

**FOREST
MANAGEMENT
PLAN**



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I. EXECUTIVE SUMMARY:

A. The Purpose of a Forest Management Plan. The purpose of this Forest Management Plan is to provide the landowner with some basic information about the forest on Tract 5, together with some recommendations and suggestions for the continued stewardship of this resource. It is the author's hope that with some planning guidelines, and periodic management activities, your forest resource will continue to increase in both volume and value.

B. Forest Management Activities. Tract 5 has timber stands that were established between 1977 and 1989. This Forest Management Plan suggests that with the implementation of a thinning program, together with a selective pruning program, growth of the timber stands will be enhanced and value to the landowner will increase.

C. Available Help and Services. Because the Pacific Northwest has a long history of producing some of the best timber in the world there are excellent sources of help to draw from when it comes to managing your timberlands. One can receive advice from Federal, State and County agencies in most parts of western Washington. In some cases government advice and help is offered at no cost to the landowner.

D. Reference Resources. The best reference resource for the non-industrial timberland owner in Washington State is the State of Washington, Dept. of Natural Resources. (DNR) The DNR headquarters is in Olympia, Washington, with satellite field offices scattered throughout the State. The Ridge At Tule Lake properties would be under the jurisdiction of the DNR field office located in Enumclaw. (phone 360-825-1631) A specific mandate of the DNR is to assist timberland owners with the management of their timber resource.

E. Site Specific Overview. The Ridge At Tule Lake project consists of a series of 20 acre home sites located about 25 miles due south of Tacoma, 6 miles west of Eatonville, and 2 miles north of the Nisqually River. (See Exhibit 2 for an Oblique Aerial Photograph of The Ridge At Tule Lake project, and the surrounding area.) Access is provided from 8th Ave. South, which is a paved County road ending at the northwest corner of the Tule Lake development. Access within the development is provided via a series of private gravel roads, and local homeowner's associations provide road maintenance.

The elevation of Tract 5 ranges from about 500 feet above sea level along the access road at the southwest property corner, to an elevation of about 650 feet above sea level along the east property line. Available soils information indicates that the entire tract contains the Kapowsin gravelly loam soil series. A community maintained access road borders the property on the west side. Community access roads also terminate at the northeast and southeast property corners.

II. PROPERTY OVERVIEW:

A. Legal Description. Tract 5 of The Ridge At Tule Lake project is legally described as being a portion of the Southwest One Quarter of Section 10, Township 16 North, Range 3 East, W.M., Pierce County, Washington, and as delineated on a survey recorded under Pierce County Recorder's Certificate No.

B. General Property Description. Tract 5 of The Ridge At Tule Lake project consists of 20.37 surveyed acres. (See Exhibit 5.) About 1½ acres of the tract contains a fully stocked third growth plantation of Douglas fir lying on flat to rolling land that slopes to the road on the west property boundary. This plantation was established in about 1977. Douglas fir in the plantation ranges from 3 to 16 inches DBH (Diameter Breast High), with most trees in the 10 and 12 inch diameter classes. About 1 acre adjacent to the road in the extreme southwest property corner contains a medium to fully stocked stand of Douglas fir that was established in about 1986. Approximately 17 acres on a nearly level plateau contains a stand of planted Douglas fir and volunteer hardwoods that were established in about 1989. About 1 ½ acres lies within access road easements.

Access is provided along a series of all-weather gravel roads, and one road borders the entire west side of the property. Buried power and telephone are available along this road. Access roads also terminate at the northeast and southeast property corners. Concept Engineering, Inc., Issaquah, Washington, surveyed the entire property in 2002. This survey set all property corners, and is recorded under Pierce County Recorder's Certificate No. . Exhibit 5 shows Tract 5 as a portion of the Concept Engineering, Inc. survey of The Ridge at Tule Lake project.

C. Topography. (See Exhibit 4.) Based on a topography map showing 20 foot contour intervals, the elevation of Tract 5 of The Ridge At Tule Lake project ranges from about 500 above sea level on the road at the southwest property corner to about 650 feet in elevation along the east property line. With the exception of a small area in the southwest property corner, the property lies on a flat to gently rolling plateau that faces to the west. Topography data was generated by Weyerhaeuser Real Estate Development Company, and is shown herein on the aerial photocopy Homesite Map labeled as Exhibit 4.

D. Timber Stand Descriptions. (See Exhibit 3.) Tract 5 is now well into the establishment of a third crop of timber. The old-growth timber was harvested from the property in the early 1900's, and a natural stand of second growth timber was harvested from the property between 1977 and 1989. Shortly after those harvests the Weyerhaeuser Company replanted the property. Planting usually consisted of two year old Douglas fir trees, with a stocking rate of about 400 to 500 trees per acre. The entire property now contains stands of Douglas fir that are a result of the planting after the second growth timber was harvested.

