphs (d)(4) and (d)(4)(i) of this section on an individual timber sale basis after 60 days public notice and review by the regional forester. (36 CFR 219.11(d)(4))**

The standards for opening size limits in section 64.4 and the exceptions identified in section 64.41 may also provide exceptions that would allow responsible officials to propose individual timber sales that exceed these opening size standards, where doing so would be consistent with other plan components, by following this process of public notice and review by the regional forester.

**64.43 - Catastrophic Conditions Allow Exceeding Opening Size Limits**

The following plan requirement restricts the standard describing the limits on created openings (sec. 64.4) from applying to openings harvested as a result of catastrophic conditions:

**(iii) The plan maximum size for openings to be cut in one harvest operation shall not apply to the size of openings harvested as a result of natural catastrophic conditions such as fire, insect and disease attack, or windstorm (16 U.S.C. 1604(g)(3)(F)(iv)). (36 CFR 219.11(d)(4))**

Plan standards that limit the size of created openings (sec. 64.4) do not apply to openings harvested as a result of the catastrophic conditions described (fire, insect and disease attack, or windstorm). To be consistent with this requirement, plan standards that limit the size of openings must create an exception for openings to exceed these sizes that result from these kinds of natural catastrophic conditions. Projects that exceed opening sizes because of natural catastrophic conditions must still be consistent with other plan components.

**64.5 - Timber Harvest Limitations from the NFMA**

Section 219.11 (d)(5) of the planning rule allows timber harvest only where conditions set out in the NFMA will be met:

**. . . (5) Timber will be harvested from NFS lands only where such harvest would comply with the resource protections set out in sections 6(g)(3)(E) and (F) of the NFMA (16 U.S.C. 1604(g)(3)(E) and (F)). . . .**

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

NFMA establishes limits for all timber harvest at 16 U.S.C. 1604(g)(3)(E). NFMA establishes limits specific to even-aged regeneration harvest at 16 U.S.C. 1604 (g)(3)(F). Section 64.51 of this Handbook describes the limits on all timber harvest and section 64.52 describes those applicable to even-aged management systems.

**64.51 - NFMA Limitations Applicable to All Timber Harvest**

NFMA at 16 U.S.C. 1604(g)(3)(E) establishes four limitations applicable to all timber harvest:

**(E) insure that timber will be harvested from National Forest System lands only where—** (four specific requirements follow)

The balance of this section (64.51a – 64.51d) describes how plans should comply with each of these four requirements. In some cases, other sections of this chapter or other chapters of this handbook discuss ways to meet the NFMA timber harvest limitations.

**64.51a – Soil, Slope, or Other Watershed Conditions**

**(E) insure that timber will be harvested from National Forest System lands only where—**

**(i) soil, slope, or other watershed conditions will not be irreversibly damaged . . .** (16 U.S.C. 1604(g)(3))

See section 64.2, which covers this identical requirement from the planning rule (36 CFR 219.11(d)(2)).

**64.51b – Assurance of Adequate Restocking Within Five Years After Harvest**

**(E) insure that timber will be harvested from National Forest System lands only where. . .**

**(ii) there is assurance that such lands can be adequately restocked within five years after harvest . . .** (16 U.S.C. 1604(g)(3))

To meet this requirement, the responsible official may choose to use one of two basic approaches or a third approach that combines the first two approaches.

1. Plans include standards that limit timber harvest to situations that have reasonable assurance that the stand can be adequately restocked. The desired conditions of the plan can identify “desired stocking conditions” and standards can identify “adequately restocked conditions” to meet this requirement. This approach is displayed in the simplified example below.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

**EXAMPLE**

Stocking Objectives for Ponderosa Pine Stands in Northern Arizona  
Five years after harvest/Trees per acre

Harvest Method	Desired Stocking	Adequately Restocked
Shelterwood Regeneration With overstory retention	5-10 trees above 10" dbh 50-100 seedlings	> 5 trees above 10" dbh > 50 seedlings
Intermediate Thinning	10-20 trees above 10" dbh 10-20 trees above 5" dbh 25-60 seedlings	> 10 trees above 10" dbh > 10 trees above 5" dbh >25 seedlings
Salvage Harvest following Fire destroying canopy	5-10 trees above 10" dbh 50-100 seedlings	> 5 trees above 10" dbh (if available) > 50 seedlings
Harvest to create permanent meadow *	< 10 trees of any size	No trees

\* Any timber harvest that would not restock after harvest to perpetuate forest conditions must be based on desired conditions or objectives of the plan and be consistent with other plan components, including those for ecological integrity. After harvest, affected land should be classified as not suitable for timber production (sec. 61.15) as part of the review of lands not suited for timber production (sec. 61.3).

