



EXHIBIT 7

ITEM 4.1

Department of Land Conservation and Development

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M E M O R A N D U M

September 16, 1983

TO: Land Conservation and Development Commission
FROM: James F. Ross, Director
SUBJECT: ITEM 4.1: EXPLANATION OF SB 237: THE MARGINAL LANDS BILL

Since passage of SB 237 (Chapter 826, Oregon Laws 1983) there have been numerous detailed questions about the meaning and intent of this Act. Attached is a DRAFT memo which the Department is considering distributing statewide to all interested parties about SB 237.

Prior to its distribution, I wanted to provide it to the Commission and other people knowledgeable about the Act in order to receive any comments on its usefulness and readability.

Any suggestions and/or questions are welcome.

This will be discussed further at the Commission's September 23-24, 1983 meeting.

JFR:RE:ad
5747B/4B

September 15, 1983

TO: Boards of Commissioners, County Courts, County Planners and
Other Interested Parties

FROM: James F. Ross, Director, DLCD

SUBJECT: SB 237: THE MARGINAL LANDS BILL

As you know, the 1983 Legislature made important changes to Oregon's land use laws. The two most significant land use bills became law when Governor Atiyeh signed them on August 9: HB 2295--the Governor's land use reform bill; and SB 237--the "marginal lands" bill. The two bills contain provisions that will aid counties in bringing their plans into compliance with the Statewide Planning Goals. Because the "marginal land" bill has received much less attention than HB 2295, I would like to describe briefly how it works.

Both HB 2295 and SB 237 represent efforts by the Governor's Office and the Legislature to respond to recommendations made by the Governor's Task Force on Land Use last fall. SB 237 addresses two particular recommendations concerning agricultural land and forest land. The Task Force recommended that "marginal land" now covered by Goal 3 or Goal 4 be made available for rural residential development. The Task Force also recommended the 1981 Lots-of-Record law be amended to make eligible those lots created prior to January 1, 1965.

SB 237 defines "marginal land," sets forth uses that may be allowed on such land, expands the number of qualified lots-of-record under the 1981 law and changes EFU criteria for the review of farm and nonfarm dwellings.

A. Marginal Land

SB 237 (Section 2) defines land as "marginal" for farm or forest uses in two ways: (1) soils of low productivity for farm or forest uses, and (2) land divided into small ownerships, regardless of soil capability. The new law defines these two types of marginal land very precisely. This will no doubt leave out land that individual Counties consider "marginal." However, the precision has the advantage of leaving less room for disagreement whether land is "marginal" or not, eliminating the need for long findings, reducing the likelihood of appeals and easing the LCDC review burden.

Working along with the "low productivity" and "small ownerships" tests is the "income test." Land which meets either the "low

productivity" or the "small ownerships" test must also meet the "income test." The "income test" is designed to ensure that land which is being managed as part of a commercial farm or forest operation does not qualify as being marginal. That includes commercial ranches operating on Class VI soil (as many do), intensive commercial farms (such as nurseries) on small tracts, and successful woodlots.

SB 237 does not prescribe any particular approach to identifying "marginal land" in a County. Washington County is using a workable approach: it determines which County lands satisfy the "low productivity" or "small ownerships" tests first, and then which of those lands satisfy the "income test."

It should be noted that both agricultural land and forest land are eligible to be designated "marginal land."

1. "Low Productivity" Test: Section 2 (1)(b)(C)

Land is eligible to be designated "marginal" if it is of low productivity for both farm and forest uses. SB 237 relies on the SCS Capability Classification System and the Site Index rating system as the measures of productivity because counties are already using this information in the preparation of their comprehensive plans.

West of the Cascades, land is eligible if it is predominantly Class V, VI, VII or VIII soil on the SCS scale and is only capable of producing less than 85 cubic feet of merchantable timber per acre per year. East of the Cascades, land is eligible if it is predominantly Class V, VI, VII or VIII soil on the SCS scale and is only capable of producing less than 50 cubic feet of merchantable timber per acre per year.

The Legislature intends "predominantly" to mean more than 50 percent. So, a 100-acre ownership that has 55 acres of Class VI soil and 45 acres of Class IV soil is still eligible to be "marginal land."

Soil capability and site index information are readily available for almost all private land in Oregon from either the U.S. Soil Conservation Service or the Oregon Forestry Department.

Land that meets the "low productivity" test can be designated "marginal" if it meets the "income test" described below.

2. "Small Ownerships" Test: Section 2(1)(b)(A) and (B)

There are two "small ownerships" tests, one for general application and one tailored specifically to apply in narrow valleys where small ownerships occur along a river or road rather than in a large cluster. However, a County can use either "small ownerships" tests anywhere in the County.

Test A

The first test is for clusters of ownerships primarily 20 acres and smaller. To apply the test, a County would choose a lot or parcel in the middle of a cluster of small tracts. The County would then draw a line around the center lot or parcel one-quarter mile from the boundaries of the lot or parcel. If the line passes through a nearby lot or parcel, then that lot or parcel is included in the "small ownerships" area. Once the line is drawn, the County checks to see whether 50 percent of the area included within the line was in lots or parcels 20 acres or less in size on July 1, 1983. For example, if the area within the line is 260 acres, it would meet the test if all the lots and parcels 20 acres or smaller added up to at least 130 acres (Section 2(1)(b)(A)).

A County can choose to draw the one-quarter mile perimeter around more than one lot or parcel, if the cluster of small ownerships is large. See the examples in Figures 1 and 2 (to be provided later).

SB 237 treats adjacent lots or parcels owned by the same person or a spouse, parent, child or sibling of the person, as one lot for the "small ownership" test. For example, assume two adjacent 15-acre tracts fall within the area described by the one-quarter mile line. If one is owned by Smith and the other by Jones, they count as two separate lots, adding 30 acres toward the 50 percent acreage total. If one is owned by Smith and the other by Smith's spouse, the tracts are treated as one 30-acre lot and cannot be counted toward the 50 percent total (Section 2(2) and (3)).

Land in exception areas can be included in the test area under this first test (Section 2 (4)). Also, any ownership that falls within the one-quarter mile perimeter, regardless of size, qualifies as "marginal" so long as 50 percent of the area within the test area is in ownerships smaller than 20 acres and meets the income test (Section 2 (6)).

For example, suppose there is an area of 25-acre to 30-acre tracts currently designated Agriculture or Forestry near an exception area adopted by the County. The County believes the tracts are "marginal" but cannot find any way to draw a perimeter including adjacent farm or forest land that meets the test. Under this test, the County can draw the line to take in the usually smaller five- and ten-acre ownerships in the exception area. If 50 percent of the test area is in ownerships 20 acres or less, the 25-acre and 30-acre tracts can be designated as "marginal" if they also meet the income test (see Figure 2).

Test B

The second "small ownerships" test works differently. A test area must include at least 240 acres. At least 60 percent of the area, not 50 percent as in the first test, must be in ownerships 20 acres or smaller. However, the area can take any shape the County wishes. The County can "gerrymander" the boundaries of the test area to take in small ownerships and exclude large ownerships (Section 2(1)(b)(B)).

For example, in some valleys there are narrow strips of five-acre and ten-acre lots along a road. Behind the small lots are large tracts of pasture or woodlots. An area like this would not qualify under the first test because the quarter-mile perimeter would take in the larger tracts. Under the second test, instead of drawing a quarter-mile line around a central lot, the line could be drawn as far down the road as necessary to make up the minimum 240-acre area.

It should be noted that, under this second "small ownerships" test, adopted exception areas may not be counted toward the 60 percent total of ownerships 20 acres or smaller (Section 2 (4)) (see Figure 3). However, just as for the first test, adjacent lots or parcels owned by the same person or a spouse, parent, child or sibling are treated as one lot.

3. "Income" Test: Section 2 (1)(a)

Land that satisfies either the "low productivity" or the "small ownership" tests qualifies as "marginal land" if it meets the "income" test. Land meets this test if it was not managed as part of a farm operation that produced at least \$20,000 in annual gross income in three of the five years prior to January 1, 1983, and was not part of a forest operation that is capable of producing an average of \$10,000 in annual gross income over the growing cycle.

Counties are not required to ask landowners to submit income information which landowners usually prefer to keep confidential. SB 237 authorizes counties to rely instead upon countywide statistics about average yield per acre and price per unit of farm products or livestock, compiled annually by OSU Extension Services, or any other objective data. Counties may also rely on average production by site index and average stumpage value to determine timber income (Section 2 (5)).

For example, suppose a County proposes to designate as "marginal" an 18-acre parcel in a "small ownership" area. For the past several years the parcel has been in wheat. The average yield in the County for those years was 60 bushels per acre. The average price was \$3.75 per bushel. It has been leased to a farmer who has another 30 acres of wheat. Sixty bushels at \$3.75 per bushel

times 48 acres equals \$10,800. The land qualifies as "marginal" because it was not part of a farm operation grossing at least \$20,000 per year.

Land which satisfied either the "low productivity" test or the "small ownerships" test and the "income" test can be designated "marginal" and used as authorized by SB 237. All goals other than Goals 3 and 4, however, still apply to the marginal land (Section 2(7)).

4. Uses Allowed on "Marginal Land": Section 3

SB 237 establishes for land designated as "marginal", a new zone very similar to a rural residential zone. As recommended by the Governor's Task Force, the new law allows much greater residential use than would otherwise be permitted by Goals 3 or 4.

First, there is a "lot-of-record" provision. A residence may be approved on all existing lots and parcels created before July 1, 1983, regardless of size or ownership. The only limitation is that if the lots occur in the Willamette Greenway or a designated floodplain or hazard area, they remain subject to those special local requirements (Section 3(2)).

Second, there is a generally applicable ten-acre minimum lot size for creation of new residential lots (Section 4 (1)). The lot size is 20 acres for those new tracts that border an EFU or forest zone. However, if land that remains zoned for EFU or forest uses would qualify as "marginal," even if they are not to be designated, the lot size on adjacent "marginal land" may also be ten acres. Existing lots smaller than the minimum lot size are still buildable under the "lot of record" provision.

The new law also authorizes temporary hardship dwellings and the same nonfarm uses outlined in ORS 215.213(1) and (2) of the exclusive farm use statute (for example, churches, schools, golf courses, utility facilities, etc.) (Section 6).

5. Implementation

SB 237 authorizes Counties to designate lands as "marginal" now, prior to acknowledgment, as a means to avoid controversy over rural residential exception areas. Counties need not wait to apply this Act until after acknowledgment.

SB 237 contemplates that counties will designate "marginal lands" by adopting plan policies that reflect the provisions of the Act, and adopting a new "marginal lands" zone allowing uses authorized by the Act, and applying the new zone to land which meets the tests. There is nothing in SB 237, however, that requires this single implementation technique. The only express requirement is that plan and ordinance provisions designed to implement

"marginal lands" be acknowledged by LCDC before they become "effective" (applicable to the issuance of permits, land divisions, etc.).

Another technique is under way in Washington County. The County will adopt plan policies and a new "marginal lands" zone. One plan policy will designate which lands are potentially eligible for "marginal lands" zoning (some 40,000 acres currently designated Agriculture-Forestry-20). The County will submit the policies and ordinance to LCDC for acknowledgment. But the actual change of zone from AF-20 to "marginal lands" will come later, on a case-by-case basis, as owners of eligible land make applications and prove their land is "marginal." In this way, Washington County will be able to use "marginal land," resolve a long-standing "exception" controversy, and still not interfere with its acknowledgment schedule.

B. Lots-of-Record

As mentioned above, SB 237 makes virtually all existing lots and parcels that fall within "marginal lands" eligible for residences. SB 237 also relaxes some of the limitations in the 1981 Lots-of-Record Law and establishes new opportunities for building on small lots and parcels in EFU, forest and other rural areas.