At the present time Tract 5 of The Ridge At Tule Lake project contains three distinct timber types, the approximate location of which are shown on a Timber Type Map prepared by the author, and shown herein as Exhibit 3. A description of each timber type is as follows:

Timber type 1 consists of approximately 1½ acres of a fully stocked Douglas fir plantation that was established in about 1977.. This entire timber type lies east of the access road in the southwest corner of the property. Douglas fir trees in Timber type 1 now range from about 3 inches to 16 inches DBH, with the majority of the trees in the 8 to 12 inch diameter classes. Field measurements indicate that the dominant trees are now about 60 to 65 feet in total height. Radial increment for the last 10 years averages about 2 inches, meaning that the average dominant tree within Timber type 1 has increased in diameter about 4 inches within the last decade. If this growth rate were to continue over the next decade the majority of the trees in Timber type 1 will then be 12 to 16 inches in diameter.

After the trees were planted in Timber type 1 no further stand management was undertaken, and many of the trees are now growing too close together and crowding each other out. Douglas fir is a species that requires a lot of sunlight to grow well. At the present time many of the Douglas fir trees in Timber type 1 are growing so close together that the more suppressed and shaded trees will soon be crowded to the point where growth will slow down, and eventually they will not survive.

Timber type 2 consists of approximately 1 acre of a third growth plantation of medium to fully stocked Douglas fir that was established in about 1986. This timber type is located on a westerly facing slope that borders the road at the southwest property corner. Douglas fir trees here are now about 4 to 10 inches DBH, and are about 35 to 45 feet tall. These trees are growing very fast, and one core sample indicated 10 year radial growth of 2.7 inches. Douglas fir trees in Timber type 2 are now at an ideal age and size to undertake a pre-commercial thinning and pruning program.

Timber type 3 consists of approximately 17 acres of a third growth Douglas fir plantation that was established in about 1989. After the second growth timber was removed from this area, it was replanted with two year old Douglas fir at the rate of about 400 to 500 trees per acre. There has been no management work since the initial planting, and in many places hardwoods of alder, maple, cottonwood and willow have invaded the plantation. Douglas fir trees in Timber type 3 now range from 3 to 8 inches DBH, and are 25 to 35 feet tall.

E. Property Tax Designation. The Pierce County Assessor currently classifies Tract 5 of The Ridge At Tule Lake project as "Designated Forest Land". The Assessor's Tax Account Number is . It is estimated that if the entire property remains in designated forestland the annual property tax will total less than \$100.00 per year.

The Designated Forest Land classification requires a minimum of 20 acres growing trees of some age. The tax is based on the value of the land for timber growing purposes only, and does not include the value of the land for other purposes. Also, it does not include the value of the timber being grown, as a yield tax will be paid on the timber at time of harvest. The purpose of this tax system is to provide uniform, predictable and fair taxes for forest landowners, and to ensure that taxes won't destroy the economic incentives for growing trees on private timberlands.

To construct a house on the property will require a minimum of 1 acre of land being removed from the Designated Forest Land tax program. When acreage is removed for non-forestland purposes some amount of back taxes are due on the area being removed as the original purpose of the tax program was to reduce taxes on only that portion of the land growing trees. However, the remaining timberland will continue to enjoy the lower tax base.

F. Reference Resources and Materials. Reference resources and materials used in the preparation of this management plan include the following:

Soil Survey of Pierce County Area, Washington. Published by the United States Dept. of Agriculture, Soil Conservation Service in cooperation with the Washington Agricultural Experiment Station. Issued in February, 1979.

Precommercial Thinning for the Health and Vigor of Your Forest. Prepared by Don Hanley, Washington State University Extension Forester and Don Theoe, Washington Dept. of Natural Resources Stewardship Forester. Distributed at the Southwest Washington Forest Owners Field Day, September 13, 1997.

Thinning – An Introduction to a Timber Management Tool. Published by the Oregon State University Extension Service in consultation with Extension Foresters at the University of Idaho. PNW 184, Reprinted in April, 1979.

III. FISH AND WILDLIFE:

The subject property harbors a number of native animals, birds and reptiles. Big game species include blacktail deer, Roosevelt elk, black bears, and an occasional cougar. Bobcats, coyotes, and raccoons are all using the property for habitat and feeding purposes. Smaller mammals include mink, weasels, opossums, rabbits, mountain beaver, moles, bats, voles, and mice. Reptiles would include garter snakes, lizards, salamanders, frogs and toads.

Birds using the property include hawks, owls, ruffed grouse, and a variety of songbirds.

There are no threatened or endangered species known to exist on the property.