The documentation for the plan should support the determination that there is reasonable assurance that identified lands and harvest methods can be adequately restocked as described based on the best available scientific information. Reasonable assurance is based on average and foreseeable conditions for these specific land conditions and does not constitute a guarantee that stands will be adequately restocked. Timber harvest projects applied to these lands consistent with the plan and based on the identified stocking objectives can use the documentation for the plan to demonstrate reasonable assurance of adequate restocking.

2. Plans include standards that individual timber harvest projects identify stocking expectations and state findings that support the determination that there is reasonable assurance that these lands can be adequately restocked within 5 years to meet those expectations based on the best available scientific information. Reasonable assurance is based on average and foreseeable conditions for these specific land conditions and does not constitute a guarantee that stands will be adequately restocked. The determination of restocking expectations should be based on plan desired conditions and objectives applicable to the area and project, and be consistent with all other applicable plan components. This approach may be appropriate for the following types of activities, where removal of forest cover may be consistent with the desired conditions and objectives of the plan such as:

- a. Harvest to thin stands for habitat for a species requiring very open conditions.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

- b. Harvest to eradicate an invasive tree that has dominated the site.
  - c. Harvest to restore an open cultural landscape associated with a historic property.
  - d. Harvest to create a parking lot for a trailhead.
3. A mixed approach in which the plan has a standard limiting harvest to set of specified situations, but the standard explicitly allows for other situations or exceptions supported by a project specific determination of the level of adequate restocking. As in the second approach, a project specific determination of adequate restocking would require a project specific finding and documented support that there is reasonable assurance that the stand can be adequately restocked five years after harvest.

### 64.51c – Protection of Aquatic and Riparian Resources

**(E) insure that timber will be harvested from National Forest System lands only where . . .**

**(iii) protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment, where harvests are likely to seriously and adversely affect water conditions or fish habitat . . . (16 U.S.C.1604(g)(3))**

Timber harvest must be consistent with plan components designed for the protection of the aquatic and riparian resources. The responsible official should review plan components related to protection of aquatic and riparian resources to see if a timber harvest that would be consistent with those plan components would also meet this requirement. If not, additional plan components must be developed to ensure that all harvests meet this requirement.

### 64.51d – Selection of Harvesting System

**(E) insure that timber will be harvested from National Forest System lands only where . . .**

**(iv) the harvesting system to be used is not selected primarily because it will give the greatest dollar return or the greatest unit output of timber . . . (16 U.S.C. 1604(g)(3))**

Plans should include a standard indicating that the selection of harvesting system for a project must not be selected primarily for the greatest dollar return or output of timber.

### 64.52 - NFMA Limitations Applicable to Even-Aged Timber Harvest

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

NFMA at 16 U.S.C. 1604(g)(3)(F) establishes the five limitations applicable to harvests designed to regenerate an even-aged stand of timber:

**(F) insure that clearcutting, seed tree cutting, shelterwood cutting, and other cuts designed to regenerate an evenaged stand of timber will be used as a cutting method on National Forest System lands only where—** (five specific requirements follow)

The balance of this section (64.52a – 64.52e) describes how plans should comply with each of these five requirements. In some cases, other sections of this chapter or other chapters of this Handbook discuss how to meet the requirement.

### **64.52a – Clearcutting and Other Even-aged Cutting Methods**

NFMA, and by reference, the regulation, limits clearcutting and other even-aged harvest to situations where:

**(i) for clearcutting, it is determined to be the optimum method, and for other such cuts it is determined to be appropriate, to meet the objectives and requirements of the relevant land management plan . . .**  
(16 U.S.C. 1604(g)(3)(F))

There are two approaches or a third, combined approach to meet this requirement for clearcutting similar to the discussion on assurance of adequate restocking in section 64.51b.

