

# FOREST PRACTICE NOTES

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## REFORESTATION

This *Forest Practice Note* explains the State of Oregon's current regulations for reforesting lands after forest operations. The Oregon Department of Forestry enforces these regulations under the authority of the Oregon Forest Practices Act. This *Forest Practices Note* replaces a previous note on reforestation, dated December 1979.

The requirements discussed in this note apply to all operations completed after January 1, 1995. Operations completed prior to that date remain subject to the rules or statutes in effect at the time of completion. Contact your local Department of Forestry forest practices forester (FPF) if you have questions about reforestation obligations on operations completed before 1995.

### Purpose and Summary of the Reforestation Rules

The purpose of the reforestation rules is to ensure that forest tree cover is maintained or re-established after harvest of forest trees. The Oregon Board of Forestry recognizes that optimum tree stocking levels are desirable, but that this objective is best met on private lands through incentives and other cooperative efforts rather than through regulation. Therefore, the rules are designed to require reforestation that ensures stands of trees continue to occupy forest land sites, but at somewhat less than optimum levels. Most landowners should easily be able to comply with these rules by continuing the sound harvesting and reforestation practices they already use.

Reforestation is required on areas where harvest operations have taken place and post-operation tree stocking is below specified levels. These required stocking levels vary by site productivity. The reforestation rules allow either artificial (usually tree planting) or natural methods to be used. The rules also describe time limits in which reforestation must be accomplished. In a significant change from past rules, reforestation requirements apply anytime post-operation stocking is below the levels specified in the rules, even if stocking

### How do the rules affect you?

*Listed below are the key steps landowners should take to comply with the reforestation rules. The following pages describe each step in more detail.*

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Determine productivity level of your forest land .....	2-3
Apply the tree stocking standards to your operation, including:	
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b. Determining if your harvest unit requires reforestation .....	3-4
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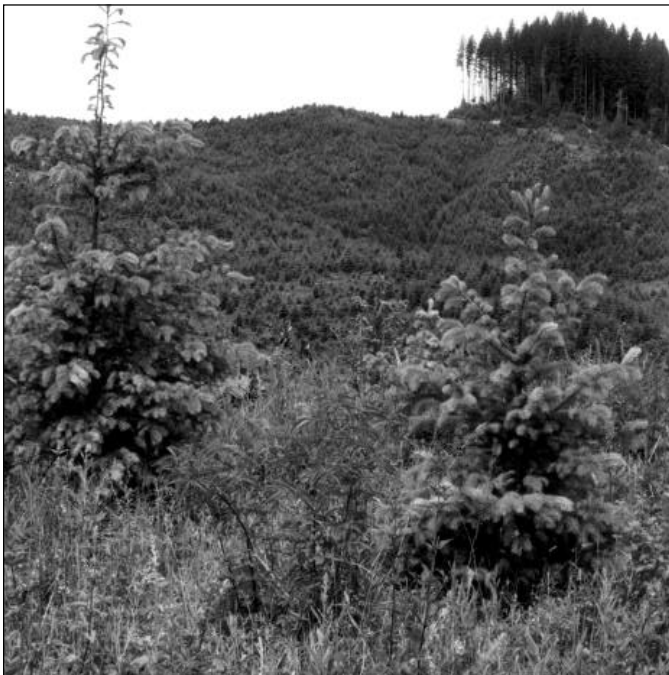
was below those levels before the operation. This means landowners often must reforest following salvage harvests and conversions of underproducing stands. The rules also specify some new procedures for operations involving forest incentive programs, and developing forestlands to non-forest uses.

### Landowner Responsibility

The reforestation rules hold landowners, not operators, responsible for reforesting their lands after forest operations. Landowners will be expected to understand and apply the rules. This technical note is designed to help landowners in that task. Local FPFs will be able to offer limited assistance, such as sharing of rule information and some technical information, but landowners needing further help should contact qualified consulting foresters or other professional foresters for advice. Landowners should be aware that **planning for reforestation before harvesting operations begin** will be necessary to comply with the rules. In addition, landowners need to know that if the department identifies a reforestation rule violation, the landowner will be ordered to comply with the rules, and may be assessed a civil penalty of up to \$5,000.