IV. HYDROLOGY:

Tract 5 consists of a nearly level to rolling plateau that extends westerly to Tanwax Creek to the west. The soils on Tract 5 are moderately well drained, and with the exception of extremely heavy rainfall, most moisture is absorbed directly into the ground, or flows towards Tanwax Creek.

The author was on the property in July of 2002, which is generally the driest time of the year. Regardless, the author did not note any wetlands, or any areas where water had periodically collected or ponded on Tract 5.

V. SOILS:

Based on the *Soil Survey of Pierce County Area, Washington*, as published in 1979 by the United States Department of Agriculture, Soil Conservation Service, Tract 5 of The Ridge At Tule Lake project contains a single soil type identified as Kapowsin gravelly loam. In a typical profile the surface layer is dark brown gravelly loam to a depth of about 7 inches. The subsoil, between the depths of 7 and 25 inches, is dark brown gravelly loam. The substratum, to a depth of about 60 inches, is mottled olive brown loam and grayish brown gravelly loam. The substratum is compacted glacial till. A water table is usually perched above the very slowly permeable, weakly cemented, substratum during the rainy season. Very few roots penetrate below a depth of 40 inches. The available water capacity is low to moderate. Surface runoff is slow, and the erosion hazard is slight.

The Kapowsin gravelly loam soil is suited to the production of Douglas fir, and it is capable of producing about 700 board feet of timber per acre per year in unmanaged stands. Under good management, the production of merchantable timber can be increased. Harvesting is best conducted in the drier summer months, and the replanting of desired species is the most successful if some brushing out of undesired species is conducted for the first few years after planting..

The Homesite Map, as generated by Weyerhaeuser Real Estate Development Company, shows, and identifies, soil classifications within Tract 5 and the surrounding vicinity.

VI. FOREST MANAGEMENT PLAN:

The author examined Tract 5 in July of 2002. Based on measurements and observations made in the field, it is recommended that the following forest management activities be undertaken within the next few years.

Note: These recommendations should be considered as a guide only. Sometimes management activities will be timed to take advantage of market conditions, and at other times the availability of contractors may influence when certain activities are undertaken.

2002- 2003: Locate, re-establish and permanently mark all property corners and property lines. An effective, and economical, way to accomplish this is with steel fence posts and a post driver. All property corners (or appropriate offsets from the existing roads) are currently marked with a white survey stake, steel fence post covered by a white plastic PVC pipe, and a rebar with a plastic hub at ground level.

Along the north, east and south property lines some tall lathes (without rebar and hubs) have been set on the exact property line. These lathes will soon fall down, rot out, or otherwise be destroyed within a year or two. It is strongly recommended that the landowner locate these "points on line" and drive tall, steel fence posts at these exact boundary points as soon possible. Starting with posts about 7 feet long will insure that 4 or 5 feet of post will be exposed for many years to come.

2002-2004: Timber type 2 is to the age and density where some of the Douglas fir trees are starting to crowd each other. Trees in this timber type are growing very quickly, and are at an ideal age to conduct some pre-commercial thinning where needed. Douglas fir is a species that requires lots of sunlight to grow at its optimum capability. The trees are currently about 16 years old, and should be spaced about 15 feet apart, which will result in an overall stem count of about 200 trees per acre. The biggest and best trees at this spacing should be identified, and the other trees removed.

Within some portions of Timber type 2 the trees are currently spaced out enough that no thinning is needed. This timber type is only about one acre in size, and the landowner, using a small chainsaw, could conduct a pre-commercial thinning. The trees to remove should be felled, and knocked completely to the ground so that they are not leaning up against the trees that will remain in the stand.

After the trees in Timber type 2 have been reduced in number to about 200 trees per acre, a pruning program should be immediately undertaken. The purpose of pruning trees is to produce clear, knot free, wood on that portion of the bole that grows out beyond the end of the sawed off limb. The trees in timber type 2 should be pruned to a height not to exceed one-half of the total tree height, or to a maximum height of 20 feet. Limbs that are pruned can be left on the ground to rot, and return nutrients to the soil.

2002-2005: Douglas fir trees in Timber type 3 were established about 1989. In some places the plantation has been heavily invaded with hardwoods of alder, maple and cottonwood. The tallest trees in Timber type 3 are currently cottonwood since it grows at such a rapid rate in its younger years. There are some places within Timber type 3 where the hardwoods have not completely overtopped the Douglas fir, and in these areas the hardwoods should be removed from the stand, thereby insuring that the Douglas fir will have sufficient light and room to grow. Again, this can be done by cutting out the undesired trees with a chainsaw, and dropping them completely to the ground.

In those portions of Timber type 3 where the planted Douglas is non-existent or totally suppressed, the hardwoods should be encouraged to continue growing. In a pecking order of future values, the author predicts the most valuable hardwood in the future will be alder, then followed by maple, and then cottonwood. Where one has a choice, the highest future value hardwoods should be selected as the trees to remain.