1. The plan has standards that limit clearcutting to specific types of situations where it is the optimum method to achieve the plan's desired conditions and objectives. The planning record provides documentation to support this determination of clearcutting as the optimum method.
2. The plan has a standard that requires the responsible official for each clearcutting project to make a finding that clearcutting is the optimum method for the specific project; and to document the rationale for that finding in the project record. The finding that clearcutting is the optimum method for the project must be based on desired conditions and objectives and be consistent with all other applicable plan components.
3. The plan has a standard that limits clearcutting to specific types of situations, but that also explicitly provides for project specific exceptions that would allow clearcutting upon a finding documented in the project record that clearcutting is optimum method for the specific project. This finding must be based on desired conditions and objectives and be consistent with all other applicable plan components.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

In determining the approach to be used, the responsible official may consider the following situations where clearcutting may be optimal, such as:

- a. Establishing, maintaining, or improving habitat for threatened, endangered, or candidate species or species of conservation requiring open conditions.
- b. Maintaining age class or structural diversity in a forested landscape.
- c. Providing a scenic vista.
- d. Maintaining utility corridors or similar development areas.
- e. Rehabilitating lands adversely affected by events such as fires, windstorms, or insect or disease infestations.
- f. Providing for the establishment and growth of desired trees or other vegetative species that are shade intolerant.
- g. Meeting research needs.

To meet the requirement that shelterwood, seed tree, and other types of even-aged cuts are appropriate to achieve the desired conditions and objectives of the plan, one of the same three general approaches can be used:

1. The plan has a standard limiting the types of situations where certain types of even-aged harvests are appropriate to achieve the desired conditions and objectives. The planning record provides documentation to support this determination that even-aged cuts are appropriate.
2. The plan has a standard requiring the responsible official for each even-aged harvest project to make a finding that such harvest is appropriate for the specific project, and to document the rationale for that finding in the project record. The finding that the even-aged cuts for the project is appropriate must be based on desired conditions and objectives and be consistent with all other applicable plan components.
3. The plan has a standard limiting other types of even-aged cuts to specific types of situations, but explicitly provides for project-specific exceptions upon a finding, documented in the project record that the even-aged cut is appropriate for the project. This finding must be based on desired conditions and objectives and be consistent with all other applicable plan components.

**64.52b – Interdisciplinary Review**

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

NFMA, and by reference, the regulation, limits clearcutting and other even-aged harvest to situations where

**(ii) the interdisciplinary review as determined by the Secretary has been completed and the potential environmental, biological, esthetic, engineering, and economic impacts on each advertised sale area have been assessed, as well as the consistency of the sale with the multiple use of the general area . . . (16 U.S.C. 1604(g)(3)(F))**

To meet this requirement, plans should have standards requiring interdisciplinary review, assessments of impacts through appropriate NEPA documentation and a finding that the sale is consistent with the multiple use of the general area for any even-aged regeneration harvests.

#### **64.52c - Cuts Shaped and Blended with Natural Terrain**

NFMA, and by reference, the regulation, limits clearcutting and other even-aged harvest to situations where

**(iii) cut blocks, patches, or strips are shaped and blended to the extent practicable with the natural terrain . . . (16 U.S.C. 1604(g)(3)(F))**

Plans must have plan components, including standards and/or guidelines that apply to even-aged harvests designed to blend these harvest units into the natural terrain to the extent practicable. Plan components related to scenic character usually provide for blending harvest units into the natural terrain (see FSH 1909.12, ch. 20) and will likely suffice to ensure compliance with this timber harvest requirement. The responsible official should review plan components developed to provide for scenery to see if consistency with those plan components ensures that this requirement is also met. If not, additional plan components must be developed to ensure meeting this requirement.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING****64.52d – Maximum Size Limits**

NFMA, and by reference, the regulation, limits clearcutting and other even-aged harvest to situations where

**(iv) there are established according to geographic areas, forest types, or other suitable classifications the maximum size limits for areas to be cut in one harvest operation, including provision to exceed the established limits after appropriate public notice and review by the responsible Forest Service officer one level above the Forest Service officer who normally would approve the harvest proposal: Provided, That such limits shall not apply to the size of areas harvested as a result of natural catastrophic conditions such as fire, insect and disease attack, or windstorm . . . (16 U.S.C. 1604(g)(3)(F))**

This requirement is the same as the one described in 64.4. See the discussion in section 64.4 for guidance on how to address this requirement.

**64.52e – Consistency with resource protections**

NFMA, and by reference, the regulation, limits clearcutting and other even-aged harvest to situations where

**(v) such cuts are carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and esthetic resources, and the regeneration of the timber resource. (16 U.S.C. 1604(g)(3)(F))**

For guidance to meet this requirement, see discussion in section 64.3 that applies to all harvests including even-aged timber harvest and section 64.51b that applies to restocking to achieve stand regeneration.

**64.6 - Limiting the Quantity of Timber that can be removed**

The NFMA at 16 U.S.C. 1611 requires that the Forest Service limit the amount of timber that may be sold from each national forest.

