

DEPARTMENT OF FORESTRY

DIVISION 642

WATER PROTECTION RULES: VEGETATION RETENTION ALONG STREAMS

Reader Friendly Version of Rule Text Showing Added Language for SSBT rule changes (note: does not include housekeeping changes such as rule numbers)

629-642-0000

Vegetation Retention Goals for Streams; Desired Future Conditions

(1) The purpose of this rule is to describe how the vegetation retention measures for streams were determined, their purpose and how the measures are implemented. The vegetation retention requirements for streams described in OARs 629-642-0100 through 629-642-0800 are designed to produce desired future conditions for the wide range of stand types, channel conditions, and disturbance regimes that exist throughout forestlands in Oregon.

(2) The desired future condition for streamside areas along fish use streams is to grow and retain vegetation so that, over time, average conditions across the landscape become similar to those of mature streamside stands. Oregon has a tremendous diversity of forest tree species growing along waters of the state and the age of mature streamside stands varies by species. Mature streamside stands are often dominated by conifer trees. For many conifer stands, mature stands occur between 80 and 200 years of stand age. Hardwood stands and some conifer stands may become mature at an earlier age. Mature stands provide ample shade over the channel, an abundance of large woody debris in the channel, channel-influencing root masses along the edge of the high water level, snags, and regular inputs of nutrients through litter fall.

(3) The rule standards for desired future conditions for fish use streams were developed by estimating the conifer basal area for average unmanaged mature streamside stands (at age 120) for each geographic region. This was done by using normal conifer yield tables for the average upland stand in the geographic region, and then adjusting the basal area for the effects of riparian influences on stocking, growth and mortality or by using available streamside stand data for mature stands.

(4) The desired future condition for streamside areas that do not have fish use is to have sufficient streamside vegetation to support the functions and processes that are important to downstream fish use waters and domestic water use and to supplement wildlife habitat across the landscape. Such functions and processes include: maintenance of cool water temperature and other water quality parameters; influences on sediment production and bank stability; additions of nutrients and large conifer organic debris; and provision of snags, cover, and trees for wildlife.

(5) The rule standards for desired future conditions for streams that do not have fish use were developed in a manner similar to that used for fish use streams. In calculating the rule standards, other factors used in developing the desired future condition for large streams without fish use and all medium and small streams included the effects of trees regenerated in the riparian management area during the next rotation and desired levels of instream large woody debris.

(6) For streamside areas where the native tree community would be conifer dominated stands, mature streamside conditions are achieved by retaining a sufficient amount of conifers next to large and medium sized fish use streams at the time of harvest, so that halfway through the next rotation or period between harvest entries, the conifer basal area and density is similar to mature unmanaged conifer stands. In calculating the rule standards, a rotation age of 50 years was assumed for even-aged management and a period between entries of 25 years was assumed for uneven-aged management. The long-term

maintenance of streamside conifer stands is likely to require incentives to landowners to manage streamside areas so that conifer reforestation occurs to replace older conifers over time.

(7) Conifer basal area and density targets to produce mature stand conditions over time are outlined in the general vegetation retention prescriptions. In order to ensure compliance with state water quality standards, these rules include requirements to retain all trees within 20 feet and understory vegetation within 10 feet of the high water level of specified channels to provide shade.

(8) For streamside areas where the native tree community would be hardwood dominated stands, mature streamside conditions are achieved by retaining sufficient hardwood trees. As early successional species, the long-term maintenance of hardwood streamside stands will in some cases require managed harvest using site specific vegetation retention prescriptions so that reforestation occurs to replace older trees. In order to ensure compliance with state water quality standards, these rules include requirements in the general vegetation retention prescription to retain all trees within 20 feet and understory vegetation within 10 feet of the high water level of specified channels to provide shade.

(9) In many cases the desired future condition for streams can be achieved by applying the general vegetation retention prescriptions, as described in OARs 629-642-0100, 629-642-0105 and 629-642-0400. In other cases, the existing streamside vegetation may be incapable of developing into the future desired conditions in a "timely manner." In this case, the operator can apply an alternative vegetation retention prescription described in OAR 629-642-0600 or develop a site specific vegetation retention prescription described in OAR 629-642-0700. For the purposes of the water protection rules, "in a timely manner" means that the trees within the riparian management area will meet or exceed the applicable basal area target or vegetation retention goal during the period of the next harvest entry that would be normal for the site. This will be 50 years for many sites.

(10) Where the native tree community would be conifer dominant stands, but due to historical events the stand has become dominated by hardwoods, in particular, red alder, disturbance is allowed to produce conditions suitable for the re-establishment of conifer. In this and other situations where the existing streamside vegetation is incapable of developing characteristics of a mature streamside stand in a "timely manner," the desired action is to manipulate the streamside area and woody debris levels at the time of harvest (through an alternative vegetation retention prescription or site specific vegetation retention prescription) to attain such characteristics more quickly.

629-642-0100

General Vegetation Retention Prescription for Type F Streams

(1)(a) Operators shall apply the vegetation retention requirements described in this rule to the riparian management areas of Type F streams. **Vegetation retention requirements for Type SSBT streams adjacent to harvest type 2 or harvest type 3 units are described in OAR 629-642-0105 and other water protection rules.**

(b) Segments of Type F streams that are different sizes within an operation shall not be combined or averaged together when applying the vegetation retention requirements.

(c) Trees left to meet the vegetation retention requirements for one stream type shall not count towards the requirements of another stream type.

(2) Operators shall retain:

(a) All understory vegetation within 10 feet of the high water level;

(b) All trees within 20 feet of the high water level; and

(c) All trees leaning over the channel.

(3) Operators shall retain within riparian management areas and streams all downed wood and snags that are not safety or fire hazards. Snags felled for safety or fire hazard reasons shall be retained where they are felled unless used for stream improvement projects.

(4) Notwithstanding the requirements of section (2) of this rule, vegetation, snags and trees within 20 feet of the high water level of the stream may be felled, moved or harvested as allowed in other rules for road construction, yarding corridors, temporary stream crossings, or for stream improvement.

(5) Operators shall retain at least 40 live conifer trees per 1000 feet along large streams and 30 live conifer trees per 1000 feet along medium streams. This includes trees left to meet the requirements described in section (2) of this rule. Conifers must be at least 11 inches DBH for large streams and 8 inches DBH for medium streams to count toward these requirements.