1. Changes to Existing Lots-of-Record Law: Sections 14 and 15

SB 237 makes a number of changes to the 1981 Lots-of-Record Law. First, as recommended by of the Governor's Task Force on Land Use, SB 237 makes lots created by or transferred to the present owner after January 1, 1948, eligible for lot-of-record status. Before amendment, lots created by, or transferred before, January 1, 1965, were not eligible.

Second, under the 1981 law, lots were considered "contiguous" unless separated by a four-lane highway. Contiguous lots owned by the same person or a relative were ineligible for lot-of-record status. Under the new law, lots are now not considered contiguous if they are separated by any public road.

Third, under the 1981 law, contiguous lots otherwise qualifying but owned by the same person, or a spouse, parent, child, brother or sister of the person, were entitled to only one building permit. SB 237 removed the term "relative" so that contiguous lots owned by a parent, child, brother or sister are eligible for a building permit.

These changes will make more existing lots buildable under the Lots-of-Record Law. However, some other new provisions in the EFU statute regarding existing small lots amended the 1981 Lot-of-Record Law so it no longer applies to lots or parcels in an EFU zone (Section 15).

2. Small Lots in EFU Zones: Section 6

SB 237 amends the EFU statute to exempt small lots from most existing EFU review criteria. The owner of any existing lot or parcel in an EFU zone created between January 1, 1948, and July 1, 1983, that is three acres or smaller in size may obtain a permit for a dwelling unless the dwelling will interfere with nearby farm operations. To obtain a permit, the landowner applies, and the County notifies owners of property within 250 feet of the parcel. If no objection is received, the County is under no obligation to hold a hearing. If an objection is received, a hearing must be set. The only issue at the hearing is whether the dwelling will "force a significant change in or significantly increase the cost of farming practices on nearby lands..." (Section 6, new ORS 215.213 (4)).

It should be noted that these lots remain subject to one of the limitations in the 1981 Lots-of-Record Law: contiguous lots owned by the same person or a spouse are eligible for only one residence.

The lot-of-record provisions are optional and need not be adopted. However, if a County chooses to use them, the County must also implement the new EFU provisions of this Act.

C. New EFU Provisions

SB 237 made major changes to the EFU statutes (ORS 215.213), principally to the review criteria for farm and nonfarm dwellings. Those revised statutes will apply to all counties that choose to take advantage of the optional marginal-land or expanded lot-of-record provisions offered by SB 237. Counties that do not choose to utilize the options offered by SB 237 will remain subject to the EFU statutes that existed prior to the adoption of SB 237. Those older EFU statutes, once familiar to many as ORS 215.213, now have been recodified as ORS 215.283 (Section 17). In other words, the newer, more stringent EFU statutes that apply to counties that embrace SB 237 are found in ORS 215.213; the older EFU statutes, which still apply to counties that do not embrace SB 237 are found in Section 17 (see Section 16).

The amendments in SB 237 to ORS 215.213(1), (2) and (3) are optional (see Section 16). Amendments to ORS 215.263 and 215.253 and several new sections are not optional. The amendments will be described briefly in the order in which they appear in SB 237. All are from Section 6 of that bill.

1. School Buildings

The new statute expressly authorizes "buildings essential to the operation of a school," such as gymnasiums and dormitories.

2. Farm Dwellings Where Minimum Lot Size Acknowledged

Under the new statute, if a dwelling is proposed on a parcel that is managed as part of a farm operation not smaller than a minimum lot size acknowledged by LCDC, the dwelling may be permitted outright.

3. Temporary Hardship Dwellings

The current EFU statute does not authorize temporary hardship dwellings unless they can be approved as farm dwellings or nonfarm dwellings. SB 237 adds a new provision that permits a mobile home in conjunction with a dwelling on a temporary basis for the term of a hardship exempt from other EFU criteria.

4. Forest Dwellings

The current EFU statute does not authorize "woodlot" dwellings. The new EFU standards do provide for dwellings "in conjunction with the propagation or harvesting of a forest product" if the standards in the statute are met. There are two ways for a lot or parcel to qualify for a "woodlot" dwelling. First, if the lot or parcel is part of a forest operation that is larger than 20 acres and also is as large as the average woodlot in the County producing at least \$2,500 annually in gross income, the tract qualifies. If a lot or parcel is smaller than the first standard requires, it can still qualify if it is capable of producing at least \$10,000 annually averaged over the growing cycle.

For example, the 1978 Census of Agriculture shows that the average size of woodlands in Yamhill County with at least \$2,500 in sales is 55 acres. A Yamhill County landowner with 55 acres or more would be entitled to a "woodlot" dwelling permit. If the landowner had only 32 acres, he would qualify for a "woodlot" dwelling only after showing the 32-acre woodlot was capable of producing at least \$10,000 in annual sales averaged over the growing cycle.

5. Farm Dwelling Where No Acknowledged Minimum Lot Size

For counties with no acknowledged lot sizes in their EFU zones, SB 237 establishes two standards for farm dwellings on existing parcels, similar to the standards for "woodlot" dwellings (Section 6).

First, if the parcel is managed as part of a farm larger than 20 acres in size and as large as the average farm of that type in the county producing at least \$2,500 in sales, the parcel qualifies. Second, if a parcel is smaller than the first standard requires, it can still qualify if the owner or operator can show that the parcel produced at least \$10,000 in sales in two consecutive years of the three years preceding the dwelling application or the parcel is planted in perennials (for example, grapes or fruit trees) capable of producing an overage of at least \$10,000 annually upon harvest.

The legislative history behind SB 237 makes clear that the Legislature did not want counties to have to collect the data needed to implement these standards themselves. The Legislature intended to allow counties to rely on existing information from the Oregon State University Extension Service but to remain free to develop their own data if they chose.

Oregon State University has obtained from the U.S. Bureau of the Census more detailed information about farm income and size, by county, than is otherwise available to counties from the Bureau in the 1978 Census. The new information, available to counties from OSU, gives the average size of eleven types of farms and ranches, by County, producing at least \$2,500. The data show the average fruit or nut orchard in Yamhill County is 69 acres. In Washington County, the average is 76 acres. In Josephine County, the average "intensive animal" operation is 58 acres; the average "horticultural specialities" operation is 15 acres. In Jackson County, the average "vegetable or melon" farm is 38 acres.

For example, an applicant in Yamhill County with a 70-acre farm whose principal crop is filberts would be entitled to a farm dwelling. An applicant whose principal crop is filberts but who has only 22 acres could not qualify under the first standard. The applicant has two chances to qualify under the second test. If he or she has produced \$10,000 in sales of filberts in two consecutive years of the past three on that parcel it qualifies for a dwelling. Or, if he or she is just getting started with filberts and has planted trees that will produce an average of at least \$10,000 in sales annually at harvest, the parcel qualifies. In Benton County, using average yield and price data, it would take 13.5 acres of filberts to produce \$10,000 in annual sales. Information about average county yields per acre and average prices are available county-by-county from the OSU Extension Service.

6. Limits on New Nonfarm Dwellings

SB 237 continues the current statute's authorization for nonfarm dwellings on Class IV, V, VI, VII and VIII soils but prohibits new nonfarm dwellings on Class I, II and III soils except on lots or parcels three acres and smaller, described in number eight below.

7. New Criteria for Nonfarm Dwellings

SB 237 revises the criteria for nonfarm dwellings in EFU zones found at ORS 215.213(3). Formerly that statute listed five criteria outlined here, and authorized counties to add their own independent "conditions": (1) compatibility with farm use; (2) consistency with ORS 215.243; (3) interference with farm practices; (4) stability of area's land use pattern; and (5) generally unsuitable soil. The new statute condenses these five criteria into two: a new interference test and a slightly modified unsuitability test. It should be noted, however, that the five older criteria still apply to counties

that do not choose to take the SB 237 options. Those criteria have been recodified to appear in ORS 215.283.

The unsuitability test has new language intended to put the court holding in Rutherford v. Armstrong (Yamhill County), 31 Or App 1319 (1977), into the statute. It says: "A lot or parcel shall not be considered unsuitable solely because of its size or location if it can reasonably be put to farm use in conjunction with other land." For example, a nine-acre tract of Class II soil may be too small to produce farm crops or livestock by itself. But it is not "generally unsuitable" solely because of its small size if it can reasonably be farmed by the operator of an adjoining field.

The new interference test focuses upon cost of accepted farm practices:

"The dwelling or activities associated with the dwelling will not force a significant change in or significantly increase the cost of accepted farming practices on nearby lands devoted to farm use.

For example, if the siting of a nonfarm dwelling would force a farmer to abandon a practice such as aerial spraying, or force an expensive new practice, either of which the County finds to be "significant," the dwelling could not be approved. The statute does not define "significant" so counties will have to determine its meaning as they apply it in particular cases.

8. Nonfarm Dwellings on Small Lots

As mentioned in the Lot-of-Record section earlier, SB 237 allows a "lot-of-record" dwelling on any lot or parcel three acres or less created between January 1, 1948, and July 1, 1983, regardless of soil quality, so long as a dwelling on the parcel meets the new interference test described above and complies with local ordinances pertaining to other matters (e.g., flooding, geological hazards). A parcel is disqualified if it is part of a contiguous ownership (same person or spouse) larger than three acres.

9. Farm Divisions

SB 237 amends ORS 215.263 to allow divisions of land creating parcels for farm use if the proposed parcel is either larger than the minimum lot size acknowledged by LCDC or is shown to be "appropriate for the continuation of the existing commercial agricultural enterprise within the area." This is the existing criterion from Goal 3.

10. Divisions for Nonfarm Dwellings

Although most counties authorize creation of new parcels for nonfarm dwellings, the old law did not expressly provide for it. SB 237 expressly authorizes nonfarm dwelling parcels if the criteria for nonfarm dwellings (at ORS 215.213(3)) are met (ORS 215.263(4), Section 7).

D. Other Changes

1. Farm-Practices Awareness Statements

SB 237 (Section 11) authorizes counties to require as a condition of approval of a dwelling in an EFU zone the signing of a statement declaring the applicant will not complain about accepted farming or forest practices in the area.

2. Protection of Farm Practices on Marginal Lands

SB 237 (Section 12) extends to accepted farming practices on "marginal lands" the same protection against unreasonable restrictions as current law provides for EFU zones under ORS 215.253.

3. Minor Partitions

Oregon's subdivision law did not previously require counties to review and approve or disapprove minor partitions (divisions creating two or three lots with no new road). SB 237 (Section 9) amends the state subdivision law to require counties to regulate minor partitions in EFU zones.

4. Reporting EFU Decisions

SB 237 (Section 13) continues the requirement imposed by the 1981 Legislature that the Joint Legislative Committee review land divisions and dwelling permits approved by counties in EFU zones. Unlike the 1981 law, however, SB 237 directs counties to send EFU decisions to LCDC rather than the Committee. LCDC then must review the decisions and make recommendations to the Joint Committee on any proposed changes to EFU criteria.

This new section also requires counties to report on the amount of land designated as "marginal" the number of dwellings and land divisions approved on such land and the approval of any dwellings on lots-of-record.