**a) Limitations on removal; variations in allowable sale quantity; public participation**

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

**The Secretary of Agriculture shall limit the sale of timber from each national forest to a quantity equal to or less than a quantity which can be removed from such forest annually in perpetuity on a sustained-yield basis: Provided, That, in order to meet overall multiple-use objectives, the Secretary may establish an allowable sale quantity for any decade which departs from the projected long-term average sale quantity that would otherwise be established: Provided further, That any such planned departure must be consistent with the multiple-use management objectives of the land management plan. Plans for variations in the allowable sale quantity must be made with public participation as required by section 1604(d) of this title. In addition, within any decade, the Secretary may sell a quantity in excess of the annual allowable sale quantity established pursuant to this section in the case of any national forest so long as the average sale quantities of timber from such national forest over the decade covered by the plan do not exceed such quantity limitation. In those cases where a forest has less than two hundred thousand acres of commercial forest land, the Secretary may use two or more forests for purposes of determining the sustained yield.**

**(b) Salvage harvesting**

**Nothing in subsection (a) of this section shall prohibit the Secretary from salvage or sanitation harvesting of timber stands which are substantially damaged by fire, windthrow, or other catastrophe, or which are in imminent danger from insect or disease attack. The Secretary may either substitute such timber for timber that would otherwise be sold under the plan or, if not feasible, sell such timber over and above the plan volume.**

The Forest Service planning regulations, at 36 CFR 219.11 (d), requires implementation of the statute as follows:

**(d) Whether timber harvest would be for the purposes of timber production or other purposes, plan components, including standards or guidelines must ensure the following:**

**\*\*\***

**(6) The quantity of timber that may be sold from the national forest is limited to an amount equal to or less than that which can be removed from such forest annually in perpetuity on a sustained yield basis. This limit may be measured on a decadal basis. The plan may provide for departures from this limit as provided by the NFMA when departure would be consistent with the plan's desired conditions**

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

**and objectives. Exceptions for departure from this limit on the quantity sold may be made only after a public review and comment period of at least 90 days. The Chief must include in the Forest Service Directive System procedures for estimating the quantity of timber that can be removed annually on a sustained-yield basis, and exceptions, consistent with U.S.C. 1611.**

To meet these requirements a plan should have a standard that limits the quantity of timber that may be sold (except for salvage or sanitation harvesting of timber stands which are substantially damaged by fire, windthrow, or other catastrophe, or which are in imminent danger from insect or disease attack) to be less than or equal to the long-term sustained-yield capacity (LTSYC) (sec. 64.61), unless the responsible official decides a departure schedule is needed to respond to certain circumstances.

Alternatively, if the plan establishes a departure harvest schedule, the plan must have a standard that limits the quantity of timber that may be sold (except for salvage or sanitation harvesting of timber stands which are substantially damaged by fire, windthrow, or other catastrophe, or which are in imminent danger from insect or disease attack) to be less than or equal to the sale quantity limit. The sale quantity limit is the LTSYC plus the departure increment. See section 64.63.

Sections 64.61 and 64.62 describe how to identify the LTSYC, the timber sale program quantity (TSPQ), the planned sale quantity (PSQ) and the amount of timber actually sold to evaluate compliance with this standard. Each of these measures of timber quantity (long-term sustained-yield capacity, timber sale program quantity, planned sale quantity and the amount of timber actually sold) must be measured in cubic feet on average annual basis.

The timber volume used to estimate the LTSYC, the departure increment, the sale quantity limit and the planned sale quantity is the timber volume that meets utilization standards—the TSPQ includes all woody biomass. These utilization standards identify the standard wood products that are expected to be sold during the first two decades of the plan. Utilization standards do not limit the display of the timber products in the plan. The utilization standards are relevant in the plan only for purposes of establishing consistency in evaluating compliance with this NFMA and planning rule requirement.

### **64.61 - Long-term Sustained-yield Capacity**

The responsible official must identify the amount of timber that can be removed annually in perpetuity on a sustained-yield basis from the plan. This sustained yield basis is the LTSYC. The responsible official must base the determination of the LTSYC on the amount of timber that could be produced on all lands that may be suitable for timber production and assuming all of these lands were managed to produce timber.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

The LTSYC should be based on the flow of timber that can be reasonably planned and scheduled on a predictable basis under these circumstances. Volume from salvage and sanitation timber harvest should not be included in calculating the LTSYC. Express the LTSYC estimate in units of cubic feet that meet appropriate utilization standards (sec. 64.64). As appropriate, the LTSYC may also be converted to board feet.

A national forest with less than 200,000 acres of land suitable for timber production may combine with one or more other national forests to develop an estimate of the LTSYC for the combined national forests.