(6) Operators shall retain trees or snags six inches or greater DBH to meet the following requirements (this includes trees left to meet the requirements of sections (2) and (5) of this rule):

(a) If the live conifer tree basal area in the riparian management area is greater than the standard target shown in Table 2 where the harvest unit will be a harvest type 2 or type 3 unit or Table 3 where the harvest unit will be a harvest type 1, partial harvest, or thinning, operators shall retain live conifer trees of sufficient basal area to meet the standard target.

(b) If the live conifer tree basal area in the riparian management area is less than the standard target (as shown in Table 2 where the harvest unit will be a harvest type 2 or type 3 unit, or Table 3 where the harvest unit will be a harvest type 1, partial harvest, or thinning) but greater than one-half the standard target shown in Table 2, operators shall retain all live conifer trees six inches DBH or larger in the riparian management area (up to a maximum of 150 conifers per 1000 feet along large streams, 100 conifers per 1000 feet along medium streams, and 70 conifers per 1000 feet along small streams).

(c) If live conifer tree basal area in the riparian management area is less than one-half the standard target shown in Table 2:

(A) Operators may apply an alternative vegetation retention prescription as described in OAR 629-642-0600 where applicable, or develop a site specific vegetation retention prescription as described in OAR 629-642-0700; or

(B) Operators shall retain all conifers in the riparian management area and all hardwoods within 50 feet of the high water level for large streams, within 30 feet of the high water level for medium streams, and within 20 feet of the high water level for small streams.

(7) In the Coast Range, South Coast, Interior, Western Cascade, and Siskiyou geographic regions, hardwood trees and snags six inches or greater DBH may count toward the basal area requirements in subsection (6)(a) of this rule as follows:

(a) All cottonwood and Oregon ash trees within riparian management areas that are beyond 20 feet of the high water level of large Type F streams, may count toward the basal area requirements.

(b) Up to 10 percent of the basal area requirement may be comprised of sound conifer snags at least 30 feet tall and other large live hardwood trees, except red alder, growing in the riparian management area more than 20 feet from the high water level and at least 24 inches DBH.

(8) In the Eastern Cascade and Blue Mountain geographic regions, hardwood trees, dying or recently dead trees and snags six inches or greater DBH may count toward the basal area requirements in subsection (6)(a) of this rule as follows:

(a) The basal area of retained live hardwood trees may count toward meeting the basal area requirements.

(b) Up to 10 percent of the basal area retained to meet the basal area requirement may be comprised of sound conifer snags at least 30 feet tall.

(c) For small Type F streams, the maximum required live conifer tree basal area that must be retained to meet the standard target is 40 square feet. The remaining basal area required may come from retained snags, dying or recently dead trees, or hardwoods if available within the riparian management area.

(9) Notwithstanding the requirements indicated in this rule, operators may conduct pre-commercial thinning and other release activities to maintain the growth and survival of conifer reforestation within riparian management areas. Such activities shall contribute to and be consistent with enhancing the stand's ability to meet the desired future condition.

(10) When determining the basal area of trees, the operator may use the average basal area for a tree's diameter class, as shown in Table 4, or determine an actual basal area for each tree. The method for determining basal area must be consistent throughout the riparian management area.

(11) (a) For large and medium Type F streams (not including Type SSBT streams), live conifer trees retained in excess of the active management target shown in Table 2 and hardwoods retained beyond 20 feet of the high water level of the stream that otherwise meet the requirements for leave trees may be counted toward requirements for leave trees within harvest type 2 or harvest type 3 units (pursuant to ORS 527.676).

(b) For small Type F streams (not including Type SSBT streams), all retained live trees that otherwise meet the requirements for leave trees may count toward requirements for leave trees within harvest type 2 or harvest type 3 units (pursuant to ORS 527.676).

(12) Trees on islands with ground higher than the high water level may be harvested as follows:

(a) If the harvest unit is solely on an island, operators shall apply all the vegetation retention requirements for a large Type F stream described in this rule to a riparian management area along the high water level of the channels forming the island.

(b) Otherwise, operators shall retain all trees on islands within 20 feet of the high water level of the channels forming the island and all trees leaning over the channels. In this case, conifer trees retained on islands may count toward the basal area requirement for adjacent riparian management areas so long as the trees are at least 11 inches DBH for large streams and eight inches DBH for medium streams.

(13) When applying the vegetation retention requirements described in this rule to the riparian management areas, if an operator cannot achieve the required retention without leaving live trees on the upland side of a road that may be within the riparian management area and those trees pose a safety hazard to the road and will provide limited functional benefit to the stream, the State Forester may approve a plan for an alternate practice to modify the retention requirements on a site specific basis.

629-642-0105

General Vegetation Retention Prescriptions for Type SSBT Streams

(1) The purpose for the vegetation retention prescriptions in this section is to ensure that, to the maximum extent practicable, forest operations will not impair the achievement and maintenance of the protecting cold water criterion described in OAR 340-041-0028(11).

(2) The vegetation retention requirements for Type SSBT streams apply to harvest type 2 or harvest type 3 units in the following Geographic Regions as described in OAR 629-635-0220: Coast Range, South Coast, Interior, and Western Cascades. Use rules in OAR 629-642-0100 for Type 1 harvests along SSBT streams.

(3) Operators shall apply the vegetation retention requirements described in this rule to the riparian management area of the following streams:

(a) Type SSBT streams.

(b) The main stem of any Type F stream upstream of the mapped end of SSBT use to the higher of:

(A) The upstream boundary of the harvest unit containing SSBT, or

(B) The upstream boundary of any adjacent upstream harvest unit commenced within a year of completing harvest of the unit containing SSBT.

(c) For the purpose of this rule, "main stem" means the stream with the largest annual average flow at a confluence of two or more streams. The State Forester shall determine average annual flow by indexing average annual flow to the upstream drainage area and average annual precipitation as described in Forest Practices Technical Note 1 dated April 11, 1994. The State Forester may substitute field evaluations of average annual flow for the calculated flows described in the technical note.

(4) Segments of Type SSBT streams that are different sizes within an operation shall not be combined or averaged together when applying the vegetation retention requirements.

(5) Trees left to meet the vegetation retention requirements for one stream type shall not count towards the requirements of another stream type.

(6) Operators shall retain:

(a) All understory vegetation within 10 feet of the high water level;

(b) All trees within 20 feet of the high water level; and

(c) All trees leaning over the channel.