EH:ad
5600B/5C

**PRELIMINARY DRAFT
SUBJECT TO REVISION**

EXHIBIT 8

DOUGLAS FIR LOG PRICES 1978-1982, 1983

REGION 1 - WESTERN OREGON UNIT

Reporting format: ODF reporting as of 4th quarter 1981

Source: Oregon Department of Forestry Forest Management Division
http://www.odf.state.or.us/divisions/management/asset_management/logprices/logP483.HTM

Domestically Processed Logs (Delivered to a mill; "Pond Value")

1978

Douglas-Fir Grade	Quarter				Average
	1st	2nd	3rd	4th	
#1P	\$ 460	475	475	475	471
#2P	\$ 415	435	435	435	430
#3P	\$ 358	389	389	389	381
SM	\$ 283	338	338	338	324
#2S	\$ 242	287	287	287	276
#3S	\$ 191	250	250	250	235
#4S	\$ 161	200	200	200	190
SC	\$ 125	157	157	157	149
Utility	\$ 70	80	80	80	78

1979

Douglas-Fir Grade	Quarter				Average
	1st	2nd	3rd	4th	
#1P	\$ 531	531	584	584	555
#2P	\$ 476	476	523	523	500
#3P	\$ 425	425	467	467	446
SM	\$ 385	385	423	423	404
#2S	\$ 322	322	354	354	338
#3S	\$ 282	282	310	310	296
#4S	\$ 256	256	281	281	269
SC	\$ 160	160	176	176	168
Utility	\$ 90	90	99	99	95

1980

Douglas-Fir Grade	Quarter				Average
	1st	2nd	3rd	4th	
#1P	\$ 584	584	584	584	584
#2P	\$ 523	523	523	523	523
#3P	\$ 467	467	467	467	467
SM	\$ 423	423	423	423	423
#2S	\$ 354	354	354	354	354
#3S	\$ 310	310	310	310	310
#4S	\$ 281	281	281	281	281
SC	\$ 176	176	176	176	176
Utility	\$ 99	99	99	99	99

1981

Douglas-Fir Grade	Quarter				Average
	1st	2nd	3rd	4th	
#1P	\$ 584	584	584	648	648
#2P	\$ 523	523	523	550	550
#3P	\$ 467	467	467	439	439
SM	\$ 423	423	423	390	415
#2S	\$ 354	354	354	323	346
#3S	\$ 310	310	310	238	292
#4S	\$ 281	281	281	208	263
SC	\$ 176	176	176	212	185
Utility	\$ 99	99	99	104	100

1982

Douglas-Fir Grade	Quarter				Average
	1st	2nd	3rd	4th	
1P	\$ 600	512	512	512	534
2P	\$ 510	439	439	439	457
3P	\$ 425	370	370	370	384
SM	\$ 375	316	316	316	331
2S	\$ 295	258	258	258	267
3S	\$ 225	202	202	202	208
4S	\$ 190	169	169	169	174
SC	\$ 190	164	164	164	171
Utility	\$ 90	123	123	123	115
CR (2S & better)	\$ --	303	303	303	303
CR (2S, 3S, and 4S)	\$ --	243	243	243	243

1983

Douglas-Fir Grade	Quarter				Average
	1st	2nd	3rd	4th	
1P	\$ 512	505	505	505	507
2P	\$ 439	410	425	425	425
3P	\$ 370	325	340	340	343
SM	\$ 316	275	285	285	290
2S	\$ 258	250	255	255	255
3S	\$ 202	210	215	215	211
4S	\$ 169	195	200	200	191
SC	\$ 164	130	140	140	144
Utility	\$ 123	75	75	75	87
CR (2S & better)	\$ 303	--	--	--	303
CR (2S, 3S, and 4S)	\$ 243	240	240	240	241

DOUGLAS FIR LOG PRICES 1978-1982, 1983

DF Grade	1978-1982 Average	1983 Average	%+	% -
1P	\$ 558	507		- 9.1%
2P	\$ 492	425		-13.6%
3P	\$ 423	343		-18.9%
SM	\$ 379	290		-23.5%
2S	\$ 316	255		-19.3%
3S	\$ 268	211		-21.3%
4S	\$ 235	191		-18.7%
SC	\$ 170	144		-15.3%
Utility	\$ 97	87		-10.3%
CR (2S & better)	\$ 303	303		n/c
CR (2S, 3S, and 4S)	\$ 243	241		- 0.8%
Average*	\$ 326	273	19.4**	-16.3

*In the absence of information concerning distribution of grades, it is not possible to assign the different grades their proper weight in calculating an overall average. This calculation assigns each grade equal weight, with the exception of the CR grades which were used only during the years 1982 and 1983 years and are not included.

** % by which 1978-82 prices exceed 1983 prices

EXHIBIT 9

PONDEROSA PINE LOG PRICES 1978-1982, 1983

Reporting format: ODF reporting as of 4th quarter 1981

Source: Oregon Department of Forestry Forest Management Division
http://www.odf.state.or.us/divisions/management/asset_management/logprices/logP483.HTM

Domestically Processed Logs (Delivered to a mill; "Pond Value")

Roseburg prices used where available; otherwise, Grants Pass prices

1978 (Grants Pass)

Grade	Quarter				Average
	1st	2nd	3rd	4th	
#1S	\$ 300	347	347	347	335
SM	-	221	221	221	221
#2S	\$ 225	305	305	305	285
#3S	\$ 180	263	263	263	242
#4S	\$ 152	187	187	187	178
#5S	\$ 140	173	173	173	165
#6S	\$ 110	147	147	147	138
Utility	-	-	-	-	-

1979 (Roseburg)

Grade	Quarter				Average
	1st	2nd	3rd	4th	
1S	\$ 479	479	527	527	503
SM	\$ 274	274	301	301	288
2S	\$ 353	353	388	388	371
3S	\$ 315	315	347	347	331
4S	\$ 244	244	269	269	257
5S	\$ 222	222	244	244	233
6S	\$ 217	217	238	238	228
Utility	\$ 130	130	130	130	130

1980 (Roseburg)

Grade	Quarter				Average
	1st	2nd	3rd	4th	
1S	\$ 527	521	521	521	521
SM	\$ 301	301	301	301	301
2S	\$ 388	388	388	388	388
3S	\$ 347	347	347	347	347
4S	\$ 269	269	269	269	269
5S	\$ 244	244	244	244	244
6S	\$ 238	238	238	238	238
Utility	\$ 130	130	130	130	130

1981 (Roseburg)

Grade	Quarter				Average
	1st	2nd	3rd	4th	
Peeler	-	-	-	610	610
1S	\$ 527	521	521	500	516
SM	\$ 301	301	301	275	295
2S	\$ 388	388	388	430	399
3S	\$ 347	347	347	300	335
4S	\$ 269	269	269	275	271
5S	\$ 244	244	244	250	246
6S	\$ 238	238	238	210	231
CR	-	-	-	315	315
Utility	\$ 130	130	130	115	126

1982 (Roseburg)

Grade	Quarter				Average
	1st	2nd	3rd	4th	
Peeler	\$ 575	575	575	575	575
1S	\$ 495	495	495	495	495
SM	\$ 300	300	300	300	300
2S	\$ 390	390	390	390	390
3S	\$ 300	300	300	300	300
4S	\$ 250	250	250	250	250
5S	\$ 175	175	175	174	175
6S	\$ 150	150	150	150	150
CR	\$ 250	250	250	250	250
Utility	\$ 100	100	100	100	100

1983 Roseburg (1st quarter); Grants Pass (2nd-4th quarters)

Grade	Quarter				Average
	1st	2nd	3rd	4th	
Peeler	\$ 575	-	-	-	575
1S	\$ 495	-	-	-	495
SM	\$ 300	300	300	300	300
2S	\$ 390	450	450	450	435
3S	\$ 300	375	375	375	356
4S	\$ 250	225	225	225	231
5S	\$ 175	200	200	200	194
6S	\$ 150	160	160	160	158
CR	\$ 250	240	240	240	243
Utility	\$ 100	55	-	-	78

PONDEROSA PINE LOG PRICES 1978-1982, 1983

PP Grade	1978-1982 Average	1983 Average	%+	%+/-
Peeler	\$ 593	575		- 3.0%
1S	\$ 474	495		+ 4.4%
SM	\$ 281	300		+ 6.7%
2S	\$ 366	435		+18.9%
3S	\$ 311	356		+14.5%
4S	\$ 245	231		- 5.7%
5S	\$ 213	194		- 8.9%
6S	\$ 197	158		-19.8%
CR	\$ 283	243		-14.1%
Utility	\$ 122	78		-36.1%
Average*	\$ 309	307	0.065**	-.0065%

*In the absence of information concerning distribution of grades, it is not possible to assign the different grades their proper weight in calculating an overall average. This calculation assigns each grade equal weight, with the exception of the CR grades which were used only during the years 1982 and 1983 years and are not included.

** % by which 1978-82 prices exceed 1983 prices

EXHIBIT 10

Board feet/cu/yd $\frac{1}{3}$

CF/AC/YR AT VARIOUS ROTATIONS

SITE INDEX 125

Ponderosa Pine

Base 100

Site Index 125					Site Index 125				
Total Age	BH Age	Norm.	Site Height <i>feet</i>	Ave. DBH <i>inches</i>	Per Acre		Data		
					Basal Area <i>sq ft</i>	Trees /Acre	Gross Cu.Ft.	Net 4" Cu.Ft.	Scrib 6" Bd Ft.
20	10	1.00	37	5.7	131	733	2370	1234	
25	15	1.00	47	6.9	165	636	3422	2267	1,602
30	20	1.00	55	7.8	191	573	4396	3254	6,006
35	25	1.00	62	8.6	212	521	5291	4179	10,538 <i>151.2</i>
40	30	1.00	69	9.4	228	474	6116	5041	15,085 <i>152.9</i>
45	35	1.00	75	10.1	241	431	6876	5841	19,589
50	40	1.00	81	10.8	251	392	7580	6585	24,018 <i>151.6</i>
55	45	1.00	86	11.5	258	356	8232	7277	28,353
60	50	1.00	91	12.2	264	323	8839	7921	32,586 <i>147.3</i>
65	55	1.00	96	12.9	268	294	9404	8521	36,711
70	60	1.00	101	13.6	271	268	9932	9081	<i>BF/AC/YR</i> 40,724 <i>58.2</i>
75	65	1.00	105	14.3	273	244	10426	9604	44,626 <i>59.8</i>
80	70	1.00	109	15.0	274	224	10889	10092	48,416 <i>60.5</i>
85	75	1.00	114	15.7	274	205	11322	10549	52,097 <i>61.3</i>
90	80	1.00	117	16.3	274	188	11730	10976	55,670 <i>61.9</i>
95	85	1.00	121	17.0	274	174	12113	11376	59,137 <i>62.4</i>
100	90	1.00	125	17.7	274	160	12474	11750	62,501 <i>62.5</i>
105	95	1.00	129	18.3	273	149	12813	12100	65,764 <i>62.6</i>
110	100	1.00	132	19.0	272	138	13134	12428	68,930 <i>62.7</i>
115	105	1.00	135	19.6	271	129	13436	12735	72,001 <i>62.6</i>
120	110	1.00	139	20.3	270	120	13721	13023	74,981 <i>62.8</i>
125	115	1.00	142	20.9	269	113	13991	13292	77,871
130	120	1.00	145	21.5	268	106	14246	13545	80,677
135	125	1.00	148	22.2	267	100	14487	13782	83,400
140	130	1.00	151	22.8	266	94	14715	14004	86,044
145	135	1.00	154	23.4	265	89	14932	14212	88,612
150	140	1.00	156	24.0	264	84	15138	14408	91,107
155	145	1.00	159	24.5	264	80	15333	14591	93,532
160	150	1.00	161	25.1	263	76	15519	14764	95,891