### “Free to Grow” Trees

The concept of a “free to grow” tree or stand of trees is important for understanding the reforestation rules. “Free to grow” means a tree or a stand of well-distributed trees that are of acceptable species, are of good form, and have a high probability of remaining vigorous, healthy and dominant over undesired, competing vegetation.



### ***In general, an FPF will consider a tree “Free to Grow” if:***

- (a) It is not severely damaged by insects, disease, fire, wildlife, weather or logging;
- (b) It exhibits the potential for continued height growth, consistent with the normal growth for the species on similar sites;
- (c) It has at least one-third of the tree height in full, live crown; and
- (d) It is taller than, and out-competing any grass, shrubs, or undesired trees growing within a ten-foot radius from the tree.

### What Lands are Subject to the Reforestation Rules?

Any land which is rated as Cubic Foot Site Class I, II, III, IV, V or VI forest land is subject to the requirements of the reforestation rules. These are forest lands that are capable of growing at least 20 cubic feet of wood fiber on an acre in a year. In eastern Oregon, very high elevation timber stands or stands dominated by juniper trees probably do not meet this standard. In western Oregon, 94 percent of the privately owned forest lands are capable of growing at least 20 cubic feet per acre per year. Less productive westside forest lands are located primarily in interior southwest Oregon and are often intermingled with more productive lands.



Landowners should become familiar with the productivity of their forest lands. Site productivity may be determined directly by tree growth and stocking measurements throughout the operation area or determined indirectly using applicable USDA Soil Conservation Service soil survey information, USDA Forest Service plant association guides, Oregon Department of Revenue western Oregon site class maps, or other information of comparable quality. Consult a professional forester if you are unsure how to determine the productivity of your land.

## Tree Stocking Standards

After a forest operation subject to the reforestation rules is conducted, the landowner must maintain or reestablish free to grow stocking of acceptable tree species to at least levels listed in **Table 1** within the time limits set in the rules. Landowners are responsible for

determining if reforestation will be required after harvest and determining how many additional trees are needed. Landowners will usually be sent a courtesy letter from the department that informs them of their reforestation obligations.

**TABLE 1: Minimum Tree Stocking Standards**

Site Productivity	Seedlings (less than 1-inch DBH*)	Saplings and Poles (1 to 10-inches DBH)	Trees 11-inches DBH and larger
<b>Cubic Foot Site Class I, II, and III (Douglas-fir 100-year site index 124 and higher)</b>	200 per acre	120 trees per acre	80 square feet of basal area** per acre
<b>Cubic Foot Site Class IV and V (Ponderosa pine 100-year site index 64 to 108)</b>	125 per acre	75 trees per acre	50 square feet of basal area per acre
<b>Cubic Foot Site Class VI (Ponderosa pine 100-year site index 40 to 63)</b>	100 per acre	60 trees per acre	40 square feet of basal area per acre

\* “DBH” means the tree diameter, including bark, at 4.5 feet above the ground (breast height).

\*\* Basal area means the area of a cross section of a tree stem at breast height, expressed in square feet.

The stocking of residual, “free to grow” seedlings, saplings and poles, and larger trees will be weighted to determine stand stocking. Generally, the larger the trees are, the fewer are needed to satisfy the reforestation rules. Regardless of the site productivity of the operation area, 100 seedlings will be considered equal to 60 saplings and poles and equal to 40 square feet of basal area of 11-inches DBH and larger trees when calculating stocking. Expressed as an equation:

$$\text{New Trees} = \text{Rule Standard} - \left[ \# \text{ Seedlings} + \left( \# \text{ Saplings \& Poles} / 0.6 \right) + \left( \text{Basal Area} / 0.4 \right) \right]$$

Where: “**New Trees**” means the minimum number of additional free to grow seedlings the landowner must establish per acre

“**Rule Standard**” means the seedling stocking standard for the site listed in the rules (100, 125, or 200 seedlings per acre)

“**# Seedlings**” means the number of free to grow seedlings per acre already present

“**# Saplings & Poles**” means the number of free to grow saplings and poles per acre already present

“**Basal Area**” means the basal area per acre of free to grow trees 11-inches in DBH and larger already present.