(7) Operators shall retain all downed wood and snags that are not safety or fire hazards within riparian management areas and streams. Snags felled for safety or fire hazard reasons shall be retained where they are felled unless used for stream improvement projects.

(8) Notwithstanding the requirements of section (6) of this rule, vegetation, snags and trees within the riparian management area of the stream may be felled, moved or harvested as allowed in other rules for road construction, yarding corridors, temporary stream crossings, or for stream improvement while maintaining required basal area and live conifer tree count.

(9) When harvesting in the riparian management area of a Type SSBT stream, an operator shall apply one of the following prescriptions, except as noted for Type SSBT Prescription 3 in section (12).

(a) Operators may apply Type SSBT Prescription 1 on any Type SSBT riparian management area as described in section (10) of this rule.

(b) If the basal area of trees six inches or greater DBH within the riparian management area but more than 20 feet from the high water level of the Type SSBT stream exceeds the total basal area target shown in Table 5, the operator may apply Type SSBT Prescription 2, described in section (11) of this rule.

(c) If a Type SSBT stream segment at least 200 feet in length meets the standards in Type SSBT Prescription 3, the operator may apply that prescription on the north side of the stream segment, as described in section (12) of this rule.

(d) If live conifer basal area within the riparian management area of a Type SSBT stream is less than half the standard target for a small or medium Type F stream in Table 2, the operator may apply the appropriate Alternative Prescription described in OAR 629-642-0600.

(e) For the riparian management area of any Type SSBT stream, the operator may propose a site-specific prescription in a plan for an alternate practice. Plans for alternate practices are subject to the review and approval of the State Forester. Site-specific prescriptions are described in OAR 629-642-0700.

(10) Type SSBT Prescription 1:

- (a) Retain all trees within 60 feet of the high water level of a small stream.
- (b) Retain all trees within 80 feet of the high water level of a medium stream.
- (c) Where SSBT Prescription 1 is applied, operators may count as wildlife leave trees all trees that meet wildlife leave tree requirements:

(A) Within 20 feet of the high water level.

(B) In the remainder of the riparian management area, up to 50 percent of the basal area trees used to meet the basal area target in Table 5.

(C) Any trees within the area described in (B) in excess of the basal area target in Table 5.

(11) Type SSBT Prescription 2:

(a) Operators shall retain trees that are well-distributed by length and width of the riparian management area beyond 20 feet of the high water level of the stream, minimize the creation of large gaps, favor small openings in the canopy, and leave residual trees in a manner that promotes understory as well as diameter and crown growth. Operators shall satisfy these requirements by meeting the following minimum standards:

(A) For small Type SSBT streams, the riparian management area length will be measured in 500 foot segments. Within each 500 foot segment at least 25 percent of the required basal area target, rounded up to the nearest whole number, and 50 percent of the required live conifer trees, rounded up to the nearest whole tree, shall be located between:

(i) 20 feet and 40 feet of the high water level, see Table 5; and

(ii) 40 feet and 60 feet of the high water level, see Table 5.

(B) For medium Type SSBT streams, the riparian management area length will be measured in 500 foot segments. Within each 500 foot segment at least 25 percent of the required basal area target, rounded up to the nearest whole number, and 50 percent of the required live conifer trees, rounded up to the nearest whole tree, shall be located between:

(i) 20 feet and 50 feet of the high water level, see Table 5; and

(ii) 50 feet and 80 feet of the high water level, see Table 5.

(b) For stream segments that are less than 500 feet, the required basal area and live conifer trees are reduced proportionally.

(c) The operator shall provide a description in the written plan and map where the measurement for the 500 foot stream segments begin and end.

(d) Operators shall retain live conifer trees:

(A) For small Type SSBT streams, at least 8 live conifer trees per 500 feet along the stream, located between 20 feet and 60 feet from the high water level. Live conifer trees must be at least 8 inches DBH to count toward these requirements, see Table 5.

(B) For medium Type SSBT streams, at least 15 live conifer trees per 500 feet along the stream, located between 20 feet and 80 feet from the high water level. Live conifer trees must be at least 8 inches DBH to count toward these requirements, see Table 5.

(e) Operators shall retain hardwood and conifer trees and snags six inches or greater DBH to meet the following basal area requirements:

(A) For small Type SSBT streams, conifer and hardwood basal area target is shown in Table 5.

(B) For medium Type SSBT streams, conifer and hardwood basal area target is shown in Table 5.

(C) Up to 10 percent of the basal area requirements may be comprised of sound conifer snags at least 30 feet tall.

(f) Where Type SSBT Prescription 2 is applied, operators may count as wildlife leave trees all trees that meet wildlife leave tree requirements:

(A) Within 20 feet of the high water level.

(B) In the remainder of the riparian management area, up to 50 percent of the basal area trees retained to meet the basal area target in Table 5.

(C) Any trees within the area described in (B) in excess of the basal area target in Table 5.

(12) Type SSBT Prescription 3:

(a) This prescription applies to Type SSBT streams where the stream valley direction is between 60 and 120 degrees east and 240 and 300 degrees west on a compass bearing of 0 and 360 degrees as north. Operators shall:

(A) Retain all trees within 40 feet of the high water level on the north side of a Type SSBT stream where the stream valley direction criteria are met.

(B) The operator shall describe in a written plan and map where the alternative prescription is intended to be implemented.

(b) Where Type SSBT Prescription 3 is not applied, the operator shall apply either Type SSBT Prescription 1 or 2.

(c) The State Forester shall maintain a map showing stream valley direction for applying Type SSBT Prescription 3.

(d) The State Forester may substitute field evaluations of stream valley direction instead of the map.

(A) The field-based evaluation shall measure the stream valley direction with a minimum of 200 foot stream segments.

(B) The stream segment must meet the stream valley direction criteria listed above to apply SSBT Prescription 3.

(e) Where Type SSBT Prescription 3 is applied, operators may count all trees that meet the wildlife leave tree requirements retained within 40 feet of the high water level as wildlife leave trees.

(13) Notwithstanding the requirements indicated in this rule, operators may conduct pre-commercial thinning and other release activities to maintain the growth and survival of conifer reforestation within riparian management areas. Such activities shall contribute to and be consistent with enhancing the stand's ability to meet the desired future condition.

(14) When determining the basal area of trees, the operator may use the average basal area for a tree's diameter class, as shown in Table 4, or determine an actual basal area for each tree. The method for determining basal area must be consistent throughout the riparian management area.