EXHIBIT II

BOARD FEET/ACRE/YEAR AT VARIOUS ROTATIONS DOUGLAS FIR, SITE INDEX 150

Site Index 150					Reflects DNR Ownership				Site Index 150		
Total Age	BH Age	PNB	Site Height feet	Ave. DBH inches	Per Acre Data						
					Basal Area sq ft	Trees /Acre 7"+	Gross Cu. Ft. 7"+	Net 4" Cu. Ft. 7"+	Scrib 6" Board Feet 16' 100'	Scrib 6" Board Feet 32' 100'	bF/ac/yr
30	24	1.00	86	12.2	160.5	199	4950	4351	18,003	13,509	450
32	26	1.00	92	12.6	170.8	198	5544	4950	21,334	16,318	510
34	28	1.00	98	13.0	180.5	195	6135	5544	24,783	19,267	567
36	30	1.00	104	13.4	189.5	192	6721	6135	28,330	22,335	620
38	32	1.00	109	13.9	198.0	189	7302	6721	31,957	25,503	671
40	34	1.00	114	14.3	205.9	185	7880	7302	35,650	28,755	719
42	36	1.00	119	14.7	213.4	181	8454	7880	39,394	32,076	764
44	38	1.00	124	15.1	220.5	177	9023	8454	43,178	35,454	806
46	40	1.00	129	15.5	227.2	172	9589	9023	46,991	38,876	845
48	42	1.00	133	16.0	233.6	168	10150	9589	50,823	42,333	882
50	44	1.00	138	16.4	239.7	164	10707	10150	54,667	45,814	916
52	46	1.00	142	16.8	245.5	160	11260	10707	58,514	49,312	948
54	48	1.00	146	17.2	251.0	156	11808	11260	62,358	52,819	978
56	50	1.00	150	17.6	256.4	152	12353	11808	66,193	56,329	1006
58	52	1.00	154	18.0	261.5	148	12893	12353	70,013	59,834	1032
60	54	1.00	157	18.4	266.5	144	13430	12893	73,813	63,331	1056
62	56	1.00	161	18.8	271.2	141	13962	13430	77,589	66,813	1078
64	58	1.00	165	19.2	275.8	137	14490	13962	81,338	70,276	1099
66	60	1.00	168	19.6	280.3	134	15013	14490	85,055	73,718	1117
68	62	1.00	171	20.0	284.5	131	15533	15013	88,739	77,134	1134
70	64	1.00	174	20.4	288.7	128	16049	15533	92,386	80,520	1150
72	66	1.00	177	20.7	292.7	125	16560	16049	95,995	83,876	1165
74	68	1.00	180	21.1	296.6	122	17067	16560	99,563	87,198	1178
76	70	1.00	183	21.5	300.4	119	17570	17067	103,090	90,484	1191
78	72	1.00	186	21.9	304.1	117	18069	17570	106,573	93,733	1202
80	74	1.00	189	22.2	307.7	114	18564	18069	110,013	96,943	1212
82	76	1.00	191	22.6	311.2	112	19054	18564	113,408	100,114	1220
84	78	1.00	194	23.0	314.6	109	19541	19054	116,758	103,244	1229
86	80	1.00	197	23.3	317.9	107	20023	19541	120,063	106,332	1236
88	82	1.00	199	23.7	321.1	105	20501	20023	123,323	109,379	1243
90	84	1.00	201	24.0	324.3	103	20975	20501	126,537	112,385	1249
92	86	1.00	204	24.4	327.4	101	21445	20975	129,708	115,348	1254
94	88	1.00	206	24.7	330.4	99	21911	21445	132,834	118,269	1258
96	90	1.00	208	25.0	333.3	98	22373	21911	135,917	121,148	1262
98	92	1.00	210	25.3	336.2	96	22830	22373	138,958	123,987	1265
100	94	1.00	212	25.7	339.0	94	23283	22830	141,957	126,784	1268

Douglas fir Site Index 150
DNR #41 Base 50

Douglas fir
Base 50

EXHIBIT 12

Cheshulpum & Steiner

Douglas Fir Base 50
 Site Index 60 Reflects DNR Ownership Site Index 60

Total Age	BH Age	PNB	Site Height feet	Ave. DBH inches	Per Acre Data						
					Basal Area sq ft	Trees /Acre 7" +	Gross Cu. Ft. 7" +	Net 4" Cu. Ft. 7" +	Scrib 6" Board Feet 16' 100	Scrib 6" Board Feet 32' 100	
30	20	1.00	30	8.2	18.3	50					
32	22	1.00	33	8.4	30.8	81					
34	24	1.00	35	8.5	42.2	108	588	353	1,092	739	
36	26	1.00	38	8.6	52.7	130	819	588	1,583	1,076	
38	28	1.00	40	8.7	62.4	150	1046	819	2,102	1,438	
40	30	1.00	42	8.8	71.4	167	1268	1046	2,649	1,824	
42	32	1.00	45	9.0	79.8	182	1487	1268	3,221	2,233	
44	34	1.00	47	9.1	87.8	195	1701	1487	3,817	2,665	
46	36	1.00	49	9.2	95.3	206	1911	1701	4,434	3,116	
48	38	1.00	50	9.3	102.3	216	2117	1911	5,069	3,586	
50	40	1.00	52	9.4	109.0	225	2319	2117	5,719	4,073	3399
52	42	1.00	54	9.5	115.4	233	2517	2319	6,382	4,573	
54	44	1.00	55	9.6	121.5	240	2710	2517	7,055	5,086	
56	46	1.00	57	9.7	127.3	246	2900	2710	7,735	5,607	
58	48	1.00	59	9.9	132.9	251	3085	2900	8,421	6,137	
60	50	1.00	60	10.0	138.2	256	3266	3085	9,109	6,671	3503 3615
62	52	1.00	61	10.0	143.4	260	3443	3266	9,797	7,208	
64	54	1.00	63	10.1	148.3	264	3616	3443	10,484	7,747	
66	56	1.00	64	10.2	153.1	268	3784	3616	11,167	8,285	
68	58	1.00	65	10.3	157.7	271	3949	3784	11,844	8,819	
70	60	1.00	66	10.4	162.1	274	4109	3949	12,514	9,350	
72	62	1.00	68	10.5	166.4	277	4265	4109	13,174	9,874	
74	64	1.00	69	10.6	170.6	280	4417	4265	13,824	10,390	
76	66	1.00	70	10.6	174.6	282	4565	4417	14,460	10,896	
78	68	1.00	71	10.7	178.5	285	4709	4565	15,083	11,391	
80	70	1.00	72	10.8	182.3	287	4848	4709	15,690	11,874	
82	72	1.00	73	10.9	186.0	290	4984	4848	16,280	12,342	
84	74	1.00	74	10.9	189.6	292	5115	4984	16,852	12,796	
86	76	1.00	74	11.0	193.1	294	5242	5115	17,404	13,232	
88	78	1.00	75	11.0	196.5	296	5365	5242	17,935	13,651	
90	80	1.00	76	11.1	199.8	299	5484	5365	18,445	14,051	
92	82	1.00	77	11.1	203.0	301	5599	5484	18,930	14,430	
94	84	1.00	78	11.2	206.2	304	5709	5599	19,392	14,788	
96	86	1.00	79	11.2	209.2	306	5816	5709	19,828	15,123	
98	88	1.00	79	11.2	212.2	309	5918	5816	20,238	15,435	
100	90	1.00	80	11.2	215.2	312	6016	5918	20,620	15,722	13,008

28C
SITE INDEX
57

250 4,073 3399

3503 6,671 3615

15,722 13,008

Douglas fir Site Index 60
DNR #41 Base 50

Douglas fir
Base 50

1022 Panther
105A Penryn
Base 50

Site Index 65		Douglas Fir			Reflects DNR Ownership						Site Index 65
Total Age	BH Age	PNB	Site Height <i>feet</i>	Ave. DBH <i>inches</i>	Per Acre Data						
					Basal Area <i>sq ft</i>	Trees /Acre <i>7" +</i>	Gross Cu. Ft. <i>7" +</i>	Net 4" Cu. Ft. <i>7" +</i>	Scrib 6" Board Feet <i>16' log</i>	Scrib 6" Board Feet <i>52' log</i>	
30	20	1.00	33	8.4	28.6	74	316	52	559	373	
32	22	1.00	36	8.5	41.1	103	575	316	1,066	715	
34	24	1.00	38	8.7	52.5	128	831	575	1,614	1,089	
36	26	1.00	41	8.8	63.0	148	1082	831	2,201	1,497	
38	28	1.00	43	9.0	72.7	166	1329	1082	2,826	1,938	
40	30	1.00	46	9.1	81.7	181	1571	1329	3,486	2,412	
42	32	1.00	48	9.2	90.2	194	1810	1571	4,180	2,917	
44	34	1.00	50	9.4	98.1	205	2044	1810	4,903	3,450	
46	36	1.00	52	9.5	105.6	214	2275	2044	5,652	4,010	
48	38	1.00	55	9.6	112.6	222	2501	2275	6,424	4,593	
50	40	1.00	56	9.8	119.4	229	2723	2501	7,215	5,197	
52	42	1.00	58	9.9	125.7	236	2941	2723	8,022	5,819	
54	44	1.00	60	10.0	131.8	241	3154	2941	8,842	6,456	
56	46	1.00	62	10.1	137.7	245	3364	3154	9,671	7,105	
58	48	1.00	63	10.3	143.2	249	3569	3364	10,508	7,764	
60	50	1.00	65	10.4	148.6	253	3771	3569	11,350	8,431	
62	52	1.00	67	10.5	153.7	256	3968	3771	12,193	9,103	
64	54	1.00	68	10.6	158.6	259	4161	3968	13,035	9,777	
66	56	1.00	69	10.7	163.4	261	4350	4161	13,875	10,452	
68	58	1.00	71	10.8	168.0	263	4534	4350	14,710	11,125	
70	60	1.00	72	10.9	172.4	265	4715	4534	15,538	11,794	
72	62	1.00	73	11.0	176.7	267	4891	4715	16,357	12,458	
74	64	1.00	74	11.1	180.9	268	5063	4891	17,166	13,114	
76	66	1.00	76	11.2	184.9	270	5232	5063	17,962	13,761	
78	68	1.00	77	11.3	188.8	271	5395	5232	18,745	14,397	
80	70	1.00	78	11.4	192.6	273	5555	5395	19,512	15,020	
82	72	1.00	79	11.5	196.3	274	5711	5555	20,261	15,629	
84	74	1.00	80	11.5	199.9	275	5862	5711	20,993	16,222	
86	76	1.00	81	11.6	203.4	276	6010	5862	21,704	16,798	
88	78	1.00	82	11.7	206.8	278	6153	6010	22,395	17,356	
90	80	1.00	83	11.8	210.1	279	6292	6153	23,063	17,895	
92	82	1.00	84	11.8	213.3	280	6427	6292	23,708	18,412	
94	84	1.00	84	11.9	216.5	282	6557	6427	24,327	18,907	
96	86	1.00	85	11.9	219.6	283	6684	6557	24,921	19,378	
98	88	1.00	86	12.0	222.6	285	6806	6684	25,488	19,825	
100	90	1.00	87	12.0	225.5	286	6925	6806	26,026	20,246	