2005-2007: The Douglas fir trees in Timber type 1 were established in about 1977. While there are trees in the stand now up to about 16 inches DBH, most trees are still in the 10 to 12 inch diameter classes. By about 2005 to 2007 all of these trees will be bigger, and a commercial thinning could be undertaken.

This commercial thinning should result in the residual trees being well spaced out, with lots of room for sunshine. Spacing, after completion of the thinning, should average about 18 to 19 feet between trees. Every effort should be made to insure that the residual trees remaining are the best Douglas fir trees available. A good example of a similar commercial thinning can be seen along the east border of Tracts 2, 3 and 4 within the Tule Lake project.

It is the author's experience that commercial thinning is best done in the fall when the bark is tight, thereby not scaring the residual trees nearly as much as would happen when working in the spring and early summer months. If one waits until the winter months soil conditions must be considered, and harvesting costs may increase.

2003-2007: It is recommended that the trees that will remain in Timber type 1 after the commercial thinning be pruned to a height of approximately 20 feet. Pruning is a popular trend at the present time, and the purpose of pruning is to create knot free wood on that portion of the tree that expands in growth beyond the end of the pruned off limbs. Some trees along the road in The Ridge At Tule Lake project have already been pruned to about 15 feet, and these trees provide a good example of what the stand will look like once all the residual trees are pruned. Pruning is a management activity that can sometimes be totally undertaken by the landowner. The first eight feet of the bole can usually be pruned from the ground, and higher portions of the bole can be pruned with pole saws, or with shorter saws while working off a ladder. The trees to be pruned in Timber type 1 could be selected now, and pruned well before the actual thinning takes place, provided the harvester makes every effort to leave these trees during the thinning process.

2027....: By this time the residual trees in Timber type 1 will be approximately 50 years old, and a final harvest could be undertaken. Dominant trees will now be in excess of 20 inches DBH, and assuming a pruning plan had been followed, will have one good, clear butt log. Individual tree crowns will again be starting to close in, and annual volume growth will start to taper off. Harvesting trees at age 50 is, however, only one option for the landowner. The landowner may want to leave the trees until they are older yet, or may want to conduct another commercial thinning within Timber type 1.

Once all the final crop trees are removed, the area should again be planted with Douglas fir, and the whole rotation can be started again for the benefit of future family members.

VII. APPENDIX:

- A.** Exhibit 1 is a Vicinity Map showing The Ridge At Tule Lake project area.
- B.** Exhibit 2 is an oblique aerial photograph of the project area, and surrounding lands.
- C.** Exhibit 3 is a Timber Type map prepared by the author.
- D.** Exhibit 4 is the Homesite Map. The Homesite Map base is an aerial photo taken in 2000. Imposed on the photo are approximate property lines, soil classification boundaries and 20 foot contours within the vicinity of Tract 5.
- E.** Exhibit 5 is a portion of the Record of Survey as done by Concept Engineering, Inc.

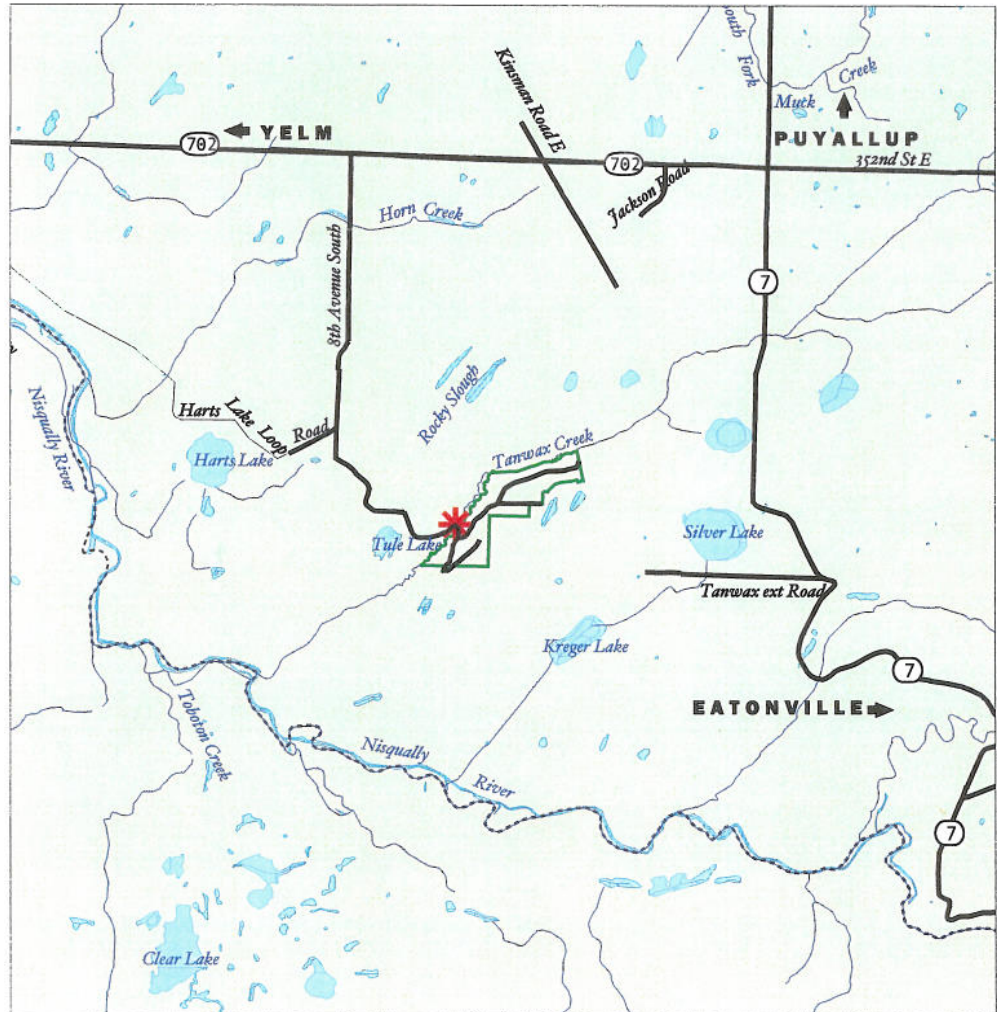
VIII. RELATED MATERIAL:

