

HARVEST GOAL AND TYPE DEFINITIONS FOR STATE FOREST LANDS

The State Forest Program of the Oregon Department of Forestry utilizes a broad continuum of silvicultural practices and harvest intensities to implement its forest management plans. This continuum ranges from the cutting of a single tree to cutting of nearly all trees on 100 or more acres, and all of the intensities in between. This document provides definitions for terms that describe the harvest types that take place on State Forests. These terms are to be used to describe operations on State Forests only; they are not designed to describe operations on any other landowner (private or public). See Figure 1 for the specific numeric definitions.

These terms will be used to improve communication, develop guidance, and set standards for the implementation of the forest management plans. The silvicultural prescriptions for harvest units are developed to meet the management goals for the area, based on the current condition of the stand (basal area, density, site index, etc.), and then the most appropriate harvest type term is used to describe the operation. It is not the practice to select a harvest type term, then develop a silvicultural prescription to fit the term.

Harvest Goals— Harvest Goals are set at the mid to long term planning level. Under the NW and SW State Forest Management Plans, Harvest Goals are set by the district implementation plans. The Elliot Forest Management Plan and the Eastern Oregon Region Long-Range Plan set the harvest goals for their respective districts. Annual Operations Plans are developed to meet the harvest goals set in the higher level plans.

Harvest Types— Harvest Types describe the general silvicultural prescriptions used to achieve the Harvest Goals. The intensity of the harvest is described using the residual stocking (basal area per acre, trees per acre, and Stand Density Index) and the size (acres) of the harvest unit.

Cohort— A cohort is composed of trees of similar age within a stand. In an extreme case, a cohort may only consist of one tree in a stand. A stand may be composed of one cohort or multiple cohorts, however cohorts are not necessarily composed of trees of the same size and a cohort is not the same thing as a canopy layer.

The sections below are narrative descriptions of the harvest types; see Figure 1 for the numeric standards for each harvest type.

REGENERATION HARVEST

The intent of a Regeneration Harvest is to develop a new stand. In general, residual trees left after a Regeneration Harvest are intended to remain on the site through the life of the new stand/cohort. All types of Regeneration Harvests retain less than 80 square feet of basal area per acre (based on trees greater than 11 inches DBH). The Harvest Types (within the Regeneration Harvest Goals) are best defined using residual trees per acre or square feet of basal area per acre; in either case, only trees greater than 11 DBH are counted.

Clearcut— A Clearcut removes all trees in a stand. Clearcuts will provide the best conditions for successful plantation establishment on almost all sites on State Forests. However, clearcuts, by definition, eliminate nearly all of the carryover of residual stand characteristics. The residual trees from the existing cohort may be distributed across the harvest unit, grouped together in patches, or left along the edge of the harvest unit. The clearcut harvest type:

- Retains between 0 to 5 green trees per acre;
- Are subject to the FPA Rules for Type 3 Harvest;
- Are not designed to meet the landscape goals for all structural components in the NW and SW FMP;
- Results in a Regeneration Stand Structure.
- Note: The FPA rules require 2 green trees or snags per acre to be left on clearcut units. In theory, these could all be snags with no green trees, however in practice, most harvest units will retain some green trees.

Modified Clearcut — Clearcuts are modified to leave residual green trees, snags, or trees destined to become snags specifically for their biological or environmental values. In this harvest type, good regeneration results are attained and structural components (green trees, snags, and down wood) are retained that provide value to other resources. A Modified Clearcut resembles a seed tree harvest, but the intent is different. The residual trees from the existing cohort may be distributed across the harvest unit, grouped together in patches, or left along the edge of the harvest unit. Sometimes the residual trees will be grouped along the edges of a harvest unit, in which case, it will look like a Clearcut. The Modified Clearcut harvest type:

- Retains from 5 trees up to 33 square feet of basal area per acre (on Site Class I, II, or III);
- Are subject to the FPA Rules for Type 3 Harvest;
- Are designed to meet or exceed the landscape goals for structural components in the NW and SW FMP;
- Results in a Regeneration Stand Structure.