Douglas fir Site Index 65
DNR #41 Base 50

Douglas fir
Base 50

12.2

Witzel

Site Index 90		Douglas Fir				Reflects DNR Ownership						Site Index 90
Total Age	BH Age	PNB	Site Height <i>feet</i>	Ave. DBH <i>inches</i>	Per Acre Data							
					Basal Area <i>sq ft</i>	Trees /Acre <i>7" +</i>	Gross Cu. Ft. <i>7" +</i>	Net 4" Cu. Ft. <i>7" +</i>	Scrib 6" Board Feet <i>16' 100</i>	Scrib 6" Board Feet <i>32' 100</i>		
30	21	1.00	46	9.4	77.0	161	1506	1144	3,308	2,210		
32	23	1.00	50	9.6	88.9	177	1865	1506	4,400	2,996		
34	25	1.00	54	9.8	99.8	190	2219	1865	5,586	3,872		
36	27	1.00	58	10.0	109.9	200	2569	2219	6,855	4,831		
38	29	1.00	61	10.3	119.2	207	2914	2569	8,199	5,865		
40	31	1.00	65	10.5	128.0	213	3256	2914	9,608	6,967		
42	33	1.00	68	10.7	136.1	218	3594	3256	11,074	8,130		
44	35	1.00	71	10.9	143.8	221	3927	3594	12,588	9,347		
46	37	1.00	74	11.1	151.1	223	4256	3927	14,146	10,613		
48	39	1.00	76	11.4	158.0	224	4581	4256	15,739	11,920		
50	41	1.00	79	11.6	164.6	225	4902	4581	17,362	13,263		
52	43	1.00	82	11.8	170.8	225	5219	4902	19,011	14,637		
54	45	1.00	84	12.0	176.7	225	5532	5219	20,679	16,037		
56	47	1.00	87	12.2	182.4	225	5840	5532	22,364	17,459		
58	49	1.00	89	12.4	187.9	224	6144	5840	24,060	18,897		
60	51	1.00	91	12.6	193.1	223	6444	6144	25,764	20,349		
62	53	1.00	93	12.8	198.2	222	6740	6444	27,473	21,811		
64	55	1.00	95	13.0	203.0	220	7032	6740	29,184	23,279		
66	57	1.00	97	13.2	207.7	219	7320	7032	30,893	24,751		
68	59	1.00	99	13.4	212.2	217	7604	7320	32,598	26,222		
70	61	1.00	101	13.6	216.6	216	7883	7604	34,297	27,691		
72	63	1.00	103	13.7	220.8	214	8158	7883	35,987	29,155		
74	65	1.00	104	13.9	224.9	213	8429	8158	37,666	30,612		
76	67	1.00	106	14.1	228.8	211	8696	8429	39,332	32,059		
78	69	1.00	108	14.3	232.7	209	8959	8696	40,984	33,495		
80	71	1.00	109	14.4	236.4	208	9218	8959	42,619	34,917		
82	73	1.00	111	14.6	240.1	206	9472	9218	44,236	36,323		
84	75	1.00	112	14.8	243.6	205	9723	9472	45,834	37,712		
86	77	1.00	114	14.9	247.0	203	9969	9723	47,411	39,082		
88	79	1.00	115	15.1	250.4	202	10211	9969	48,965	40,432		
90	81	1.00	116	15.2	253.7	201	10449	10211	50,496	41,760		
92	83	1.00	118	15.4	256.9	199	10683	10449	52,002	43,065		
94	85	1.00	119	15.5	260.0	198	10912	10683	53,483	44,345		
96	87	1.00	120	15.6	263.0	197	11138	10912	54,936	45,599		
98	89	1.00	121	15.8	266.0	196	11359	11138	56,361	46,826		
100	91	1.00	122	15.9	268.9	195	11576	11359	57,757	48,024		

Douglas fir Site Index 90
DNR #41 Base 50

Douglas fir
Base 50

RITNER - 107

Douglas Fir					Base 50					
Site Index 105					Reflects DNR Ownership					
Site Index 105					Site Index 105					
Total Age	BH Age	PNB	Site Height <i>feet</i>	Ave. DBH <i>inches</i>	Per Acre Data					
					Basal Area <i>sq ft</i>	Trees /Acre <i>7" +</i>	Gross Cu. Ft. <i>7" +</i>	Net 4" Cu. Ft. <i>7" +</i>	Scrib 6" Board Feet <i>16' log</i>	Scrib 6" Board Feet <i>32' log</i>
30	22	1.00	56	10.0	102.9	187	2352	1931	6,035	4,148
32	24	1.00	61	10.3	114.3	197	2769	2352	7,631	5,360
34	26	1.00	65	10.6	124.8	204	3182	2769	9,337	6,686
36	28	1.00	69	10.9	134.5	209	3590	3182	11,139	8,113
38	30	1.00	73	11.1	143.5	212	3994	3590	13,023	9,631
40	32	1.00	77	11.4	152.0	214	4395	3994	14,979	11,228
42	34	1.00	80	11.7	159.9	215	4791	4395	16,996	12,896
44	36	1.00	84	12.0	167.4	215	5183	4791	19,066	14,624
46	38	1.00	87	12.2	174.5	214	5570	5183	21,180	16,406
48	40	1.00	91	12.5	181.2	213	5954	5570	23,331	18,233
50	42	1.00	94	12.7	187.6	212	6333	5954	25,513	20,099
52	44	1.00	97	13.0	193.7	210	6708	6333	27,719	21,997
54	46	1.00	100	13.3	199.5	208	7080	6708	29,945	23,922
56	48	1.00	102	13.5	205.1	206	7447	7080	32,185	25,869
58	50	1.00	105	13.8	210.4	203	7809	7447	34,435	27,832
60	52	1.00	108	14.0	215.5	201	8168	7809	36,691	29,808
62	54	1.00	110	14.3	220.5	198	8523	8168	38,949	31,792
64	56	1.00	112	14.5	225.2	196	8873	8523	41,207	33,781
66	58	1.00	115	14.8	229.8	193	9219	8873	43,460	35,771
68	60	1.00	117	15.0	234.3	191	9561	9219	45,706	37,759
70	62	1.00	119	15.2	238.6	188	9899	9561	47,943	39,742
72	64	1.00	121	15.5	242.7	186	10233	9899	50,168	41,717
74	66	1.00	123	15.7	246.7	184	10563	10233	52,379	43,683
76	68	1.00	125	15.9	250.6	181	10888	10563	54,574	45,636
78	70	1.00	127	16.1	254.4	179	11209	10888	56,752	47,574
80	72	1.00	129	16.4	258.1	177	11526	11209	58,910	49,497
82	74	1.00	131	16.6	261.7	175	11840	11526	61,047	51,401
84	76	1.00	132	16.8	265.2	173	12148	11840	63,163	53,286
86	78	1.00	134	17.0	268.6	171	12453	12148	65,255	55,149
88	80	1.00	136	17.2	271.9	169	12754	12453	67,322	56,989
90	82	1.00	137	17.4	275.2	167	13050	12754	69,364	58,805
92	84	1.00	139	17.6	278.3	165	13342	13050	71,379	60,596
94	86	1.00	140	17.8	281.4	163	13631	13342	73,367	62,361
96	88	1.00	142	18.0	284.4	162	13914	13631	75,327	64,097
98	90	1.00	143	18.1	287.3	160	14194	13914	77,257	65,805
100	92	1.00	144	18.3	290.2	159	14470	14194	79,158	67,484

107
BE
32

20988

31,048

70,053

Douglas fir Site Index 105
DNR #41 Base 50

Douglas fir
Base 50

Dixonville - 109

Site Index 110		Douglas Fir Reflects DNR Ownership			Site Index 110					
Total Age	BH Age	PNB	Site Height <i>feet</i>	Ave. DBH <i>inches</i>	Per Acre Data					
					Basal Area <i>sq ft</i>	Trees /Acre <i>7"+</i>	Gross Cu. Ft. <i>7"+</i>	Net 4" Cu. Ft. <i>7"+</i>	Scrib 6" Board Feet <i>16' 100</i>	Scrib 6" Board Feet <i>32' 100</i>
30	22	1.00	59	10.2	108.9	191	2574	2133	6,854	4,745
32	24	1.00	63	10.5	120.3	199	3011	2574	8,613	6,097
34	26	1.00	68	10.8	130.8	205	3444	3011	10,488	7,572
36	28	1.00	72	11.1	140.5	209	3873	3444	12,463	9,154
38	30	1.00	76	11.4	149.5	211	4297	3873	14,525	10,832
40	32	1.00	80	11.7	158.0	212	4718	4297	16,660	12,593
42	34	1.00	84	12.0	165.9	212	5134	4718	18,859	14,428
44	36	1.00	88	12.3	173.4	211	5546	5134	21,112	16,326
46	38	1.00	91	12.5	180.5	210	5954	5546	23,410	18,280
48	40	1.00	95	12.8	187.2	209	6358	5954	25,746	20,280
50	42	1.00	98	13.1	193.6	207	6757	6358	28,113	22,321
52	44	1.00	101	13.4	199.7	204	7153	6757	30,504	24,394
54	46	1.00	104	13.7	205.5	202	7544	7153	32,914	26,495
56	48	1.00	107	13.9	211.1	199	7931	7544	35,339	28,617
58	50	1.00	110	14.2	216.4	197	8314	7931	37,772	30,756
60	52	1.00	113	14.5	221.5	194	8693	8314	40,211	32,907
62	54	1.00	115	14.7	226.5	191	9068	8693	42,652	35,066
64	56	1.00	118	15.0	231.2	189	9438	9068	45,090	37,228
66	58	1.00	120	15.3	235.8	186	9805	9438	47,523	39,392
68	60	1.00	123	15.5	240.3	183	10167	9805	49,948	41,552
70	62	1.00	125	15.8	244.6	180	10525	10167	52,363	43,706
72	64	1.00	127	16.0	248.7	178	10879	10525	54,764	45,852
74	66	1.00	129	16.3	252.7	175	11229	10879	57,150	47,987
76	68	1.00	131	16.5	256.6	173	11575	11229	59,519	50,109
78	70	1.00	133	16.7	260.4	170	11916	11575	61,869	52,215
80	72	1.00	135	17.0	264.1	168	12253	11916	64,199	54,304
82	74	1.00	137	17.2	267.7	166	12587	12253	66,507	56,373
84	76	1.00	139	17.4	271.2	164	12916	12587	68,791	58,422
86	78	1.00	141	17.7	274.6	162	13241	12916	71,051	60,448
88	80	1.00	142	17.9	277.9	160	13561	13241	73,286	62,451
90	82	1.00	144	18.1	281.1	158	13878	13561	75,494	64,429
92	84	1.00	146	18.3	284.3	156	14190	13878	77,674	66,381
94	86	1.00	147	18.5	287.4	154	14499	14190	79,827	68,305
96	88	1.00	149	18.7	290.4	152	14803	14499	81,950	70,202
98	90	1.00	150	18.9	293.3	151	15103	14803	84,045	72,069
100	92	1.00	152	19.1	296.2	149	15399	15103	86,109	73,906

109

B6
32

21,787

32,287

72,622

Douglas fir
DNR #41 Base 50

Site Index 110

Douglas fir
Base 50

12.5

78 McAlpin - 125

Site Index 125		Douglas Fir Reflects DNR Ownership			Site Index 125					
Total Age	BH Age	PNB	Site Height feet	Ave. DBH inches	Per Acre Data					
					Basal Area sq ft	Trees /Acre 7"+	Gross Cu. Ft. 7"+	Net 4" Cu. Ft. 7"+	Scrib 6" Board Feet 16' 100	Scrib 6" Board Feet 32' 100
30	23	1.00	69	11.0	131.2	200	3490	2991	10,679	7,651
32	25	1.00	74	11.3	142.2	204	3986	3490	13,021	9,531
34	27	1.00	79	11.7	152.2	206	4477	3986	15,482	11,544
36	29	1.00	84	12.0	161.6	206	4964	4477	18,045	13,673
38	31	1.00	89	12.3	170.3	205	5447	4964	20,695	15,902
40	33	1.00	93	12.7	178.5	204	5926	5447	23,417	18,218
42	35	1.00	98	13.0	186.2	202	6401	5926	26,201	20,609
44	37	1.00	102	13.3	193.5	199	6871	6401	29,035	23,063
46	39	1.00	106	13.7	200.4	196	7338	6871	31,911	25,570
48	41	1.00	109	14.0	206.9	193	7800	7338	34,821	28,123
50	43	1.00	113	14.3	213.1	190	8258	7800	37,756	30,712
52	45	1.00	117	14.7	219.1	187	8712	8258	40,711	33,331
54	47	1.00	120	15.0	224.8	183	9162	8712	43,680	35,972
56	49	1.00	123	15.3	230.2	180	9607	9162	46,656	38,631
58	51	1.00	127	15.6	235.5	177	10049	9607	49,635	41,301
60	53	1.00	130	16.0	240.5	173	10486	10049	52,613	43,977
62	55	1.00	133	16.3	245.4	170	10920	10486	55,585	46,656
64	57	1.00	135	16.6	250.0	167	11349	10920	58,549	49,333
66	59	1.00	138	16.9	254.5	164	11774	11349	61,500	52,004
68	61	1.00	141	17.2	258.9	161	12194	11774	64,436	54,666
70	63	1.00	143	17.5	263.1	158	12611	12194	67,355	57,316
72	65	1.00	146	17.8	267.2	155	13023	12611	70,254	59,952
74	67	1.00	148	18.1	271.2	152	13432	13023	73,131	62,570
76	69	1.00	151	18.4	275.0	149	13836	13432	75,983	65,169
78	71	1.00	153	18.7	278.8	147	14236	13836	78,811	67,747
80	73	1.00	155	19.0	282.4	144	14632	14236	81,612	70,302
82	75	1.00	157	19.2	286.0	142	15023	14632	84,385	72,831
84	77	1.00	160	19.5	289.4	139	15411	15023	87,129	75,335
86	79	1.00	162	19.8	292.8	137	15794	15411	89,843	77,812
88	81	1.00	164	20.0	296.0	135	16174	15794	92,526	80,260
90	83	1.00	165	20.3	299.2	133	16549	16174	95,179	82,679
92	85	1.00	167	20.6	302.3	131	16920	16549	97,799	85,067
94	87	1.00	169	20.8	305.4	129	17287	16920	100,388	87,425
96	89	1.00	171	21.1	308.4	127	17649	17287	102,944	89,751
98	91	1.00	173	21.3	311.3	126	18008	17649	105,468	92,044
100	93	1.00	174	21.6	314.1	124	18362	18008	107,960	94,305