(15) When applying the vegetation retention requirements described in this rule to the riparian management areas, if an operator cannot achieve the required retention without leaving live trees on the upland side of a road that may be within the riparian management area and those trees pose a safety hazard to the road and will provide limited functional benefit to the stream, the State Forester may approve a plan for an alternate practice to modify the retention requirements on a site specific basis.

629-642-0110

Relief for General Vegetation Retention Prescriptions for Type SSBT Streams

(1) Upon written request from a landowner, relief is available if the additional encumbered forested stream area due to Type SSBT classification is 8% or more of the forested portion of any parcel. The additional encumbered forested stream area is measured by the increase in acres of the Type SSBT vegetation prescription over the vegetation prescription for Type F streams. To determine the additional percentage forested stream area encumbered, the increase in acres is divided by the forested parcel acres.

(2) "Parcel" as described in this section means a contiguous single ownership recorded at the register of deeds within the county or counties where the property is located, including any parcel(s) touching along a boundary, but a railroad, road, stream, or utility-right-of-way may intersect the parcel. Single ownership is defined in ORS 527.620(14).

(3) If a landowner qualifies for relief, the landowner may utilize:

(a) Type SSBT Relief Prescription 1 which is Type SSBT Prescription 1, as described in OAR 629-642-0105(10), within a reduced riparian management area of 50 feet or 70 feet for small and medium Type SSBT streams, respectively; or

(b) Type SSBT Relief Prescription 2 which is Type SSBT Prescription 2, as described in OAR 629-642-0105(11), within a reduced riparian management area of 50 feet or 70 feet for small and medium Type SSBT streams, respectively. See Table 6 for reduced basal area targets and live conifer tree requirements.

(4) Type SSBT Relief Prescription 1:

(a) Retain all trees within 50 feet of the high water level of a small stream.

(b) Retain all trees within 70 feet of the high water level of a medium stream.

(c) Where Type SSBT Relief Prescription 1 is applied, operators may count as wildlife leave trees all trees that meet wildlife leave tree requirements:

(A) Within 20 feet of the high water level.

(B) In the remainder of the riparian management area, up to 50 percent of the basal area trees used to meet the basal area target in Table 6.

(C) Any trees within the area described in (B) in excess of the basal area target in Table 6.

(5) Type SSBT Relief Prescription 2:

(a) Operators shall retain trees that are well-distributed by length and width of the riparian management area beyond 20 feet of the high water level of the stream, minimize the creation of large gaps, favor small openings in the canopy, and leave residual trees in a manner that promotes understory as well as diameter and crown growth. Operators shall satisfy these requirements by meeting the following minimum standards:

(A) For small Type SSBT streams, the riparian management area length will be measured in 500 foot segments. Within each 500 foot segment at least 25 percent of the required basal area target, rounded up to the nearest whole number, and 50 percent of the required live conifer trees, rounded up to the nearest whole tree, shall be located between:

(i) 20 feet and 35 feet of the high water level, see Table 6; and

(ii) 35 feet and 50 feet of the high water level, see Table 6.

(B) For medium Type SSBT streams, the riparian management area length will be measured in 500 foot segments. Within each 500 foot segment at least 25 percent of the required basal area target, rounded up to the nearest whole number, and 50 percent of the required live conifer trees, rounded up to the nearest whole tree, shall be located between:

(i) 20 feet and 45 feet of the high water level, see Table 6; and

(ii) 45 feet and 70 feet of the high water level, see Table 6.

(b) For stream segments that are less than 500 feet, the required basal area and live conifer trees are reduced proportionally.

(c) The operator shall provide a description in the written plan and map where the measurement for the 500 foot stream segments begin and end.

(d) Operators shall retain live conifer trees:

(A) For small Type SSBT streams, at least 6 live conifer trees per 500 feet along the stream, located between 20 feet and 50 feet from the high water level. Live conifer trees must be at least 8 inches DBH to count toward these requirements, see Table 6.

(B) For medium Type SSBT streams, at least 13 live conifer trees per 500 feet along the stream, located between 20 feet and 70 feet from the high water level. Live conifer trees must be at least 8 inches DBH to count toward these requirements, see Table 6.

(e) Operators shall retain hardwood and conifer trees and snags six inches or greater DBH to meet the following basal area requirements:

(A) For small Type SSBT streams, conifer and hardwood basal area target is shown in Table 6.

(B) For medium Type SSBT streams, conifer and hardwood basal area target is shown in Table 6.

(C) Up to 10 percent of the basal area requirements may be comprised of sound conifer snags at least 30 feet tall.

(f) Where Type SSBT Relief Prescription 2 is applied, operators may count as wildlife leave trees all trees that meet wildlife leave tree requirements:

(A) Within 20 feet of the high water level.

(B) In the remainder of the riparian management area, up to 50 percent of the basal area trees retained to meet the basal area target in Table 6.

(C) Any trees within the area described in (B) in excess of the basal area target in Table 6.

(6) The State Forester will identify those parcels that potentially qualify for relief.

(7) The State Forester will make the final determination on whether a parcel qualifies for relief.

629-642-0200

Placing Large Wood Key Pieces in Type F or Type SSBT Streams to Improve Fish Habitat

(1) Placement of large wood key pieces in a Type F or Type SSBT stream to improve fish habitat that is conducted in conjunction with a forest operation is subject to the regulations in the Oregon Forest Practices Act and the forest practice rules.

(2) The goal of placing large wood key pieces is to deliver wood that is relatively stable, but can reconfigure to a limited degree and work with the natural stream flow to restore and maintain habitat for aquatic species. When placing large wood key pieces in conjunction with an operation, an operator shall design and implement the project to:

(a) Rely on the size of wood for stability and exclude the use of any type of artificial anchoring;

(b) Emulate large wood delivery configurations that occur from natural riparian processes over time;

(c) Restore and maintain natural aquatic habitat over time rather than rely on constructed habitat structures; and

(d) Meet the standards established in "Guide to Placement of Wood, Boulders and Gravel for Habitat Restoration," developed by the Oregon Department of Forestry, Oregon Department of Fish and Wildlife, Oregon Department of State Lands, and Oregon Watershed Enhancement Board, January 2010.