EXHIBIT 1

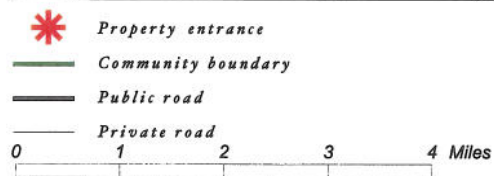
THE RIDGE AT TULE LAKE T16N R3E Sections 10 & 11, Pierce County, Washington

 A Weyerhaeuser Real Estate Development Company Property

VICINITY MAP



LEGEND



Information contained herein deemed reliable though not guaranteed.

© 2001, Weyerhaeuser Real Estate Development Company, 2001

EXHIBIT 2



www.forestreserveinfo.com

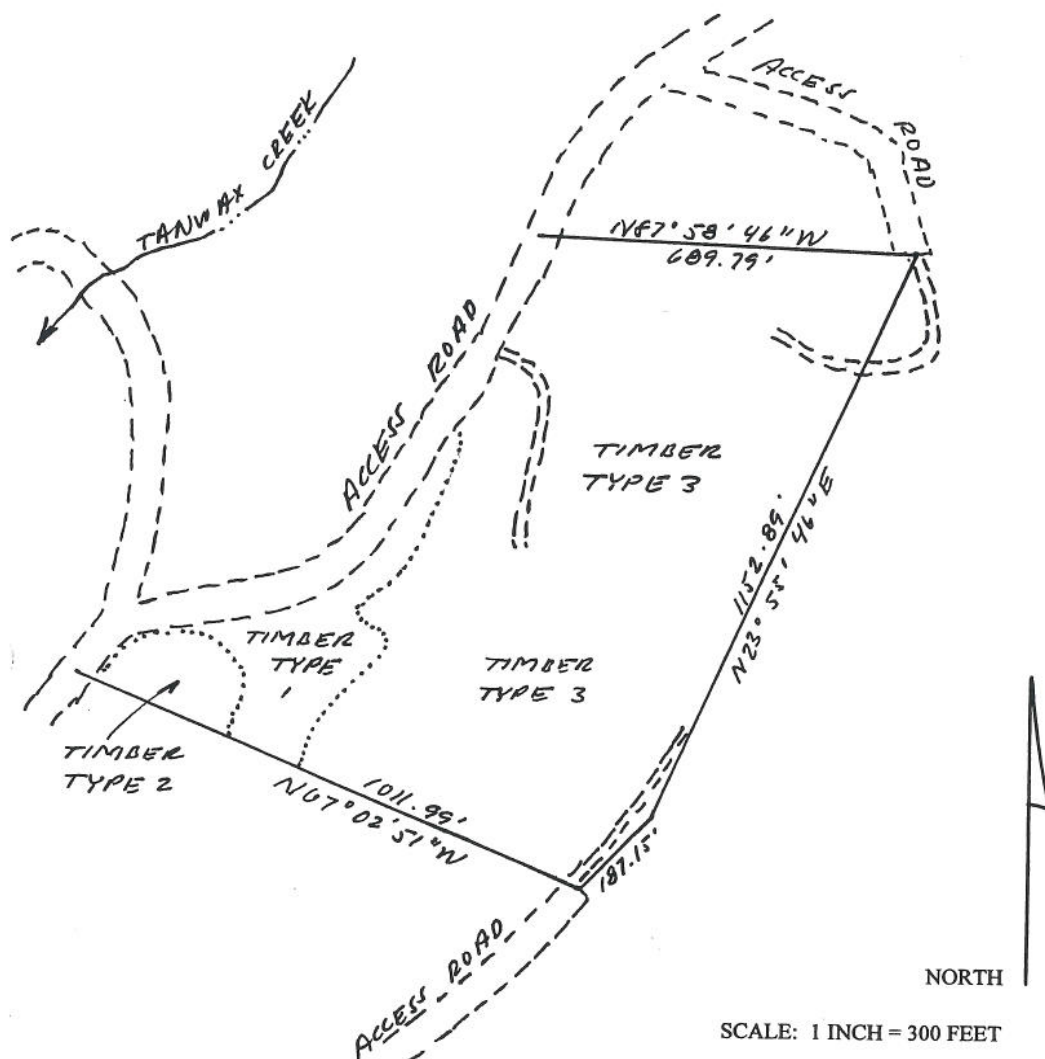
Weyerhaeuser Real Estate
Development Company