Douglas fir Site Index 125
DNR #41 Base 50

Douglas fir
Base 50

12.6

135 E Willakorne - 160

Site Index 160		Douglas Fir Reflects DNR Ownership					Base 50 Site Index 160				
Total Age	BH Age	PNB	Site Height <i>feet</i>	Ave. DBH <i>inches</i>	Per Acre Data						
					Basal Area <i>sq ft</i>	Trees /Acre <i>7" +</i>	Gross Cu. Ft. <i>7" +</i>	Net 4" Cu. Ft. <i>7" +</i>	Scrib 6" Board Feet <i>16' log</i>	Scrib 6" Board Feet <i>32' log</i>	
30	24	1.00	92	12.6	168.6	196	5435	4796	20,709	15,736	
32	26	1.00	98	13.0	179.1	194	6069	5435	24,420	18,903	
34	28	1.00	104	13.5	188.8	190	6700	6069	28,248	22,214	
36	30	1.00	110	13.9	197.8	186	7326	6700	32,173	25,645	
38	32	1.00	116	14.4	206.3	182	7949	7326	36,176	29,176	
40	34	1.00	122	14.9	214.2	178	8567	7949	40,241	32,790	
42	36	1.00	127	15.3	221.7	173	9181	8567	44,352	36,470	
44	38	1.00	132	15.8	228.8	169	9791	9181	48,498	40,202	
46	40	1.00	137	16.2	235.5	164	10396	9791	52,667	43,974	
48	42	1.00	142	16.7	241.9	159	10998	10396	56,848	47,775	
50	44	1.00	147	17.1	248.0	155	11595	10998	61,033	51,595	
52	46	1.00	151	17.6	253.8	151	12189	11595	65,213	55,425	
54	48	1.00	156	18.0	259.4	147	12778	12189	69,382	59,256	
56	50	1.00	160	18.5	264.7	143	13363	12778	73,532	63,082	
58	52	1.00	164	18.9	269.8	139	13943	13363	77,657	66,896	
60	54	1.00	168	19.3	274.8	135	14520	13943	81,754	70,693	
62	56	1.00	172	19.8	279.5	131	15092	14520	85,816	74,467	
64	58	1.00	176	20.2	284.1	128	15661	15092	89,841	78,213	
66	60	1.00	179	20.6	288.6	125	16225	15661	93,825	81,928	
68	62	1.00	183	21.0	292.9	121	16785	16225	97,765	85,608	
70	64	1.00	186	21.5	297.0	118	17341	16785	101,658	89,251	
72	66	1.00	189	21.9	301.0	115	17893	17341	105,502	92,852	
74	68	1.00	193	22.3	305.0	113	18440	17893	109,296	96,412	
76	70	1.00	196	22.7	308.7	110	18984	18440	113,038	99,926	
78	72	1.00	199	23.1	312.4	107	19523	18984	116,727	103,395	
80	74	1.00	202	23.5	316.0	105	20058	19523	120,363	106,816	
82	76	1.00	205	23.9	319.5	103	20589	20058	123,945	110,189	
84	78	1.00	207	24.3	322.9	100	21116	20589	127,473	113,513	
86	80	1.00	210	24.7	326.2	98	21639	21116	130,947	116,788	
88	82	1.00	213	25.1	329.5	96	22157	21639	134,367	120,014	
90	84	1.00	215	25.4	332.6	94	22672	22157	137,734	123,190	
92	86	1.00	218	25.8	335.7	92	23182	22672	141,049	126,317	
94	88	1.00	220	26.2	338.7	91	23688	23182	144,312	129,396	
96	90	1.00	223	26.5	341.6	89	24190	23688	147,525	132,426	
98	92	1.00	225	26.9	344.5	87	24688	24190	150,690	135,410	
100	94	1.00	227	27.3	347.3	86	25181	24688	153,806	138,347	

Douglas fir Site Index 160
DNR #41 Base 50

Douglas fir
Base 50

Philomath - 131

Ponderosa Pine

Base 100

Site Index 130					Site Index 130				
Total Age	BH Age	Norm.	Site Height feet	Ave. DBH inches	Per Acre Data				
					Basal Area sq ft	Trees /Acre	Gross C.J.Ft.	Net 4" Cu.Ft.	Scrib 6" Bd Ft
20	10	1.00	39	6.1	135	664	2623	1445	
25	15	1.00	49	7.3	170	584	3745	2552	2,966
30	20	1.00	58	8.3	197	530	4779	3603	7,806
35	25	1.00	64	9.1	218	484	5730	4585	12,737
40	30	1.00	71	9.9	234	442	6604	5497	17,654
45	35	1.00	78	10.6	247	403	7410	6343	22,504
50	40	1.00	84	11.3	257	367	8156	7130	27,259 <u>27,259</u>
55	45	1.00	89	12.0	265	334	8848	7860	31,904
60	50	1.00	95	12.8	271	305	9492	8541	36,431 <u>37,228</u>
65	55	1.00	100	13.5	275	278	10092	9175	40,836
70	60	1.00	105	14.2	278	253	10652	9766	45,118
75	65	1.00	109	14.9	280	232	11177	10318	49,279
80	70	1.00	114	15.6	281	212	11668	10834	53,319
85	75	1.00	118	16.3	282	195	12130	11317	57,240
90	80	1.00	122	17.0	282	179	12563	11769	61,045
95	85	1.00	126	17.7	281	165	12971	12192	64,738
100	90	1.00	130	18.3	281	153	13356	12588	68,321 <u>69,541</u>
105	95	1.00	134	19.0	280	142	13718	12959	71,797
110	100	1.00	137	19.7	279	132	14060	13307	75,169
115	105	1.00	141	20.4	278	123	14383	13633	78,442
120	110	1.00	144	21.0	277	115	14688	13939	81,618
125	115	1.00	147	21.7	276	108	14976	14226	84,700
130	120	1.00	151	22.3	275	101	15249	14495	87,692
135	125	1.00	154	22.9	274	95	15507	14747	90,598
140	130	1.00	157	23.6	273	90	15752	14984	93,421
145	135	1.00	160	24.2	273	85	15985	15206	96,163
150	140	1.00	162	24.8	272	81	16206	15416	98,829
155	145	1.00	165	25.4	271	77	16415	15612	101,422
160	150	1.00	168	26.0	271	73	16615	15797	103,945

Ponderosa Pine
CZ FMSS 1974

Site Index 130

Ponderosa Pine
Base 100

Harvey - 123

Ponderosa Pine

Base 100

Site Index 120					Site Index 120				
Total Age	BH Age	Norm.	Site Height feet	Ave. DBH inches	Per Acre Data				
					Basal Area sq ft	Trees /Acre	Gross Cu.Ft.	Net 4" Cu.Ft.	Scrib 6" Bd Ft
20	10	1.00	36	5.3	126	813	2126	1032	
25	15	1.00	45	6.5	160	695	3110	1992	341
30	20	1.00	53	7.4	186	622	4024	2917	4,316
35	25	1.00	59	8.2	206	563	4865	3786	8,456
40	30	1.00	66	8.9	222	510	5640	4597	12,639
45	35	1.00	72	9.6	235	462	6356	5352	16,803
50	40	1.00	77	10.3	244	419	7018	6054	20,912
55	45	1.00	82	11.0	252	379	7632	6707	24,945
60	50	1.00	87	11.7	257	344	8202	7316	28,889
65	55	1.00	92	12.4	261	312	8734	7883	32,737
70	60	1.00	97	13.1	264	284	9230	8412	36,486
75	65	1.00	101	13.7	266	259	9694	8906	40,134
80	70	1.00	105	14.4	267	236	10128	9367	43,680
85	75	1.00	109	15.1	267	216	10535	9798	47,124
90	80	1.00	113	15.7	267	199	10917	10201	50,468
95	85	1.00	116	16.4	267	183	11276	10578	53,714
100	90	1.00	120	17.0	266	169	11614	10931	56,862
105	95	1.00	123	17.6	265	156	11931	11260	59,917
110	100	1.00	127	18.3	264	145	12230	11569	62,880
115	105	1.00	130	18.9	263	135	12512	11858	65,753
120	110	1.00	133	19.5	262	126	12779	12128	68,540
125	115	1.00	136	20.1	261	118	13030	12381	71,243
130	120	1.00	139	20.8	260	111	13267	12617	73,864
135	125	1.00	142	21.4	259	104	13492	12839	76,408
140	130	1.00	145	21.9	258	98	13704	13047	78,877
145	135	1.00	147	22.5	257	93	13905	13241	81,273
150	140	1.00	150	23.1	257	88	14096	13423	83,600
155	145	1.00	153	23.7	256	84	14277	13594	85,860
160	150	1.00	155	24.2	256	80	14449	13755	88,058

123

6" Bd Ft

22,776

31,107

57,990

Ponderosa Pine
CZ FMSS 1974

Site Index 120

Ponderosa Pine
Base 100

12-9

Successful Reforestation: An Overview

M.M. Atkinson and S.A. Fitzgerald

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So you'd like to plant some trees! As the saying goes, "The best time to plant a tree was 30 years ago—the next best time is now." This publication gets you started on the right track and answers some common reforestation questions. It provides a brief overview of the steps involved in a typical reforestation operation, including:

- Preparing the planting site
- Obtaining suitable seedlings
- Planting seedlings
- Plantation maintenance
- Financing reforestation activities

Also, you'll find references to other publications that provide more detail on reforestation. They are highly recommended reading.



Why reforest? Well, for one thing, it's the law. Reforestation is required when timber harvesting reduces the number of trees below specified stocking* levels (see EC 1194, *Oregon's Forest Practice Rules*). You must complete reforestation within 24 months after completing a harvest operation. Depending on site productivity, at least 100 to 200 seedlings per acre must be established. In addition, seedlings must be well distributed across the area and "free to grow" (vigorous and above competing vegetation) within 6 years.

In general, commercial tree species suited for your site conditions are acceptable species for reforestation. Contact your local Oregon Department of Forestry office about your particular reforestation situation.

Because reforestation is labor intensive and expensive, planning is essential to assure success. Lack of attention to any one step can result in costly reforestation failures.

Site preparation

The first thing to consider is the condition of the planting site. This includes the kind of vegetation present, soil type, aspect (compass direction the slope faces), and even the kinds of animals that might damage your trees.

Site characteristics are important because they affect critical site resources—water, light, temperature, and nutrients—necessary for seedling survival and growth.

Site preparation has three major objectives:

- Reduce the amount of vegetation that competes with tree seedlings
- Reduce habitat of animals that damage (browse and/or clip) seedlings
- Create plantable spots

Water is the most critical factor for seedling survival and growth, particularly

* Stocking is the number of trees in a forest. Usually this is expressed as trees per acre or some relative measure—well-stocked, fully stocked, overstocked, understocked.