629-642-0300

Live Tree Retention Credit for Improvement of Type F and Type SSBT Streams

(1) Many Type F and Type SSBT streams currently need improvement of fish habitat because they lack adequate amounts of large woody debris in channels, or they lack other important habitat elements.

(2) This rule allows operators incentives to conduct other stream enhancement projects to create immediate improvements in fish habitat. Operators placing large wood key pieces in streams, as described in OAR 629-642-0200, may qualify for the live tree retention credit for Type F or Type SSBT streams under this rule only if such placement meets the additional requirements of this rule.

(3) When addressed in a written plan, operators may place conifer logs or downed trees in Type F or Type SSBT streams and receive basal area credit toward meeting the live tree retention requirements in a stream's riparian management area.

(4) For each conifer log or tree the operator places in a large or medium Type F stream (except Type SSBT streams), the basal area credit is twice the basal area of the placed log or tree.

(5) For each conifer log or tree the operator places in a small Type F stream, or small or medium Type SSBT stream, the basal area credit is equal to the basal area of the placed log or tree.

(6) Basal area credit will be determined by measuring the cross-sectional area of the large end of a log or by measuring the point on a downed tree that would be equivalent to breast height.

(7) To receive basal area credit for downed trees or conifer logs placed in a stream, the operator shall comply with the guidance and restrictions for placing logs or trees prescribed by the State Forester.

(8) Operators may propose other stream enhancement projects for basal area credit such as creation of backwater alcoves, riparian grazing exclosures (such as fencing), and placement of other instream structure such as boulders and rootwads. When a project is addressed in a written plan and reviewed by the State Forester in consultation with the Department of Fish and Wildlife, basal area credit shall be given toward meeting the live tree requirements within riparian management areas. The basal area credit shall be negotiated between the State Forester, operator and Department of Fish and Wildlife.

(9) Basal area credit may be given to an operation for enhancement projects conducted at locations other than at the operation site so long as the project is in the same immediate vicinity as the operation site (for instance, within one or two miles of the operation).

(10) Basal area credit may be given to an operation for improvement projects conducted at a later date (this may be necessary to avoid operating under high water conditions or to protect spawning areas), but the project must be completed within six months of the completion of the operation.

(11) In granting basal area credit, the standing tree basal area retained within riparian management areas of Type F streams shall not be reduced to less than the active management targets for Type F streams shown in Table 2 or 3, as applicable.

(12) For small Type F streams in the Eastern Cascade and Blue Mountain geographic regions, the live conifer tree basal area may be reduced to 30 square feet for the active management target. The remaining portion of the basal area requirement must come from snags, dying or recently dead or dying trees, or hardwood trees if available in the riparian management area.

(13) Operators shall notify the State Forester of the completion of live tree retention credit stream improvement projects that were planned for locations other than on the operation site under section (9) of this rule or that were planned to be completed at another date under section (10) of this rule.

629-642-0400

General Vegetation Retention Prescription for Type D and Type N Streams

(1)(a) Operators shall apply the vegetation retention requirements described in this rule to the riparian management areas of Type D and Type N streams.

(b) Segments of Type D or Type N streams that may be of a different size within an operation shall not be combined or averaged together when applying the vegetation retention requirements.

(c) Trees left to meet the vegetation retention requirements for one stream type shall not count toward the requirements of another stream type.

(2) Operators shall retain along all Type D, and large and medium Type N streams:

(a) All understory vegetation within 10 feet of the high water level;

(b) All trees within 20 feet of the high water level; and

(c) All trees leaning over the channel.

(3) Operators shall retain all downed wood and snags that are not safety or fire hazards within riparian management areas and streams. Snags felled for safety or fire hazard reasons shall be retained where they are felled unless used for stream improvement projects.

(4) Notwithstanding the requirements of section (2), vegetation, snags and trees within 20 feet of the high water level of the stream may be felled, moved or harvested as allowed in the rules for road construction, yarding corridors, temporary stream crossings, or for stream improvement.

(5) Operators shall retain at least 30 live conifer trees per 1000 feet along large Type D and Type N streams and 10 live conifer trees per 1000 feet along medium Type D and Type N streams. This includes any trees left to meet the requirements described in section (2) of this rule. Conifers must be at least 11 inches DBH for large streams and eight inches DBH for medium streams to count toward these requirements.

(6) Operators shall retain all understory vegetation and non-merchantable conifer trees (conifer trees less than six inches DBH) within 10 feet of the high water level on each side of small perennial Type N streams indicated in Table 7.

(a) The determination that a stream is perennial shall be made by the State Forester based on a reasonable expectation that the stream will have summer surface flow after July 15.

(b) The determination in subsection (6)(a) of this rule can be made based on a site inspection, data from other sources such as landowner information, or by applying judgment based upon stream flow patterns experienced in the general area.

(c) Operators are encouraged whenever possible to retain understory vegetation, non-merchantable trees, and leave trees required within harvest type 2 or harvest type 3 units (pursuant to ORS 527.676) along all other small Type N streams within harvest units.

(7) Operators shall retain trees six inches or greater DBH to meet the following requirements (this includes trees left to meet the requirements of sections (2) and (5) of this rule):

(a) If the live conifer tree basal area in the riparian management area is greater than the standard target shown in Table 8 where the harvest will be a harvest type 2 or type 3 unit or in Table 9 where the harvest unit is a harvest type 1, partial harvest, or thinning, operators shall retain along all Type D, and medium and large Type N streams live conifer trees of sufficient basal area to meet the standard target.

(b) If the live conifer tree basal area in the riparian management area is less than the standard target (as shown in Table 8 where the harvest will be a harvest type 2 or type 3 unit or Table 9 where the harvest unit is a harvest type 1, partial harvest, or thinning), but greater than one-half the standard target shown in Table 8, operators shall retain along all Type D, and medium and large Type N streams all conifers 6 inches DBH or larger in the riparian management area (up to a maximum of 100 conifers per 1000 feet along large streams, and 70 conifers per 1000 feet along medium streams).

(c) If the live conifer tree basal area in the riparian management area is less than one-half the standard target shown in Table 8:

(A) Operators may apply an alternative vegetation retention prescription as described in OAR 629-642-0600, where applicable, or develop a site specific vegetation retention prescription as described in OAR 629-642-0700; or

(B) Operators shall retain along all Type D, and medium and large Type N streams all conifers in the riparian management area and all hardwoods within 30 feet of the high water level for large streams and within 20 feet of the high water level for medium streams.