The analysis conducted to estimate LTSYC should be reasonable in cost and time commitment. The analysis can be based on standard growth and yield equations to estimate sustainable timber production from the lands that may be suitable for timber production. Calculations of the LTSYC should include all potential outputs of wood fiber that would meet utilization standards for products sold from NFS lands. Regression equations, growth and yield simulation models such as Forest Vegetation Simulator (FVS) are acceptable tools for determining LTSYC. Data used to develop LTSYC estimates may include volume, basal area, number of trees, and average diameter at breast height (d.b.h.) by age class or successional stage. Where a choice of estimation techniques is available, the responsible official shall determine the appropriate method to use.

The calculations of LTSYC may be based on application of intensified management practices such as reforestation, thinning and tree improvement.

The plan must identify the LTSYC as shown in section 65.1, exhibit 2 or exhibit 3. The LTSYC must be identified at the time of plan development and plan revision. The LTSYC may be adjusted as appropriate in plan amendments.

**64.62 – Timber Sale Program Quantity, Planned Sale Quantity, and Quantity of Timber Sold**

To display clearly to the public the intended timber program and to assure compliance with the standard identified in 36 CFR 219.11(d)(6) and 16 U.S.C. 1611 (see section 64.6), the plan must identify the timber sale program quantity (TSPQ). The TSPQ is the total output of timber and other wood products anticipated in the first two decades of the plan, recognizing that the plan must be revised every 15 years. Display of the TSPQ must include a separate identification of the planned sale quantity (PSQ) to show the relationship between the planned timber sale program and the LTSYC. Except as provided in section 64.63 for a departure harvest schedule, the PSQ must be equal to or below the LTSYC. Both the PSQ and the TSPQ must take into account the fiscal capability of the planning unit in the first two decades and be consistent with the plan components. The PSQ and TSPQ are based on expected harvests, for any purpose, on all lands in the plan area.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

After the development or revision of the plan, the responsible official must track the quantity of woody material sold from the plan area (comparable to the TSPQ) and specifically the quantity that meets utilization standards (comparable to the PSQ) to evaluate compliance with the decadal timber limitation described in 64.6. This is normally done as part of the Agency's Cut and Sold reporting system.

In any given year, the responsible official may sell a quantity of timber in excess of the annual average volume for the decade of the LTSYC or sale quantity limit for a departure. However, the total quantity sold over a 10-year period may not exceed the decadal limit. The LTSYC limit shall not prohibit the responsible official from salvage or sanitation harvesting of timber stands substantially damaged by fire, windthrow, or other catastrophe, or that are in imminent danger from insect or disease attack. The responsible official may either substitute such timber for timber that would otherwise be offered under the plan or offer such volume above the LTSYC.

If multiple national forests were combined for calculation of the LTSYC (sec. 64.61), the sum of the PSQs of the combined national forests must be less than or equal to the LTSYC of the combined national forests. The quantity of the timber sold must also be tracked for the combined national forests and sum to a quantity less than or equal to the LTSYC of the combined units.

If intensified management practices were used to calculate the LTSYC and such practices are planned to achieve the LTSYC during the plan period, the PSQ and TSPQ must be decreased at the end of the plan period if such practices were not successfully implemented or funds were not received to permit such practices to continue substantially as planned.

**64.63 - Departure from Long-term Sustained-yield Capacity**

To achieve the plan's desired conditions and objectives such as a need for accelerated restoration, the responsible official may establish a departure increment for the first and second decades of the plan above the LTSYC. The sum of the departure increment and the LTSYC is the sale quantity limit for timber that can be sold in the first or second decade. The departure increment can be different for each of these decades. Departure schedules must be consistent with the following:

1. Any such planned departure must be consistent with the multiple-use management objectives of the land management plan; and
2. The departure schedule must be consistent with all desired conditions, objectives and other plan components of the plan.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

3. A departure above the LTSYC must be made with public participation after a public review and comment period of at least 90 days (16 USC 1604(d) and 16011(a); (36 CFR 219.11(d)(6)). The 90 day comment period for review of a proposed land management plan or plan revision can meet this requirement (36 CFR 219.16(a)(2)).

The responsible official may choose to establish a departure increment to sell a quantity of timber in excess of the LTSYC if necessary to move the forested landscape toward desired conditions. The rationale for the departure must be explained in the plan decision document.

The departure increment may exceed the LTSYC for one or more decades and subsequently lead to the PSQ dropping below the LTSYC before eventually reaching the LTSYC level again.

As part of the adaptive management framework, the responsible official may review the accomplishment and effects of the departure schedule.