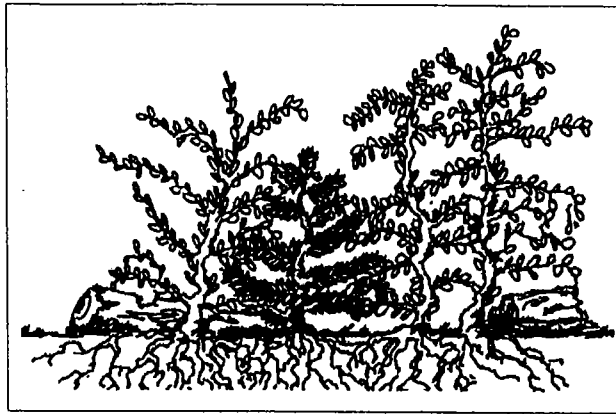


Figure 1.—Shrubs crowding a tree seedling.

the first few years after seedlings are planted. Grass, shrubs, and larger weeds are obvious competitors for moisture and light (Figure 1). It's important to remember that the root systems of grass and other vegetation are very extensive, spreading well beyond the aboveground portion of the plant.

Grass also provides habitat for meadow mice, voles, and gophers, which can severely damage or kill tree seedlings. You must keep grass away from newly planted seedlings for a few years to reduce habitat for these animal species.

Several methods or combinations of methods are available to prepare sites for planting. Costs depend on site conditions, methods used, existing vegetation, and amount of logging debris or slash. See EC 1188, *Site Preparation: An Introduction for the Woodland Owner*.

Mechanical methods

If there is a lot of slash or brush, you may need to use mechanical (tractor) or manual methods to create planting spots as well as to reduce brush competition. Heavy slash can make it difficult to plant an area and can pose a fire hazard. Disadvantages of mechanical methods are that they can remove topsoil, compact soil, and encourage grass and other vegetation to reestablish.

Burning also can reduce slash and brush competition, but it can be difficult to control. You first must move the slash into piles so you can control the fire more

easily. Contact your local Oregon Department of Forestry office before doing any burning.

Manual methods

Hand-scalping is difficult, gives only short-lived vegetation control, and is very expensive. You can place mulch mats made of heavy kraft paper or plastic at least 3 to 4 feet square around seedlings immediately after planting. These mats effectively control local vegetation, but they are expensive (Figure 2).

Chemical methods

When selecting chemical methods, know which weeds you want to control, select the appropriate herbicides that are registered for forestry use, and always *read* and *follow label directions*. Pesticide registrations change often, so always consult the label; it is your best source of information. Chemical site preparation methods are most cost effective and generally offer better long-term control of competing vegetation.

If you are planting in an old pasture or field or if the site isn't too brushy (that is, you can walk easily through the area), you can use a combination of chemical and manual methods. The purpose of preparing a site is not so much to clear a planting spot completely but rather to expose mineral soil and reduce the amount of vegetation that competes with seedlings for moisture and light.

Finally, remember that you have more options and that it's easier to control competing vegetation *before* you plant seedlings. Also, maintaining a weed-free environment the first 2 years after planting helps ensure good survival and vigorous seedlings.

Obtaining seedlings

You can get tree seedlings for your site by encouraging natural seeding, by transplanting wildlings (seedlings growing in the wild), or by purchasing high-quality, nursery-grown seedlings.



Figure 2.—Mats effectively control competing vegetation, but they are expensive.

Use herbicides safely!

- **Wear** protective clothing and safety devices as recommended on the label. **Bathe** or shower after each use.
- **Read** the herbicide label—even if you've used the herbicide before. **Follow closely** the instructions on the label (and any other directions you have).
- **Be cautious** when you apply herbicides. **Know** your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from herbicide use.

Natural seeding of new trees (natural regeneration) from remaining or nearby "parent" trees can be effective under the right circumstances. Species such as hemlock, alder, and lodgepole pine produce regular cone crops and regenerate rapidly from natural seeding. In other cases, relying on natural seeding to regenerate a site is risky because cone crops of many other tree species (including Douglas-fir and ponderosa pine) are sporadic, and site conditions must be right for seeds to germinate and grow.

Using natural regeneration requires a written plan that is reviewed by the Oregon Forest Practices Forester. The written plan must be submitted within 12 months after timber harvesting has reduced tree stocking.

The written plan should estimate the time needed to regenerate adequately stocked, free-to-grow seedlings and alternative strategies that you will use if natural regeneration does not go as planned. Consult a Forest Practices Forester with the Oregon Department of Forestry if you are considering using natural regeneration to reforest your site.

For smaller planting projects (a few acres or less), you can use wildlings, provided they are of the correct species and taken from the same geographic area and elevation where you will replant them. Wildlings should appear healthy, be about 2 feet tall, and have an adequate root system left intact after digging. Ask owners' permission before removing wildlings from land that is not yours.

Nursery-grown tree seedlings are used most widely and are available from many sources. A list of nurseries is available from the OSU Extension Service and the Oregon Department of Forestry. To ensure that you'll have enough seedlings for your reforestation project, be sure to order several months in advance. Some nurseries allow you to order seedlings 6 months before the planting season.

Seedling costs range from \$150 to \$300 per 1,000 seedlings. Costs vary by nursery

and by type of seedling (stock-type) purchased. Be cautious of buying "good deal" surplus trees that are given away or sold at low cost at the end of the planting season. These trees may not be suitable for your planting location or may be of low quality after a long period of storage. Low quality will result in poor survival and growth—and so, these trees may cost you more in the long run.

To improve seedling survival and growth, you need to match the seedling properly to the site (environment) where it will be planted. A proper match begins when you order seedlings. You must tell the nursery what species and stock-type you want, the seed zone and approximate elevation where they will be planted, and how many seedlings you need. See EC 1196, *Selecting and Buying Quality Seedlings*, for more detailed information.

The following sections review some of the basic considerations for matching trees to your planting site.

Species selection

Different tree species are adapted to different site conditions. Ponderosa pine does well in eastern Oregon and on the drier, heavy clay soils of the Willamette

Valley. Douglas-fir does best in many western Oregon locations except on wet sites or in shady areas, where western hemlock or western redcedar may be a better choice. Some species, such as western redcedar, are more susceptible to animal browse.

It is possible to plant more than one species in an area. To be successful, you should become familiar with the ecological requirements (tolerance to frost, high temperatures, light, and moisture) of the

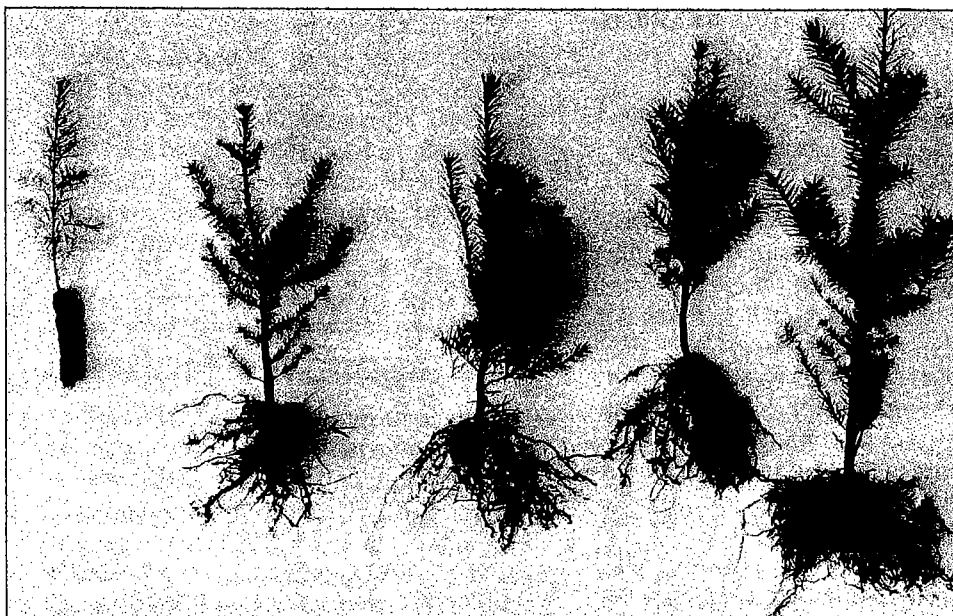


Figure 3.—Examples of the different seedling stock-types. From left: container; plug + 1; 2 + 0; 1 + 1; and 2 + 1.

different species and their growth habits. Investigate very carefully before planting nonnative (also called "exotic") tree species. Consult a local forester for specific information on selecting species suitable for your area.

Seed zone and elevation

To ensure that trees are adapted to your site conditions, order seedlings that are specifically for your seed zone and elevation. Seed zone maps and related information are in EC 1196, *Selecting and Buying Quality Seedlings*; or, contact a forester with the OSU Extension Service or Oregon Department of Forestry.

Stock-type

Stock-type is a *general* indication of seedling size, age, and other characteristics (Figure 3). For example, a 2-0 seedling is grown for 2 years in a seedbed. A 1-1 seedling is grown for 1 year in a seedbed and then transplanted at wider spacing and grown for another year in a transplant bed. Both trees are 2 years old, but because the 1-1 was transplanted, it is a larger seedling (larger diameter, taller, more root mass). A 1-1 seedling is more expensive, but it may be worth the extra cost in terms of better survival and faster growth.

Larger seedlings can withstand more deer browse and are better able to compete with fast-growing shrubs. On the other hand, on hot, dry sites a smaller stock-type may be a better choice because the seedling has a better balance between shoots and roots, enabling the seedling to survive under harsher conditions.

Planting seedlings

Careful handling and proper planting of seedlings are important steps to successful reforestation. You can find more detailed information in EC 1095, *Seedling Care and Handling*, and EC 1504, *The Care and Planting of Tree Seedlings on Your Woodland*. The following sections review some of the basics for successful planting.

Table 1.—Trees per acre at various spacings.

Trees/acre	Spacing (ft.)
1,210	6 x 6
681	8 x 8
436	10 x 10
302	12 x 12
222	14 x 14
170	16 x 16

Spacing and selecting planting spots

Trees usually are planted at a 10' x 10' spacing in western Oregon and 12' x 12' spacing in central and eastern Oregon. If you anticipate severe (hot and dry) site conditions and heavier than normal mortality, you could consider planting trees closer together to ensure that enough survive to occupy the site. Table 1 is a guide to the number of trees to plant at a given spacing.

Your planting pattern need not be square. It is more important to select good planting spots—areas of exposed mineral soil, free of weeds—than to space trees precisely. On hot, south-facing slopes, selecting good planting spots, such as those areas shaded by stumps or logs, can be more effective than planting additional trees. Following up with good weed control can improve seedling survival on these severe sites.

Timing

The best time to plant conifer seedlings in western Oregon is from January through March. Hardwood seedlings do best if planted from mid-March to mid-April. Seedlings are dormant during these months and can withstand handling and planting.

Soils in eastern Oregon or at higher elevations may be frozen or snow covered during this time. Plant these areas as soon as possible after snow melts and the ground thaws (late March through April).

Some growers have tried planting in the fall. This is risky because seedlings are not fully dormant and so are susceptible to damage. Also, fall rains are unpredictable, and dry soils generally result in poor seedling survival.

Care and handling

Keep seedlings cool (34 to 40°F) and moist and handle them gently at *all* times. When transporting seedlings to the planting site, keep them away from direct sunlight and cover them with a reflective tarp. Store extra seedlings temporarily in a shaded, cool spot at the planting site until needed. Do not allow seedlings to freeze.

Tools and planting

Special long-bladed shovels, planting spades, planting hoes (called hoedads), or power augers are used to plant seedlings. Planting holes should be deep enough to accommodate roots. Plant the seedling so its roots spread downward in the planting hole and are not cramped in, forming “J-roots.” Plant seedlings upright so that all roots are well covered, and firm the soil around roots to eliminate air pockets. Avoid mixing any organic debris, such as rotten wood, branches, or needles, in the planting hole.