**The example on page 4 shows how this equation is used.**

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## Example Using Stocking Equivalents:

A partial cut harvest unit on Site IV forest land contains the following tree stand after the operation:

Average number of seedlings per acre = 35  
Average number of saplings and poles per acre = 8  
Average square feet of basal area per acre of trees 11-inches DBH and larger = 15

1 seedling = 0.6 saplings and poles = 0.4 square feet of basal area of 11-inch DBH and larger trees; therefore:

8 saplings and poles per acre / 0.6 = 13 seedling equivalents  
15 sq. ft. of basal area per acre / 0.4 = 38 seedling equivalents

$35 + 13 + 38 = 86$  seedling equivalents already present

*One hundred and twenty-five (125) seedlings or equivalent larger trees is the minimum stocking standard for Site IV land; therefore, establishment of an additional 39 free to grow seedlings per acre is required on this site [39 = 125 - (35 + 13 + 38)].*

***(Example assumes all trees are healthy, undamaged, and well distributed)***

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Live conifer trees 11 inches DBH and larger left standing in harvested areas to meet the Forest Practices Act's green tree and snag retention requirements may also be counted towards meeting the tree stocking standards if the trees are free to grow.

**Table 2** provides approximate conversions between trees per acre and tree spacing when evaluating trees less than 11-inches DBH. For trees 11-inches DBH and larger, **Table 3** (*opposite*) provides approximate conversions between trees per acre, tree spacing, and basal area per acre.

Landowners should be aware that if planting is planned, the number of planted seedlings will usually need to be higher than the applicable seedling levels listed in these rules because some seedlings may die between planting and the free to grow deadline.

The reforestation rules provide flexibility for forest practices foresters and landowners to tailor reforestation requirements to site-specific situations. Landowners may submit plans for alternate practices that do not conform to the reforestation stocking levels established under these rules. Such plans may be approved if the FPF determines that there is a high probability that the purpose of the reforestation rules will be achieved.

## Using Natural Reforestation Methods

Natural reforestation methods may be the best means to meet a variety of resource management objectives on some forestlands. Successful natural reforestation requires careful, flexible, site-specific pre-harvest planning and post-harvest monitoring. On Cubic Site Class VI forestlands and in wetlands, the use of silvicultural systems that promote natural reforestation and the

**TABLE 2: Relationship Between Trees Per Acre and Average Tree Spacing**

Trees per acre	Average spacing between tree centers (in feet)
200	15
125	19
120	19
100	21
75	24
60	27



**Table 3: Relationship Between Basal Area Per Acre and Tree Spacing for Different Tree Diameters**

Average DBH of trees 11-inches and larger	Average trees per acre for 80 sq. ft./ac. basal area	Average spacing between tree centers for 80 sq. ft./ac. basal area (in feet)	Average trees per acre for 50 sq. ft./ac. basal area	Average spacing between tree centers for 50 sq. ft./ac. basal area (in feet)	Average trees per acre for 40 sq. ft./ac. basal area	Average spacing between tree centers for 40 sq. ft./ac. basal area (in feet)
11	122	19	76	23	61	26
12	102	21	64	26	51	29
14	75	24	47	31	37	34
16	58	27	36	35	29	39
18	46	31	28	39	22	44
20	37	34	23	44	18	49
22	31	37	19	48	15	54
24	26	41	16	52	13	58
26	22	44	14	56	11	63
28	19	48	12	60	10	68
30	17	51	11	63	8	73
32	15	54	9	69	7	78

retention of good quality residual trees after operations often have a higher probability of success than artificial reforestation methods.

When natural reforestation methods are planned, landowner must first obtain written approval by the forest practices forester of a written plan which describes how reforestation will be accomplished. Information in the plan must include:

- (a) A description of the seed sources that will be used;
- (b) Site preparation and vegetation competition control methods;
- (c) An estimate of the time needed to obtain an adequately stocked free to grow stand;
- d) How progress towards natural reforestation will be evaluated; and
- (e) Alternative strategies that will be used if natural reforestation does not progress as planned.

The written plan must be submitted no later than twelve months after tree stocking is reduced.