**64.64 - Utilization Standards**

For purposes of the calculations and measurement of timber volumes described throughout section 64.6 and referenced in section 65.1, exhibit 02 and exhibit 03, the plan must identify or reference the appropriate utilization standards that identify the standard types of timber products to be sold. These utilization standards may distinguish between sawtimber, pulpwood, and other products. These utilization standards for timber should not include branches, sawdust, fuelwood, firewood, biomass, or other woody material that is not consistently sold on a volume basis. The woody material that does not meet utilization standards is not included in the PSQ, but must be displayed as part of the TSPQ (sec. 65.1).

Regions must identify utilization standards in regional supplements to the directives in order to maintain consistency for these calculations within the region.

**64.7 - Culmination of Mean Annual Increment of growth**

NFMA, at 16 USC 1604 (m), sets out a requirement to ensure that timber harvest shall occur at the culmination of the mean annual increment of growth, but also provides for exceptions:

**(m) Establishment of standards to ensure culmination of mean annual increment of growth; silvicultural practices; salvage harvesting; exceptions**

**The Secretary shall establish—**

**(1) standards to insure that, prior to harvest, stands of trees throughout the National Forest System shall generally have reached the culmination of mean annual increment of growth (calculated on the basis of cubic measurement or other methods of calculation at the**

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

**discretion of the Secretary): Provided, That these standards shall not preclude the use of sound silvicultural practices, such as thinning or other stand improvement measures: Provided further, That these standards shall not preclude the Secretary from salvage or sanitation harvesting of timber stands which are substantially damaged by fire, windthrow or other catastrophe, or which are in imminent danger from insect or disease attack; and**

**(2) exceptions to these standards for the harvest of particular species of trees in management units after consideration has been given to the multiple uses of the forest including, but not limited to, recreation, wildlife habitat, and range and after completion of public participation processes utilizing the procedures of subsection (d) of this section.**

This statutory direction is reflected in the planning rule at 36 CFR 219.11 (d)(7).

**... (7) The regeneration harvest of even-aged stands of trees is limited to stands that generally have reached the culmination of mean annual increment (CMAI) of growth. This requirement would apply only to regeneration harvest of even-aged stands on lands identified as suited for timber production and where timber production is the primary purpose for the harvest. Plan components may allow for exceptions, set out in 16 U.S.C 1604(m), only if such harvest is consistent with the other plan components of the land management plan.**

Plans for national forests that have lands suitable for timber production must include plan components (typically standards and guidelines) to address these requirements.

A stand that “generally [has] reached the culmination of mean annual increment (CMAI) of growth” is the age at which the stand achieves at least 95 percent of the cubic foot volume at culmination. The responsible official must calculate the CMAI based on cubic measurement. Base the determination of the CMAI on the expected cumulative timber yield from regeneration harvest and additional timber yields from any planned intermediate harvests prior to the regeneration harvest. The minimum rotation age is the shortest length of time required to achieve volume production equivalent to at least 95 percent of the CMAI. See also the definition of mean annual increment in section 60.5 of this Handbook.

Plan components that limit regeneration harvest to stands that have reached 95 percent of CMAI must clarify that these limitations do not apply to:

1. Thinning or other stand improvement treatments and uneven-aged systems that do not regenerate even-aged stands

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

2. Salvage or sanitation harvesting of timber stands which are substantially damaged by fire, wind throw, or other catastrophe, or which are in imminent danger from insect or disease attack.
3. Harvesting of trees at CMAI is not a consideration on lands not suited for timber production because the type and frequency of harvests are driven by the need to protect multiple use values other than timber production.

A plan may provide for exceptions to the CMAI requirement for expected situations where even-aged regeneration harvest at less than CMAI would contribute to the plan's desired conditions or objectives consistent with other plan components. For example, it may be appropriate for a plan to establish shorter even-aged rotations to maintain levels of early seral stages that are sufficient for wildlife that depend upon such habitat conditions

**65 - LAND MANAGEMENT PLAN GUIDANCE**

A plan must include plan components as described in 36 CFR 219.7(e) for desired conditions, objectives, standards, guidelines, and suitability of lands. The plan may also have goals. In addition to requirements of 36 CFR 219.11, sections 219.7, 219.8, 219.9, and 219.10 have substantive requirements that guide the development of plan components for vegetation. FSH 1919.12, chapter 20 describes the plan development process and provides guidance for the development of plan components and other plan content.

**65.1 - Proposed and Possible actions, Vegetation Management, and Timber Sale Program Quantity (TSPQ)**

The NFMA requires plans to include specific information regarding timber management at 16 USC 1604 (e)(2) and (f) (2), as follows.