(8) In the Coast Range, South Coast, Interior, Western Cascade, and Siskiyou geographic regions, hardwood trees and snags six inches or greater DBH may count toward the basal area requirements in subsection (7)(a) of this rule as follows:

(a) All cottonwood and Oregon ash trees within riparian management areas that are beyond 20 feet of the high water level of large Type D and N streams, may count toward the basal area requirements.

(b) For large Type D and N streams, up to 10 percent of the basal area requirement may be comprised of sound conifer snags at least 30 feet tall and other large live hardwood trees, except red alder, growing in the riparian management area more than 20 feet from the high water level and at least 24 inches DBH.

(c) For medium Type D and N streams:

(A) Up to 30 square feet of basal area per 1000 feet of stream may be comprised of hardwood trees.

(B) Up to five percent of the basal area retained may be comprised of sound conifer snags that are at least 30 feet tall.

(9) In the Eastern Cascade and Blue Mountain geographic regions:

(a) The basal area of all retained live hardwood trees may count toward meeting the basal area requirements.

(b) For large Type D and N streams, up to 10 percent of the basal area requirement may be comprised of sound conifer snags at least 30 feet tall.

(c) For medium Type D and N streams, up to five percent of the basal area retained may be comprised of sound conifer snags that are at least 30 feet tall.

(10) Notwithstanding the requirements indicated in this rule, operators may conduct precommercial thinning and other release activities to maintain the growth and survival of conifer reforestation within riparian management areas. Such activities shall contribute to and be consistent with enhancing the stand's ability to meet the desired future condition.

(11) When determining the basal area of trees along streams in a harvest unit, operators may use the average basal area for a tree's diameter class, as shown in Table 4 in OAR 629-642-0100, or determine an actual basal area for each tree. The method for determining basal area must be consistent throughout the riparian management area.

(12) All live trees retained along Type D and N streams that otherwise meet the requirements for leave trees may count toward requirements for leave trees within harvest type 2 or harvest type 3 units (pursuant to ORS 527.676).

(13) Trees on islands with ground higher than the high water level may be harvested as follows:

(a) If the harvest unit is solely on an island, operators shall apply all the vegetation retention requirements for a large Type F stream described in this rule to a riparian management area along the high water level of the channels forming the island.

(b) Otherwise, operators shall retain all trees on islands within 20 feet of the high water level of the channels forming the island and all trees leaning over the channels. In this case, conifer trees retained on islands may count toward the basal area requirement for adjacent riparian management areas so long as the trees are at least 11 inches DBH for large streams and 8 inches DBH for medium streams.

(c) All merchantable trees may be harvested from islands within small Type N streams.

(14) When applying the vegetation retention requirements described in this rule to the riparian management areas, if an operator cannot achieve the required retention without leaving live trees on the upland side of a road that may be within the riparian management area and those trees pose a safety hazard to the road and will provide limited functional benefit to the stream, the operator may submit a plan for an alternate practice to the State Forester to modify the retention requirements on a site specific basis.

629-642-0500

Leaving Green Trees and Snags along Small Type N Streams subject to Rapidly Moving Landslides

(1) The purpose of this rule is to provide a source of large wood that can be moved by rapidly moving landslides into Type F or Type SSBT streams.

(2) When directed by the State Forester, operators must retain green trees and snags required for harvest type 2 or type 3 units under ORS 527.676 adjacent to small Type N streams subject to rapidly moving landslides likely to deliver wood to Type F or Type SSBT streams.

(a) The green trees and snags must be retained within an area that is 50 feet on each side of the small Type N stream and 500 feet upstream from a riparian management area of a Type F or Type SSBT stream.

(b) Requirements under OAR 629-623-0300 supersede the requirements of this rule.

(3) Operators are required to retain all green trees and snags in the area described in subsection (2)(a) of this rule up to the number determined by the equation $H - T$ where:

(a) H is the total number of green trees and snags required to be retained in the harvest type 2 or type 3 unit; and

(b) T is the number of trees retained in riparian management areas in the harvest unit that may be counted as harvest unit leave trees under OARs 629-642-0100(11) and 629-642-0400(12).

(4) An operator may propose a plan for an alternate practice to meet the purpose of this rule. Alternate practices may include but are not limited to placing wood directly in the Type F or Type SSBT stream.

(5) This rule takes effect on October 1, 2007.

629-642-0600

Alternative Vegetation Retention Prescriptions

(1) Alternative prescriptions are intended to apply to situations where the existing streamside stand is too sparse or contains too few live conifers to maintain fish, wildlife, and water quality resources over time. Future desired streamside stand conditions are achieved through immediate manipulation of vegetation, including reforesting the riparian management area with conifers.

(2) Sections (3) and (4) of this rule are alternative vegetation retention prescriptions that operators may apply if the conifer basal area in the riparian management area is no more than one-half of the standard target indicated in either Table 2 of OAR 629-642-0100 or Table 8 of OAR 629-642-0400, as may be applicable, and conditions described in the alternative prescription are applicable.

(3) Alternative Vegetation Retention Prescription 1 (Catastrophic Events). This alternative prescription applies to streamside stands that have been damaged by wildfire or by catastrophic windthrow, insect or disease mortality. Such mortality must occur at the stand level and shall not include normal endemic mortality. The prescription is intended to provide adequate stream shade, woody debris, and bank stability for the future while creating conditions in the streamside area that will result in quick establishment of a new and healthy stand. Operators shall:

(a) Retain trees that have fallen in the stream. Only portions of these trees that are outside the high water levels and do not contribute to the ability of the downed tree to withstand movement during high flows may be harvested.

(b) Retain all live and dead trees within 20 feet of the high water level of large and medium streams and 10 feet of the high water level of small streams.

(c) For Type F streams, retain live trees, dying or recently dead trees, and downed logs sufficient to satisfy the active management target shown in Table 2.

(d) For Type D and N streams, retain live trees, dying or recently dead trees, or downed logs sufficient to satisfy the standard target shown in Table 8.

(e) Live conifers shall be retained first to meet the target. If live conifers are too few to satisfy the target, then the target shall be met as much as possible by including windthrown trees within the channel and dying or recently dead trees.

(f) For purposes of this prescription the basal area of a windthrown tree in the channel or a retained dying or recently dead tree contributes two times its basal area toward meeting the target.