Retention Cut — Retention Cuts look more like a partial cut than a clearcut, however the focus of future management will be on the new/young trees (new cohort) in the stand, rather than the residual trees (existing cohort). A Retention Cut resembles the first stage of a shelterwood harvest, but the intent and long term prescription are different. At its highest density, a Retention Cut leaves nearly as much basal area as a Heavy Thinning, and the management focus may be on the existing cohort, the new cohort, or both.

In the Retention Cut harvest type, regeneration is more difficult, but still achievable, while complex stand structures are likely to develop much more quickly than after a clearcut or modified clearcut. A Retention Cut will result in a stand with two distinct and well-distributed cohorts. A Retention Cut provides for greater flexibility for managing at the landscape level than do clearcuts and modified clearcuts. The Retention Cut harvest type:

- Retains between 33 and 80 square feet of basal area per acre (on Site Class I, II, or III);
- Are subject to the FPA Rules for Type 1 Harvest;
- Are designed to meet or exceed the landscape goals for structural components in the NW and SW FMP;
- Result in a Regeneration or Understory Stand Structure.

PARTIAL CUT HARVEST

The intent of a Partial Cut Harvest is to manage the growth and density of an existing stand. A prescription for a Partial Cut may be designed to increase the structural complexity of a stand, maximize volume growth, or capture tree mortality. A stand may be Partial Cut many times through out its life. All Partial Cut harvest types retain at least 80 square feet of basal area per acre of trees greater than 11 inches DBH.

There are several forms and intensities of Partial Cuts, however the most common form of Partial Cut is thinning. Thinning prescriptions are often designed using measures of Stand Density Index or Relative Density and remove a portion of the trees from a stand in a generally uniform pattern. Sometimes thinning prescriptions are developed to increase the horizontal diversity within a stand; a diameter limit prescription often results in a stand with variable density.

More frequent, but less intense, thinnings may provide some of the same growth and structure results as the more intense thinning. For example, a Light Thinning conducted every 8 years may have the same growth results as a Moderate Thinning conducted every 16 years.

The structure of a stand immediately after a partial cut (1 to 3 years) is very dependent on both the harvest prescription and the structure of the stand prior to harvest. Generally, the stand structure will become more complex or remain the same.

Heavy Thinning — A Heavy Thinning approaches the harvest intensity of a Retention Cut, and the management focus may be on the existing cohort, new cohort, or both. A heavy thinning results in the fast growth of individual trees, but reduces the total volume growth of the stand.

- Retains at least 80 square feet of basal area per acre and an SDI% of less than or equal to 25.

Moderate Thinning — A Moderate Thinning provides for optimal stand growth and allows vigorous growth of the individual trees. Stand structure will continue to develop with a Moderate Thinning, and depending on species composition and site index, a new cohort of trees may be initiated.

- Retains an SDI% of greater than 25 and less than or equal to 35.

Light Thinning — A Light Thinning focuses on maintaining stand growth and health, however in order to achieve these goals, it must occur more frequently than a Heavy or Moderate Thinning in the same stand. More complex stand structure will not be developed with a Light Thinning and a new cohort of trees will not be initiated.

- Retains an SDI% of greater than 35 and less than or equal to an 45.

Sanitation Thinning — A Sanitation Thinning has the objective of removing or capturing the mortality that naturally occurs in an unmanaged stand. A Sanitation Thinning occurs in stands where the growth rates are already slow and it does not significantly improve that growth. It does not improve stand structure and it will not result in a new cohort.

- Retains an SDI% of greater than 45.

Group Selection — Group Selection harvest, also known as Patch Cutting, removes all (or nearly all) of the trees in patches that range in size between one-half (1/2) acre and five (5) acres. Group Selection is often used to treat specific tree diseases, such as root rot, or to increase the horizontal diversity within a stand. Group Selection sometimes results from salvage of small pockets of windthrown trees. Group Selection is often conducted with a thinning prescription applied to the rest of the stand, but not always.

- The entire unit retains an average of at least 80 square feet of basal area per acre;
- Individual patches are less than 5.0 acres;
- Total portion of the unit in patch cuts must be less than 50 percent of the net acres in the unit;
- To meet the definition of Group Selection, the unit must meet both the basal area retention and acreage limit;
- The Group Selection harvest type can be used in combination with other Partial Cut harvest types (i.e. a Moderate Thinning with Group Selection).