The Ridge at Tule Lake

EXHIBIT 3

Showing a Timber type map of Tract 5 of The Ridge At Tule Lake.



Timber type 1: Approximately 1½ acres of medium to fully stocked Douglass fir about 25 years old.

Timber type 2: Approximately 1 acre of medium to fully stocked Douglas fir about 16 years old.

Timber type 3: Approximately 17 acres of lightly to fully stocked Douglas fir and hardwoods about 13 years old.

EXHIBIT 4

THE RIDGE AT TULE LAKE

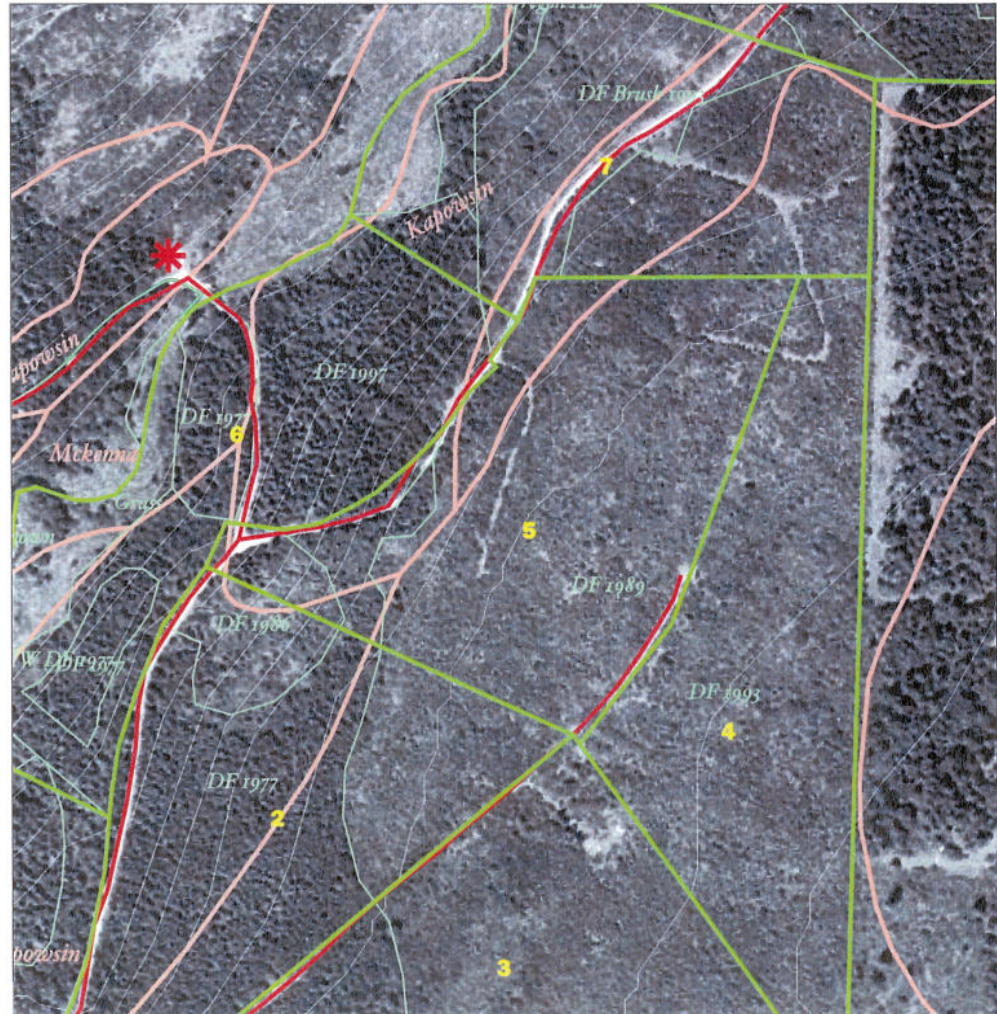
T16N R3E Sections 10 & 11, Pierce County, Washington