**(e) Required assurances**

**In developing, maintaining, and revising plans for units of the National Forest System pursuant to this section, the Secretary shall assure that such plans -**

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**(2) determine forest management systems, harvesting levels, and procedures in the light of all of the uses set forth in subsection (c)(1) of this section, the definition of the terms “multiple use” and “sustained yield” as provided in the Multiple-Use Sustained-Yield Act of 1960, and the availability of lands and their suitability for resource management**

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING****f) Required provisions****Plans developed in accordance with this section shall -**

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**(2) be embodied in appropriate written material, including maps and other descriptive documents, reflecting proposed and possible actions, including the planned timber sale program and the proportion of probable methods of timber harvest within the unit necessary to fulfill the plan ;**

The rule requires this information as plan content other than plan components, at 36 CFR 219.7(f):

**(f) *Other content in the plan. (1) Other required content in the plan.***

**Every plan must . . .**

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**(iv) Contain information reflecting proposed and possible actions that may occur on the plan area during the life of the plan, including: the planned timber sale program; timber harvesting levels; and the proportion of probable methods of forest vegetation management practices expected to be used (16 U.S.C. 1604(e)(2) and (f)(2)). Such information is not a commitment to take any action and is not a “proposal” as defined by the Council on Environmental Quality regulations for implementing NEPA (40 CFR 1508.23, 42 U.S.C. 4322(2)(C)).**

To meet the requirement for a display of the planned timber sale program and the proportion of probable methods of timber harvest, a table similar to that of exhibit 01, should display the planned types of vegetation management practices that include sale of timber and may include other vegetation management practices such as prescribed fire. The table should display the estimated acreage of these practices planned for the first decade and second decade in the plan area, recognizing that the plan must be revised at least once every 15 years. The planned practices would be the estimated types of practices that would be necessary to achieve the desired conditions and objectives during the plan period on an average annual basis within the fiscal capability of the planning unit. This estimate is not a commitment to take an action or a proposal for such action. As a minimum, this identification of management practices must display or describe practices of even-aged and uneven-aged management systems planned for the plan area. The practices identified can be broken out by lands suited or not suited for timber production or any other land stratification deemed appropriate by the responsible official.

To display the TSPQ, use a format similar to that presented in exhibit 02 or exhibit 03. Exhibit 02 displays the LTSYC, PSQ, and TSPQ for the first two decades of a non-departure situation.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

Exhibit 03 shows a similarly formatted table for a departure situation. All volumes in this table should be displayed as annual averages for the decade rather than decadal totals.

The first line of both exhibits show the LTSYC.

Row **A** displays the estimated volumes in the planned sale quantity from lands suitable for timber production. Line A1 shows the amount of sawtimber volume in cubic feet. Line A2 shows this same sawtimber volume converted to board feet using local factors for the plan area. Line A3 shows the amount of non-sawtimber products to be sold that meet utilization standards for sale.

In row **B** the table should also show the planned sale quantity from lands not suitable for timber production if the plan anticipates timber harvest on those lands for protection of multiple use values. The **B** lines repeat the same format and sequence as the **A** lines.

Row **C** sums these quantities to indicate the total PSQ for the plan area for the first two decades. This must be less than the LTSYC for each decade, unless a departure schedule is being used (sec. 64.6)

In row **D**, the table should also display any estimates of woody material that do not meet utilization standards such as fuelwood, firewood or woody biomass that are anticipated to be made available in the first two decades in the **D** lines. If useful, this should break out display of different types of wood products anticipated. Volumes should be displayed in both cubic feet and tons.

Finally, row **E** provides the total timber sale program quantity that includes all wood products and materials. This must be in cubic feet of measure, but may also be converted into other units of measure.

For a departure schedule, the format in exhibit 03 should be used. This table has the same format as shown in exhibit 02, except that the departure increment and the sale quantity limit are added to the table. Exhibit 03 shows a departure only for the first decade for restoration activity on lands that are not suitable for timber production. In a departure decade, the PSQ must be less than the sale quantity limit. In the second decade, there is no departure and the PSQ must be less than the LTSYC.