Forest practices foresters will closely review any plans that rely on naturally regenerated hardwood species to meet the reforestation requirements. In some cases, such as cottonwood and quaking aspen groves, natural reforestation with the same hardwood species is probably the best option. However, written plans proposing natural reforestation on conifer sites with species such as red alder will generally not be approved unless strong evidence is provided that establishes a high probability of reforestation success.

Landowners may not need to submit a new written plan every time natural reforestation methods are used if an approved plan already exists and future operations on the ownership will take place under similar conditions. However, approval will still be required.

### **Time Line for Completing Reforestation Activities**

The time period for compliance with the reforestation rules begins at the completion of the operation or 12 months after tree stocking has been reduced, which-

ever comes first. "Completion of the operation" means harvest activities have been completed to the extent that an operation area will not be further disturbed. FPFs may require reforestation on a logical portion of a harvest unit even if activities on other portions of the operation are continuing.

Once the compliance period begins, the landowner must begin reforestation, including any necessary site preparation, within 12 months. If artificial reforestation is planned, the landowner must complete planting or seeding within 24 months. By the end of the sixth full calendar year, the landowner must have established an adequately stocked, free to grow stand of trees.

When natural reforestation methods are planned, the time limits for evidence of successful germination and for establishing a free to grow stand of trees, which meets or exceeds the minimum stocking level required for the site, will be established in the approved written plan.

If reforestation cannot be accomplished within the specified time due to circumstances determined by the forest practices forester to be beyond the landowner's control, the time to accomplish reforestation may be extended. Examples of such circumstances include:

- (a) Nursery failure;
- (b) Inadequate seedling availability following salvage harvesting;
- (c) Extreme drought;
- (d) Insect infestation;
- (e) State smoke management restrictions on the burning of slash;
- (f) Wildfire or disease damage; or
- (g) Severe wildlife damage that could not be reasonably anticipated or controlled by the landowner.

The following situations are examples of where extensions will *not* be granted:

- (a) Failure of artificial reforestation efforts is due to landowner's failure to secure appropriate seed or seedlings following the harvest of free to grow trees. Exceptions may be granted for salvage harvests that the landowner could not anticipate.
- (b) Natural reforestation failures are due to inadequate seed sources or poor seed crops in the years immediately after an operation.
- (c) Failures on harsh reforestation sites resulting from harvest area design or competing vegetation.
- (d) Wildlife damage that could have reasonably been anticipated and controlled, such as from mountain beavers.

## Tree Species Suitable for Reforestation

Tree species are acceptable for artificial reforestation, natural reforestation, and as residual tree stocking based on all of the following criteria:

- (a) The species must be ecologically suited to the planting site;
- (b) The species must be capable of producing logs, fiber, or other wood products suitable in size and quality for the production of lumber, sheeting, pulp or other commercial forest products; and
- (c) The species must be marketable in the foreseeable future.



Native species will generally be considered "ecologically suited" and the preferred reforestation species.

Up to 20 percent of required tree stocking may be met by using free to grow hardwood trees remaining after harvest. Prior approval by the FPF is required before more than 20 percent of the required stocking may be met with residual, post-operation hardwood trees.

Landowners are encouraged to reforest with a mixture of acceptable tree species where appropriate to reduce the risk of insect and disease losses and to promote stand diversity.

Seedlings or seeds used for artificial reforestation should be from seed sources that are genetically adapted to the growing site. If local seed sources are not available, landowners should not use off-site seeds or seedlings that may result in poor survival. A delay while waiting for appropriate seedlings is preferable to planting off-site stock.

When a landowner intends to plant or seed a tree species not native to the operation area, the landowner must obtain prior approval of a written plan which describes the tree species and how it will be used to meet the reforestation requirements. Information in the plan must include:

- (a) The tree species that will be used;
- (b) Evidence that the species is ecologically suited to the planting site;
- (c) Evidence that the species is capable of producing commercial forest products that will be marketable in the foreseeable future; and

- 
- (d) Available research or field test findings which demonstrate the tree species has been successfully used in reforesting sites similar to the operation area.

Written plans for the use of non-native tree species must be submitted for approval no later than twelve months after tree stocking is reduced and prior to planting. For the purpose of the rules, any tree species that has naturally existed and reproduced in the operation area or on similar sites will be considered a native species.