A Weyerhaeuser Real Estate Development Company Property

HOMESITE MAP

Contour interval - 20 feet



© 2001, Weyerhaeuser Real Estate Development Company, 2001

LEGEND



- Soil type boundary
- Available homesites
- Public road
- Private road

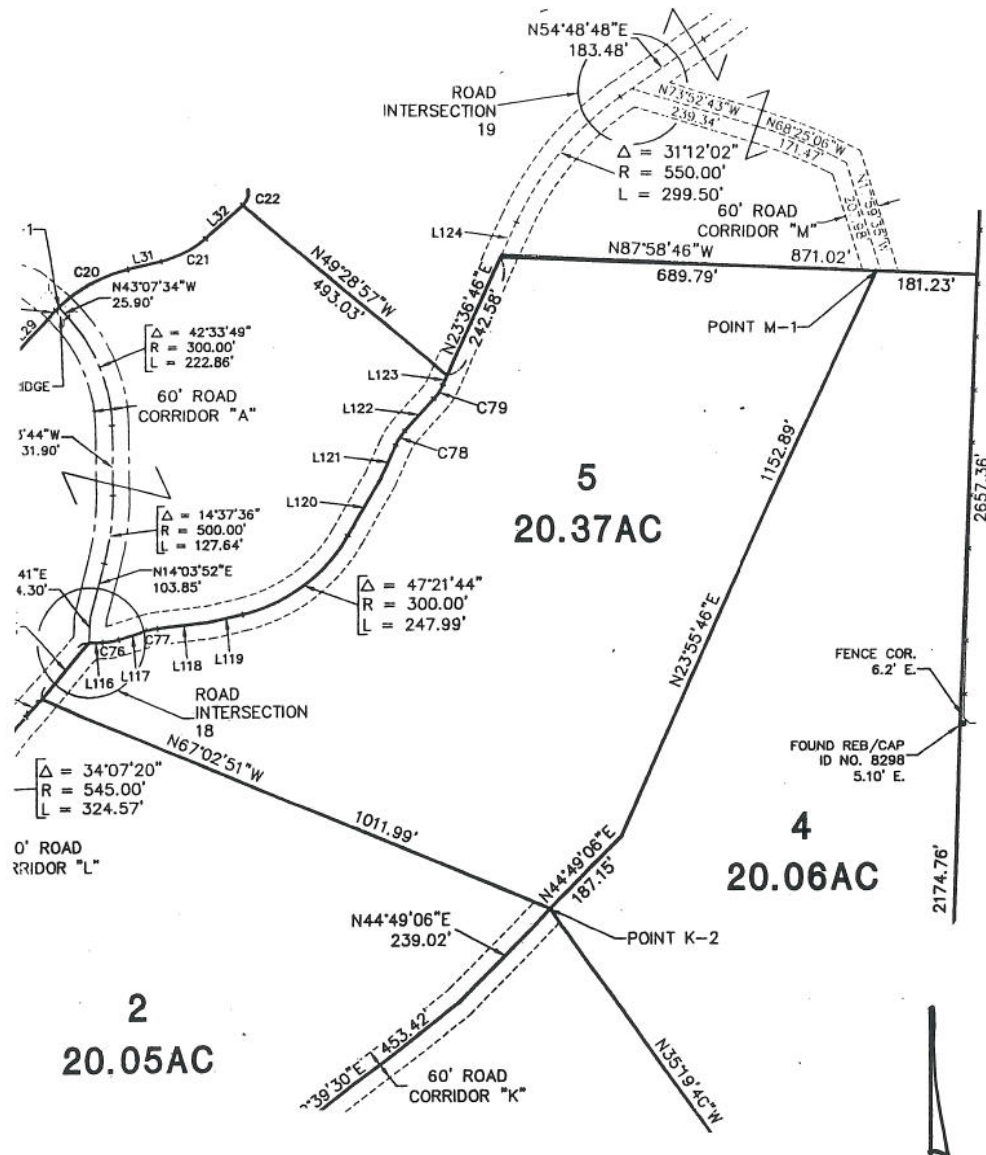
0 0.25 0.5 0.75 1 Miles

Information contained herein deemed reliable though not guaranteed.