Fertilizing seedlings at planting time is not recommended under most conditions. Soil fertility usually is adequate. Fertilization actually may harm seedlings by burning the roots, encouraging excessive top growth, or by encouraging the growth of weeds that compete with seedlings.

If you hire a planting contractor, obtain and check references first. Names of local contractors may be available from an OSU Extension forester or the Oregon Department of Forestry. It is important to monitor tree planters to be sure they do a good job.

Planting costs vary with site conditions, size of seedling, spacing, and availability of planting crews. Costs may range from 25 to 45 cents per seedling or roughly from \$100 to \$200 per acre. This includes the costs of seedlings and labor.

Seedling protection

If populations of deer, elk, gophers, or mountain beavers are large, you may need to protect newly planted seedlings. To deter deer and elk, you can place protective devices (Figure 4) around seedlings or use repellents. Control gophers by baiting and trapping; mountain beavers usually are

trapped to control their populations. For specific information on animal damage protection, see:

- EC 1144, *Controlling Mountain Beaver Damage in Forest Plantations*
- EC 1201, *Understanding and Controlling Deer Damage in Young Plantations*
- EC 1255, *Controlling Pocket Gopher Damage to Conifer Seedlings*
- EC 1256, *Controlling Vole Damage to Conifer Seedlings*

On south-facing slopes, seedlings may be damaged or killed by intense sunlight and heat. Shading the seedling's lower stem with shade cards (available commercially or homemade) can improve seedling survival on these harsh sites, particularly if there is little shade from stumps, logs, and slash.

Plantation maintenance

Once seedlings are planted, additional maintenance often is needed to ensure their continued survival and growth. A systematic walk through the plantation each year can reveal whether seedlings are alive and growing well and whether action is needed to control weeds or protect trees from animal damage.

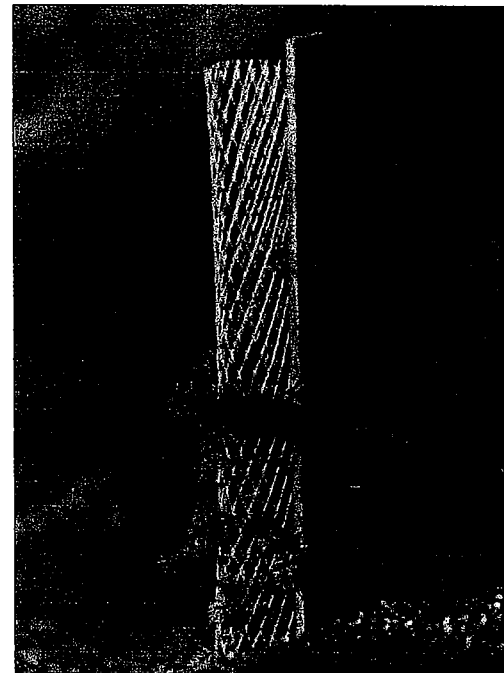


Figure 4.—A vexar tube protects against browsing deer.

Seedling growth is slow the first year or two (4 to 6 inches). Some hardwood species, such as alder, can grow much faster. After the first year or two, and depending on site conditions, you should get 1 to 3 feet of height growth on Douglas-fir seedlings as they become established and growth improves.

Be sure to watch the site closely so that weeds don't reinvade before your seedlings take hold and grow. The first 2 years are critical, and retreatment may be necessary to ensure survival. A healthy plantation is your reward for a job well done! Find additional information on weed control in EC 1388, *Introduction to Conifer Release*.

For more information on plantation maintenance and protection from animal damage, contact the OSU Extension Service and the Oregon Department of Forestry.

Financial assistance for reforestation

Many landowners are interested in financial assistance for reforestation: either reimbursement for some costs of reforestation, or tax savings from having your property assessed as forest land, or state and federal reforestation tax credits.

Cost-share money may be available for reforestation in some situations under the Forestry Incentive Program (FIP) and the Stewardship Incentive Program (SIP). For more information, contact your local Farm Services Agency (FSA). The FSA is listed in the phone book under "United States Government—Agriculture Dept. of." FSA administers these cost-share programs and works closely with your local Service Forester from the Oregon Department of Forestry. You can find additional information in EC 1119, *Incentive Programs for Woodland Management and Resource Conservation*.

If your land currently has no trees but could support native, commercial tree species, you might qualify for "forest deferral" if you plant seedlings and manage your land for timber. This special tax designation provides significant property tax savings to you. To qualify, you must

Steps for successful reforestation

- Carefully plan and evaluate your site.
- Do an excellent job of site preparation.
- Select the proper species and seedling stock-type for your site, and order early.
- Carefully handle and plant seedlings.
- Follow up with weed and animal damage control, if needed, the first 2 years.
- Enjoy your young forest and watch it grow!

have a management plan and own at least 2 acres that are contiguous (not including area for residence), *and* you must establish enough trees to meet or exceed the forest practices minimum reforestation stocking requirements. Apply for forest deferral between January 1 and April 1 with your county assessor's office. The county assessor can give you additional details.

Reforestation tax credits are available to help offset reforestation costs. Information on state reforestation tax credits can be obtained from the local Oregon Department of Forestry Service Forester. Contact the IRS for information on federal reforestation tax credits.

For further reading

OSU Extension publications

Oregon's Forest Practice Rules, EC 1194.

P.W. Adams. 1996. Corvallis: Oregon State University Extension Service. \$1.00

Controlling Mountain Beaver Damage in Forest Plantations, EC 1144. 1993. D.S.

deCalesta, R.E. Duddles, and M.C. Bondi. Corvallis: Oregon State University Extension Service. \$1.00

Controlling Pocket Gopher Damage to Conifer Seedlings, EC 1255. 1993. D.S.

deCalesta and K. Asman. Corvallis: Oregon State University Extension Service. \$1.50

Controlling Vole Damage to Conifer Seedlings, EC 1256. 1992. R.E. Duddles and D.S. deCalesta. Corvallis: Oregon State University Extension Service. \$1.00

Introduction to Conifer Release, EC 1388. 1998. R.E. Duddles and M. Cloughesy. Corvallis: Oregon State University Extension Service. \$1.50

Selecting and Buying Quality Seedlings, EC 1196. 1999. R.E. Duddles and C.G. Landgren. Corvallis: Oregon State University Extension Service. \$2.00

Understanding and Controlling Deer Damage in Young Plantations, EC 1201. 1999. R.E. Duddles and W.D. Edge. Corvallis: Oregon State University Extension Service. \$2.00

The Care and Planting of Tree Seedlings on Your Woodland, EC 1504. 1999. M. Elefritz, M. Atkinson, and S.A. Fitzgerald. Corvallis: Oregon State University Extension Service. \$2.00

Seedling Care and Handling, EC 1095. 1998. W.H. Emmingham, B.D. Cleary, and D.R. DeYoe. Corvallis: Oregon State University Extension Service. \$1.00

Site Preparation: An Introduction for the Woodland Owner, EC 1188. 1998. S.A. Fitzgerald. Corvallis: Oregon State University Extension Service. \$2.50

Incentive Programs for Woodland Management and Resource Conservation, EC 1119. 2002. B. Withrow-Robinson and R. Fletcher. Corvallis: Oregon State University Extension Service. \$1.00

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The Woodland Workbook is a collection of publications prepared by the Oregon State University Extension Service specifically for owners and managers of private, nonindustrial woodlands. The Workbook is organized into separate sections, containing information of long-range and day-to-day value for anyone interested in wise management, conservation, and use of woodland properties. It's available in a 3-ring binder with tabbed dividers for each section.

For information about how to order, and for a current list of titles and prices, inquire at the office of the OSU Extension Service that serves your county.

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EXHIBIT 14

BEEF COW PRICES, 1978-82

			HARVEST	SALES	PRICE			
COMMODITY	COUNTY	YR	/UNIT	(000)	/UNIT			
9105 - BEEF COWS	Lane	1978	14,500	\$5,347	\$368.76			
9105 - BEEF COWS	Lane	1979	14,500	\$7,992	\$551.17			
9105 - BEEF COWS	Lane	1980	15,000	\$6,611	\$444.07			
9105 - BEEF COWS	Lane	1981	15,000	\$6,774	\$451.60			
9105 - BEEF COWS	Lane	1982	15,000	\$7,017	\$467.80			
AVERAGE PRICE/UNIT					\$456.68			

Source: Oregon State University, Dept. Agricultural and Resource Economics, Oregon Agricultural Information Network (OAIN).

KENDALL Jerry

From: Chet Bowers [chetbowers@earthlink.net]
Sent: Tuesday, April 18, 2006 10:31 AM
To: KENDALL Jerry
Subject: Dahlen Marginal Land Application

Dear Mr. Kendall:

As a property owner that borders the Dahlen property, I want to add my name to the list of people that support the objections raised by the Goal One Coalition. We have lived on Camas Lane for 24 years and are now on our third well. The prospect of the number of new residents that would build large houses on the land Ms. Dahlen wants to sub-divide, and assume that they can use water in the same wasteful manner that access to city water has accustomed them too, should be a major concern for government officials ruling on her application. Last summer a large truck with a giant water container made regular trips from her residence for the purpose of providing water that she was unable to access on her own property. And as the water is accessed in pockets among the rocks at very deep levels, there is no way of determining how long the water on her land will be available at the rate she claims in her petition.

Please confirm that you received this email.

C. A. Bowers 31479 Camas Lane, Eugene, OR. 97405

KENDALL Jerry

From: Wolling, Susan [SWolling@peacehealth.org]
Sent: Tuesday, April 18, 2006 1:39 PM
To: KENDALL Jerry
Subject: Testimony for Dahlen Hearing



Dahlen Property
April 2006.doc...

Please include the following as testimony for public hearing concerning the Dahlen property, Map 18-04-24, Tax Lot 300
<<Dahlen Property April 2006.doc>>

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April 15, 2006

Attn: Jerry Kendall
Land Management Division
Public Works Department
125 East 8th Avenue
Eugene OR 97401

Testimony concerning Department File # PA 04-6092
Property 18-04-24, tax lot 300 (Tax Levy Code: 00401)
Applicant: Karen A. Dahlen Trust
Property Address: 85800 S. Willamette

Dear Lane County Board of Commissioners,

I live at 85219 S. Willamette, and as a neighbor of the Dahlen property, I strongly oppose the proposed re-zoning of this property to Marginal Land status.

The land of the Dahlen property is not marginal land, because it has been logged profitably in the past. In addition, it is surrounded by other properties that have been used for timber harvest and grazing.

I am very concerned about the impact that subdividing the Dahlen property would have on the surrounding properties. Water is extremely limited in this entire area. My well barely passed the well test required by my lender when I bought the property, and that was probably because it was tested in late spring. By late summer, my well has run dry. Many neighbors have had wells fail in recent years, and the addition of up to 30 new residences in this area could easily have catastrophic impact on the water supply of those already living here.

In addition, Lane County has expressed concern about the danger of wildland fires in this area, and has proposed new regulations to reduce the risk of fire. Adding a large concentration of new residences in an inherently fire-prone region would exacerbate a problem the County has already identified as a significant concern.

I commute into Eugene daily by bicycle, and am also concerned about adding a significant number of vehicles to this poorly lit, high-speed road that is already hazardous due to black ice, road debris and deer. Beginning at the city limits, street lights, frequent road maintenance and a bike lane improve my safety as a bicyclist—but rezoning the Dahlen property would add traffic outside the city limits, where there are no such safety improvements. Rezoning this property would place me and the many other recreational cyclists in this area at increased risk.

For these and other reasons, I feel that rezoning this property would have unacceptable detrimental effects on neighboring properties. I hope you will reject this request for rezoning. Thank you for your attention.

Sincerely,
Susan C. Wolling
85219 S. Willamette
Eugene OR 97405
541-345-2110