These estimated outputs may be displayed in the plan in this or any supplemental table by softwoods and hardwoods, for different product types, species or any other desired breakdown.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

**65.1 - Exhibit 01**

**Estimated Vegetation Management Practices**

<b>Forest Wide Vegetation Management Practices (acres)</b>		
<b>Annual Average per Decade</b>		
<b>Forest Cover Types/ Vegetation Management Practices</b>	<b>Summary</b>	
	<b>1<sup>st</sup> Decade</b>	<b>2<sup>nd</sup> Decade</b>
<b>Openings Maintenance Even Aged</b>		
Prescribed Fire	0	1040
<b>Aspen Treated</b>		
Regeneration * (Even-aged harvest)	1890	600
Thinning (Intermediate harvest)	960	390
<b>Jack Pine Treated</b>		
Regeneration * (Even-aged harvest)	1210	900
Thinning (Intermediate harvest)	230	30
<b>Mid-Seral Treated</b>		
Regeneration * (Even-aged harvest)	250	1030
Thinning (Intermediate harvest)	3730	2510
<b>Late-Seral Treated</b>		
Regeneration * (Even-aged harvest)	1770	3560
Thinning (Intermediate harvest)	4420	2830
Improvement/Selection (Uneven-aged harvest)	3820	3920
<b>Totals Treated</b>		
Regeneration *(Even-aged harvest)	5110	6090
Thinning (Uneven-aged harvest)	9340	5760
Improvement/Selection (Uneven-aged harvest)	3820	3920

\* Regeneration harvest treatment includes clear cuts, shelterwoods, shelterwood removal and seed tree methods.

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

**65.1 - Exhibit 02**

**Timber Sale Program Quantity**

**Annual Average Volume Outputs for 1<sup>st</sup> and 2<sup>ed</sup> Decade)**

	First Decade	Second Decade
<b>Long-term sustained-yield capacity (LTSYC)</b> (Millions cubic feet – MMCF)	<b>50.0</b>	
<b>Planned Sale Quantity</b> Harvest volumes other than salvage or sanitation volumes that meet timber product utilization standards		
Lands suitable for timber production		
A1. Sawtimber (million cubic feet- MMCF)	15.0	15.0
A2. Sawtimber (million board feet-MMBF)	60.0	60.0
A3. Other products meeting utilization standards (MMCF)	1.7	1.7
Lands not suitable for timber production		
B1. Sawtimber (MMCF)	7.0	5.0
B2. Sawtimber (MMBF)	28.0	20.0
B3. Other products meeting utilization standards (MMCF)	1.3	1.3
<b><u>C. Subtotal Planned Sale Quantity</u></b> (MMCF) (A1+A3+B1+B3)	<b>25.0</b>	<b>23.0</b>
<b>Other estimated wood products from all lands</b> Fuelwood, biomass, and other volumes that do not meet timber product utilization standards		
D. Fuelwood (MMCF)	3.0	2.5
Fuelwood (Tons)	45.0	37.5
<b><u>E. Timber Sale Program Quantity</u></b> (MMCF) (C+D)	<b>28.0</b>	<b>25.5</b>

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**

**65.1 - Exhibit 03**  
**Timber Sale Program Quantity**  
**Departure Schedule in the first decade**  
**Annual Average Volume Outputs for 1<sup>st</sup> and 2<sup>nd</sup> Decade)**

	First Decade	Second Decade
<b>Long-term sustained-yield capacity (LTSYC)</b> (Millions cubic feet – MMCF)	<b>50.0</b>	
<b>Departure Increment</b>	10.0	N/A
<b>Sale quantity limit</b>	60.0	N/A
<b>Planned Sale Quantity</b> Harvest volumes other than salvage or sanitation volumes that meet timber product utilization standards		
Lands suitable for timber production		
A1. Sawtimber (million cubic feet- MMCF)	40.0	40.0
A2. Sawtimber (million board feet-MMBF)	160.0	160.0
A3. Other products meeting utilization standards (MMCF)	8.0	8.0
Lands not suitable for timber production		
B1. Sawtimber (MMCF)	10.0	1.0
B2. Sawtimber (MMBF)	40.0	8.0
B3. Other products meeting utilization standards (MMCF)	2.0	.2
<b><u>C. Subtotal Planned Sale Quantity</u></b> (MMCF) (A1+A3+B1+B3)	<b>60.0</b>	<b>49.2</b>
<b>Other estimated wood products from all lands</b> Fuelwood, biomass, and other volumes that do not meet timber product utilizations standards		
D. Fuelwood (MMCF)	6.0	5.0
Fuelwood (Tons)	90.0	75.0
<b><u>E. Timber Sale Program Quantity</u></b> (MMCF) (C+D)	<b>66.0</b>	<b>54.2</b>

**FSH 1909.12 - LAND MANAGEMENT PLANNING HANDBOOK  
CHAPTER 60 – FOREST VEGETATION RESOURCE PLANNING**