EXHIBIT 5

TRACT 5

Showing a portion of the survey map of The Ridge At Tule Lake project as prepared by Concept Engineering, Inc., and recorded under Pierce County Recorder's Certificate No.



SCALE: ONE INCH = 300 FEET

NORTH

How To...

Prune Forest Trees

Pruning forest trees is a value-added activity in the woods instead of in the mill or factory. The result can often more than quadruple the value of timber in a stand. Pruning can also improve fire resistance by removing "fuel ladders" that carry ground fire to tree crowns, provide easier access, contribute to aesthetics, allow better growth of forage for livestock, and, in some cases, help control diseases.

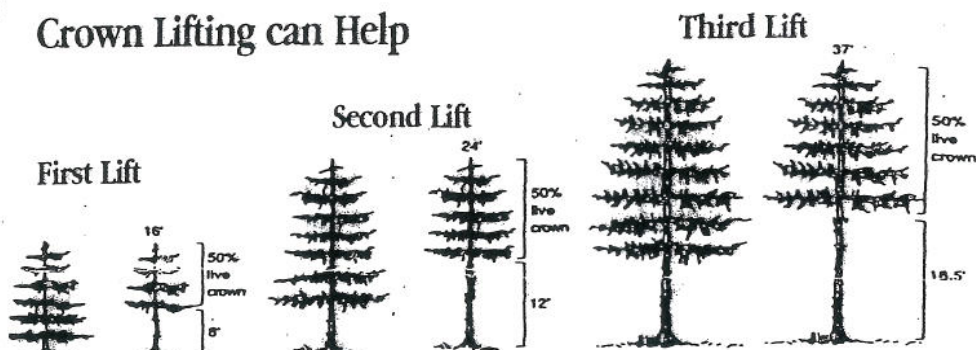
Some Basic Considerations:

- Select healthy, vigorous stands on productive sites. Avoid windy areas and sites with a high water table.
- Prune only species with a market for knot-free lumber or veneer. Also, check with local foresters to find out what species, if any, might attract insects if pruned.
- To maximize growth, try to maintain 50 percent of the total tree height in live crown.
- Make cuts with a sharp pruning saw or shears. Jagged stubs invite decay and impede wound closure.
- A minimum of 15 to 20 years is usually needed for the tree to add enough clear wood to make pruning profitable.

A 4-Step Pruning Strategy

1. Decide the length of clear logs you want to produce. Base this on local market opportunities, site quality, and how long you are willing to wait before harvesting.
2. Select and permanently mark potential crop trees and prune only these. Avoid trees with double tops, crooked stems, diseases or other defects. The total number varies, but is often 110 to 115 hardwoods or 150 to 225 conifers per acre.
3. When possible, begin pruning when your trees are small so that the final log has a knotty core no larger than 2 to 4 inches in diameter.
4. Coordinate pruning with thinning. Thinning concentrates wood growth on the pruned crop trees. By thinning frequently, the stand is not opened too much at once, which could lead to sunscald or epicormic branching.

Crown Lifting can Help

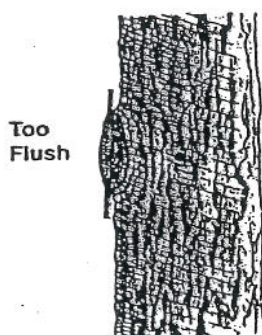


The number of successive "lifts" depends on the tree's size when you first prune and the length of the clear-wood log desired at harvest time.

The Pruning Cut

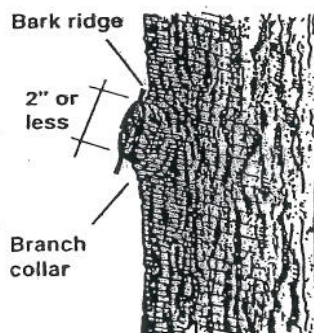
SOURCE: Much of this information is from Pruning to Enhance Tree and Stand Value by W. Emmingham and S. Fitzgerald, Oregon State University Extension Service, Corvallis, OR 97331-2119.

INCORRECT



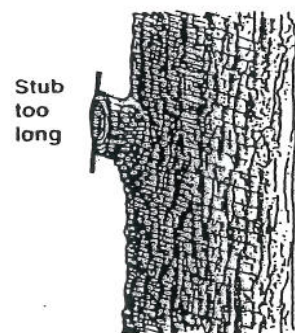
By cutting too close to the trunk, wound diameter is increased and the tree's natural defense system against decay fungi is weakened.

CORRECT



By cutting perpendicular to the branch, wound diameter is minimized. If the cut is made just outside the swollen areas at the base of the branch, the tree can "compartmentalize" the wound using a chemical barrier. This reduces the chance of decay.

INCORRECT



Leaving an unnecessarily long stub increases the time needed for the tree to produce clear wood, thereby defeating the most common reason for pruning.