(4) Alternative Vegetation Retention Prescription 2 (Hardwood Dominated Sites). This alternative prescription applies to streamside sites that are capable of growing conifers, and where conifer stocking is currently low and unlikely to improve in a "timely manner" because of competition from hardwoods and brush. If portions of such riparian management areas currently contain abundant conifer basal area, it is intended that these areas of good conifer basal area be segregated and managed using the general vegetation retention prescription while the remainder is managed according to this alternative prescription. The alternative prescription is intended to provide adequate stream shade, some woody debris, and bank stability for the future while creating conditions in the streamside area that will result in quick establishment of a conifer stand. The operator shall:

(a) Evaluate the stand within the riparian management area and, where they exist, segregate segments (200 feet or more in length) that are well-stocked with conifer, as identified from an aerial photograph, from the ground or through other appropriate means. The general vegetation retention prescription for vegetation retention shall be applied to these segments.

(b) For the remaining portion of the riparian management area that has lower conifer basal area, the riparian management area shall be divided into conversion blocks and retention blocks.

(c) No more than half of the total stream length in the harvest unit can be included within conversion blocks. Conversion blocks can be no more than 500 feet long and must be separated from each other by at least 200 feet of retention block or by at least a 200 foot segment where the general vegetation retention prescription is applied.

(d) Within conversion blocks the operator shall retain:

(A) All trees growing in the stream or within 10 feet of the high water level of the stream.

(B) All trees leaning over the channel within 20 feet of the high water level of large streams.

(e) Within retention blocks the operator shall retain:

(A) For large streams, all conifer trees within 50 feet of the high water level of the stream and all hardwood trees within 30 feet of the high water level of the stream.

(B) For medium streams, all conifer trees within 30 feet of the high water level of the stream and all hardwood trees within 20 feet of the high water level of the stream.

(C) For small streams, all trees within 20 feet of the high water level of the stream.

629-642-0700

Site Specific Vegetation Retention Prescriptions for Streams and Riparian Management Areas

(1)(a) Operators are encouraged to develop site specific vegetation retention prescriptions in a plan for an alternate practice.

(b) A primary aim of these prescriptions is to identify opportunities and allow incentives for restoring or enhancing riparian management areas or streams.

(c) Another purpose of site specific vegetation retention prescriptions is to allow for changes to the vegetation retention requirements in OARs 629-642-0100, 629-642-0105 and 629-642-0400. The changes must provide for the functions and values of streams and their riparian management areas as described in the vegetation retention goals for streams while affording a better opportunity to meet other objectives.

(2) Operators may develop site specific vegetation retention prescriptions for streams and their riparian management areas to achieve the vegetation retention goals described in OAR 629-642-0000 if:

(a) The potential of the streamside stand to achieve basal area and stand density similar to mature conifer forest stands in a "timely manner" is questionable; or

(b) In-stream conditions are impaired due to inadequate large woody debris or other factors; or

(c) The modification of a standard or practice would result in less environmental damage than if the standard or practice were applied.

(3) A plan for an alternate practice shall be approved if the State Forester determines that when properly executed the alternate plan will have no significant or permanent adverse effects and:

(a) It will meet or exceed the vegetation retention goals in a more "timely manner" than if the plan were not implemented; or

(b) The long-term benefits of the proposed restoration practice are greater than short-term detrimental effects; or

(c) The proposed practice will result in less environmental damage than if the regular rules were followed.

(4) Factors that may need to be considered in the plan include, but are not limited to, the potential of the existing streamside stand to achieve mature conifer forest characteristics, the long-term supply of woody debris, survival of planted conifers, sensitivity to changes in water temperature and water quality, the potential for sedimentation, the stability of woody debris placed in aquatic areas, and monitoring the direct effects of the proposed practices.

629-642-0800

Reforestation within Stream Riparian Management Areas

Harvested portions of riparian management areas along streams are subject to the same reforestation requirements that apply to adjacent areas outside of the riparian management areas. Reforestation is more difficult in riparian management areas due to a number of factors. To succeed with the required reforestation, land-owners should anticipate and plan for such factors as brush control measures, animal damage problems, and tree species that are suitable for wetter sites.

Table 1. Riparian Management Area Widths for Streams of Various Sizes and Beneficial Uses (OAR 629-635-0310)

	Type F	<u>Type SSBT</u>	Type D	Type N
LARGE	100 feet	N/A	70 feet	70 feet
MEDIUM	70 feet	<u>80 feet</u>	50 feet	50 feet
SMALL	50 feet	<u>60 feet</u>	20 feet	Apply specified water quality protection measures, and see OAR 629-640642-02400.

TABLE 2. General Prescription for Type F streams: Streamside Tree Retention for Harvest Type 2 or Type 3 Units (OAR 629-6402-0100(6)(a))

	SQUARE FEET OF BASAL AREA PER 1000 FEET OF STREAM, EACH SIDE					
Geographic Region	LARGE Type F RMA = 100 feet		MEDIUM Type F RMA = 70 feet		SMALL Type F RMA = 50 feet	
	Standard Target	Active Mgt. Target	Standard Target	Active Mgt. Target	Standard Target	Active Mgt. Target
Coast Range & S. Coast	230	170	120	90	40	20
Interior & W. Cascades	270	200	140	110	40	20
Siskiyou	220	170	110	90	40	20
Eastern Cascade & Blue Mountain	170	130	90	70	50 ¹	50 ²

TABLE 3. General Prescription for Type F Streams: Streamside Tree Retention for Harvest Type 1, Partial Harvest, or Thinning Units (OAR 629-6402-0100(6)(a))

	SQUARE FEET OF BASAL AREA PER 1000 FEET OF STREAM, EACH SIDE					
Geographic region	LARGE Type F RMA = 100 feet		MEDIUM Type F RMA = 70 feet		SMALL Type F RMA = 50 feet	
	Standard Target	Active Mgt. Target	Standard Target	Active Mgt. Target	Standard Target	Active Mgt. Target
Coast Range & S. Coast	300	270	160	140	50	30
Interior & W. Cascades	350	310	180	160	50	30
Siskiyou	290	260	140	120	50	30
Eastern Cascade & Blue Mountain	220	200	120	100	50 ¹	50 ²

¹ The maximum live conifer tree basal area that must be retained is 40 square feet. The remaining basal area may come from snags, dying or recently dead or ~~dying~~ trees, or hardwood trees if available within the riparian management area.