### **Suspension of the Reforestation Requirements**

A landowner may request a suspension of the reforestation rules for the salvage or conversion of low value forest stands. Forest practices foresters will suspend the reforestation rules in such cases if the landowner is approved for funding from a forest incentive program administered by the Department of Forestry and the gross harvest revenues will not exceed the total costs of harvest, taxation, and reforestation. The intent of this suspension option is to allow landowners to fully qualify for federal cost-share funds and state incentive programs.



The suspension of the reforestation rules may be revoked at any time within six years of completing the operation if the landowner fails to establish a forest stand according to the specifications and time lines required under the applicable forest incentive program.

Contact your local Department of Forestry service forester if you wish to apply for this rule suspension.

### **Revegetation When Reforestation is Not Required**

When reforestation is not required, the landowner must ensure sufficient revegetation of the site to provide continuing soil productivity and stabilization within 12 months of the completion of the operation. Revegetation may be planted or naturally established,

and must consist of trees, shrubs, grasses, or forbs suitable for soil stabilization and productivity protection. Landowners are encouraged to revegetate the operation area with native plants.

### **Exemption from Reforestation when Developing Land for Non-Forest Uses**

Nothing in the Forest Practices Act or the forest practice rules is intended to prevent a landowner from converting land to a non-forest use. However, when a land use change is planned following a harvest operation, the landowner must take certain steps for the operation area to receive an exemption from the reforestation requirements.

In seeking a reforestation exemption, the landowner must provide written documentation to the Department of Forestry which establishes:

- (a) The specific portion of the operation area necessary for the proposed change in land use;
- (b) The intended change in land use and the incompatibility of the land use with forest tree cover;
- (c) The intended change in land use is authorized under local land use and zoning ordinances, and all necessary permits and approvals have been obtained, or will be obtained within 12 months following the reduction in tree stocking; and
- (d) The county assessor and local planning department have been notified in writing of the proposed change in land use.

The Department of Forestry has developed a written plan form for this exemption request.

Reforestation exemptions will only be granted for the smallest land area necessary to carry out the intended change in land use. Reforestation will be required on the portions of operation areas not directly involved in the land use change.

Reasonable progress towards the change in land use, as determined by the forest practices forester, must be made within 12 months of the completion of the operation. The change in land use must be completed and continuously maintained within 24 months of the completion of the operation. Compliance extensions may be granted by the forest practices forester based on written evidence provided by the landowner, that the landowner made reasonable attempts to comply, but was prevented from doing so by circumstances beyond the landowner's control.

To remain exempt from the reforestation requirements the landowner must continuously maintain the land in the new use until at least six calendar years following the completion of the operation.

# ODF Field Offices Directory

## Northwest Oregon Area

Astoria District  
Route 1, Box 950  
Astoria, OR 97103  
503-325-5451

Tillamook District  
4907 E. 3rd St.  
Tillamook, OR 97141  
503-842-2545

Forest Grove District  
801 Gales Creek Road  
Forest Grove, OR 97116  
503-357-2191

Clackamas-Marion District  
14995 S. Hwy 211  
Molalla, OR 97038  
503-829-2216

West Oregon District  
25433 Alsea Hwy  
Philomath, OR 97370  
503-929-3266

## Southern Oregon Area

Douglas Forest Protection  
Association  
1758 N.E. Airport Road  
Roseburg, OR 97470  
503-440-3412

Western Lane District  
P.O. Box 157  
Veneta, OR 97847  
503-35-2283

Eastern Lane District  
3150 Main St.  
Springfield, OR 97478  
503-726-3588

Linn District  
4690 Hwy 20  
Sweet Home, OR 97386  
503-367-6108

Southwest Oregon District  
5286 Table Rock Road  
Central Point, OR 97502  
503-664-3328

Coos District  
300 5th St., Bay Park  
Coos Bay, OR 97420  
503-267-4136

## Eastern Oregon Area

Central Oregon District  
Route 2, Box 357  
Prineville, OR 97754  
503-447-5658

Klamath-Lake District  
3400 Greensprings Drive  
Klamath Falls, OR 97601  
503-883-5681

Northeast Oregon District  
611 20th St.  
La Grande, OR 97850  
503-963-3168

## Salem Headquarters

2600 State Street  
Salem, OR 97310  
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