Single Tree Removal — Very few trees per acre are cut in a Single Tree Removal harvest, and in most cases, each tree to be cut must be selected and marked by a forester. Single Tree Removal harvests are often used to remove trees that are safety hazards to recreational facilities or to salvage scattered trees that have been killed by insects. There is also some opportunity for using this harvest type within the Inner Zone of Riparian Management Areas and in some Older Forest Structure stands. This harvest type should not be confused with the Tree Selection method called Individual Tree Selection

Multiple Prescription Thinning — A Multiple Prescription Thin harvest type has three or more different Partial Cut prescriptions applied to a single harvest unit at the same time. This harvest type is applied to a unit because the stand(s) within the unit are composed of many small patches with very diverse characteristics. The patches in these stands are so small that they can not be mapped and managed as separate stands, yet the patches are so diverse that a single prescription can not be applied.

- For example, a one hundred-acre harvest unit may have 30 to 40 patches, ranging from one to five acres in size, for which five separate thinning prescriptions may be applied. There may be patches where a Heavy Thin is applied to favor ponderosa pine; patches of young white fir that receive a Light Thin; patches of older white fir and some pockets of diseased trees are harvested by group selection; and some patches of mixed conifer receive a Moderate Thin.
- Multiple Prescription Thinning units are frequent east of the Cascades.

RELATED TERMS

There are a number of other terms that are related to timber harvest, or are commonly used to describe timber harvest (but should not be confused with a harvest type). Some of these terms are listed below:

Implementation Plan Harvest Goals: The implementation plans for the districts covered by the Northwest and Southwest Oregon State Forest Management Plans were approved prior to the development of the Harvest Goals and Harvest Types described in this document. In those implementation plans, the harvest goals were identified as clearcut or partial cut. The harvest goals in the district implementation plans relate to the harvest goals described in this document as follows:

- Implementation Plan clearcut = Regeneration Harvest Goal
- Implementation Plan partial cut = Partial Cut Harvest Goal

Salvage: Salvage describes the reason for conducting a harvest rather than the intensity of the harvest. Salvage is normally conducted to remove trees killed or severely damaged by fire, wind,

insects, or disease. The intensity of salvage operations range from the Single Tree Removal harvest type to the largest of clearcuts.

Tree Selection: There are a number of methods for identifying the specific trees to be harvested by a particular operation, and each can be used to implement one or more of the harvest types. These methods include (but are not limited to):

- Individual Tree Selection (Marking) - The individual trees to be harvested or retained are marked with paint prior to the timber sale contract being auctioned.
- Diameter Limit - Specific Thinning Prescriptions are included in the timber sale contract that describe the trees that can be harvested by their DBH. These prescriptions generally identify the maximum diameter of trees that can be harvested, but they can also identify the minimum or both an upper and lower diameter.
- AutoMark Thinning - Specific Thinning Prescriptions are included in the timber sale contract that describe the acceptable residual stocking after harvest within basal area range. The prescription may also include the residual average DBH, and a maximum and/or minimum diameter limit.

Stand Density Index: The residual SDI percent is used to define the range of the four commercial thinning harvest types. For the purposes of describing the harvest type, SDI will be calculated using the following assumptions:

- Trees per acre and average DBH will be based on all trees greater than or equal to 5.6 inches;
- The SDI percent will be calculated based on a weighted average of the all species that are a significant component of the stand (for the purposes of this calculation, a significant component means the species comprises 20 percent or more of the stands total basal area).
- Note: In order to develop the silvicultural prescription for a stand, the SDI may be calculated in a number of different ways. The method specified here is intended to provide a consistent standard for identifying the harvest type.

Right of Ways for Roads and Utilities: Right of ways for new roads within a harvest unit will be considered a part of the harvest unit, and the acres within the right of way will be attributed to the same harvest goal as the harvest unit. Roads, power line, and other right of ways, outside of harvest unit boundary, are considered minor forest operations. The acres associated with these operations are not attributed to the Harvest Goals.