² Live conifer tree basal area may be reduced to 30 square feet for the active management target. The remaining portion of the basal area requirement must come from snags, dying or recently dead or ~~dying~~ trees, or hardwood trees if available within the riparian management area.

TABLE 4. Basal Area for Various Diameter Classes (OAR 629-6402-0100(10))

Diameter Breast Height (inches)	Basal Area (square feet)	Diameter Breast Height (inches)	Basal Area (square feet)
6 to 10	0.3	41 to 45	10.1
11 to 15	0.9	46 to 50	12.6
16 to 20	1.8	51 to 55	15.3
21 to 25	2.9	56 to 60	18.3
26 to 30	4.3	61 to 65	21.6
31 to 35	5.9	66 to 70	25.2
36 to 40	7.9	71 to 75	29.0

Table 5. Type SSBT Prescription 2. Vegetation Prescription for Type SSBT Streams: Streamside Tree Retention for Harvest Type 2 or Type 3 Units (OAR 629-642-0105(11))

	BASAL AREA TARGET: Square feet of basal area per each 500-foot stream segment, each side of the stream (any combination of conifers and hardwoods 6 inches or greater DBH)		LIVE CONIFER TREES (8 inches or greater DBH) per each 500-foot stream segment, each side of the stream	
Geographic Region	Medium Type SSBT RMA = 80 feet	Small Type SSBT RMA = 60 feet	Medium Type SSBT RMA = 80 feet	Small Type SSBT RMA = 60 feet
Coast Range, South Coast, Interior, Western Cascades	0 to 20 feet = Retain all trees. Trees in this area do not count toward meeting the basal area or live conifer tree requirements in this table.			
	20 to 50 feet: minimum 18 sq. ft.	20 to 40 feet: minimum 10 sq. ft.	20 to 50 feet: minimum 7 trees	20 to 40 feet: minimum 4 trees
	50 to 80 feet: minimum 18 sq. ft.	40 to 60 feet: minimum 10 sq. ft.	50 to 80 feet: minimum 7 trees	40 to 60 feet: minimum 4 trees
	RMA Total (20 to 80 feet) = 69 sq. ft.	RMA Total (20 to 60 feet) = 37 sq. ft.	RMA Total (20 to 80 feet) = 15 trees	RMA Total (20 to 60 feet) = 8 trees
Notes for Table 5				
1. Distances are measured from the high water level of the Type SSBT stream.				
2. Up to 10% of the basal area requirement may be comprised of sound conifer snags six inches or greater DBH and at least 30 feet tall.				

Table 6. Type SSBT Relief Prescription 2. Vegetation Retention for Type SSBT Streams: Streamside Tree Retention for Harvest Type 2 or Type 3 Units (OAR 629-642-0110)

	BASAL AREA TARGET: Square feet of basal area per each 500-foot stream segment, each side of the stream (any combination of conifers and hardwoods 6 inches or greater DBH)		LIVE CONIFER TREES (8 inches or greater DBH) per each 500-foot stream segment, each side of the stream	
Geographic Region	Medium Type SSBT RMA = 70 feet	Small Type SSBT RMA = 50 feet	Medium Type SSBT RMA = 70 feet	Small Type SSBT RMA = 50 feet
Coast Range, South Coast, Interior, Western Cascades	0 to 20 feet = Retain all trees. Trees in this area do not count toward meeting the basal area or live conifer tree requirements in this table.			
	20 to 45 feet: minimum 15 sq. ft.	20 to 35 feet: minimum 7 sq. ft.	20 to 45 feet: minimum 6 trees	20 to 35 feet: minimum 3 trees
	45 to 70 feet: minimum 15 sq. ft.	35 to 50 feet: minimum 7 sq. ft.	45 to 70 feet: minimum 6 trees	35 to 50 feet: minimum 3 trees
	RMA Total (20 to 70 feet) = 58 sq. ft.	RMA Total (20 to 50 feet) = 28 sq. ft.	RMA Total (20 to 70 feet) = 13 trees	RMA Total (20 to 50 Feet) = 6 trees
Notes for Table 6				
1. Distances are measured from the high water level of the Type SSBT stream.				
2. Up to 10% of the basal area requirement may be comprised of sound conifer snags six inches or greater DBH and at least 30 feet tall.				

TABLE 57. Vegetation Retention for Specified Small Type N Streams (OAR 629-6402-02400(6))

Geographic Region	Retain Understory Vegetation and Unmerchantable Conifers 10 Feet Each Side of Stream for:
Eastern Cascades and Blue Mountains	All perennial streams.
South Coast	Portions of perennial streams where the upstream drainage area is greater than 160 acres.
Interior	Portions of perennial streams where the upstream drainage area is greater than 330 acres.
Siskiyou	Portions of perennial streams where the upstream drainage area is greater than 580 acres.
Coast Range and Western Cascades	No retention required.

TABLE 68. General Prescription for Type D, and Large and Medium Type N Streams: Streamside Tree Retention for Harvest Type 2, or Type 3 Units (OAR 629-6402-02400(7)(a))

Geographic Region	SQUARE FEET OF BASAL AREA PER 1000 FEET OF STREAM, EACH SIDE		
	LARGE TYPE D AND N RMA = 70 feet	MEDIUM TYPE D AND N RMA = 50 feet	SMALL TYPE D RMA = 20 feet
	Standard Target	Standard Target	Standard Target
Coast Range & S. Coast	90	50 ¹	0
Interior & W. Cascades	110	50 ¹	0
Siskiyou	90	50 ¹	0
Eastern Cascade & Blue Mountain	70	50 ¹	0

TABLE 79. General Prescription for Type D, and Large and Medium Type N Streams: Streamside Tree Retention for Harvest Type 1, Partial Harvest, and Thinning Units (OAR 629-6402-02400(7)(a))

Geographic Region	SQUARE FEET OF BASAL AREA PER 1000 FEET OF STREAM, EACH SIDE		
	LARGE TYPE D AND N RMA = 70 feet	MEDIUM TYPE D AND N RMA = 50 feet	SMALL TYPE D RMA = 20 feet
	Standard Target	Standard Target	Standard Target
Coast Range & S. Coast	140	60 ¹	0
Interior & W. Cascades	160	60 ¹	0
Siskiyou	120	60 ¹	0
Eastern Cascade & Blue Mountain	100	60 ¹	0

¹ Hardwoods may count up to 30 square feet of basal area per 1000 feet toward meeting the standard target.