



What is the Purpose of a Tree Management Plan?

Retention and protection of existing trees is one of the primary goals of Kenmore's tree management regulations and should be implemented as part of a development's tree management plan. Trees provide countless benefits to soil, surface water, wildlife, and add natural beauty and a sense of place for communities (KMC 18.57.015).

When is a Tree Management Plan Required?

All development applications require a tree management plan. Types of development applications requiring a plan include subdivisions, commercial, and multifamily developments. Applications exempt from preparing a plan are in KMC 18.57.035.

The tree management plan must be filed early in the application review process. When a subdivision or site plan application is required the plan shall be filed simultaneously with the preliminary subdivision or site plan review stage.

Who Can Prepare the Tree Management Plan?

A qualified tree protection professional shall prepare the tree management plan (KMC 18.20.2207). Plans that are not prepared by a qualified tree protection professional will not be accepted. A qualified tree protection professional:

- Is a **licensed professional** with academic and/or field experience that makes them a recognized expert in tree preservation and management;
- Is a **certified arborist** by the International Society of Arboriculture **or a registered arborist** with the American Society of Consulting Arborists;
- Will have **specific experience with tree management** in the State of Washington;
- And must possess the **ability to evaluate the health and hazard potential of existing trees**, and the ability to prescribe appropriate measures necessary for the **preservation of trees during development**.

What Information Will I Need for My Tree Management Plan?

The tree management plan consists of three components: 1) a tree survey and inventory; 2) a tree protection plan and; 3) a tree replacement plan, if necessary.

1. Tree Survey & Inventory

Survey of development site drawn to scale by a land surveyor licensed in Washington State and containing the following information (KMC 18.57.050.C.1):

- Name of qualified tree protection professional responsible for the preparation of the plan.
- Property lines and dimensions.
- Exact location and conditions of existing trees, numbered.
- Common and botanical name of each tree (see example survey table below).
- Trees proposed to remain and to be removed (see example survey table below).
- Groves with indication of predominant species, number of trees and size at dbh (diameter at breast height).

- Off site tree with critical root protection zone which could be adversely affected by the proposed activity.
- The location and dimensions of established and proposed:
 - Perimeter landscaping.
 - Natural vegetation easements.
 - Open space areas for public, private, or community use.
- Critical areas with buffers.
- Stormwater tracts.
- Limits of construction line.
- North arrow, scale, and date of survey.
- Tree unit value for each tree based on Table 18.57.060A (see Appendix A).

EXAMPLE: TREE SURVEY TABLE

Symbol (example)	Tree #	Common Name	Botanical Name	Size (dbh)	Retain (y/n)	Tree Unit Value	Note/Condition
	1	Douglas Fir	Pseudotsuga	34"	Yes	10.0	Healthy
	2	Western Red Cedar	Thuja plicata	12"	Yes	1.8	
	3	Big Leaf Maple	Acer macrophyllum	8"	No	--	Diseased
	4	Douglas Fir	Pseudotsuga	38"	No	12.0	
	5	Western Red Cedar	Thuja plicata	8"	No	--	Unhealthy

2. Tree Protection Plan

A qualified tree protection professional shall prepare a tree protection plan to reflect the following principles (KMC 18.57.080):

- **Design:** Development shall be designed, located, and conducted so as to minimize the loss of healthy groves and protected trees as identified by a qualified tree protection professional, degradation of wildlife habitat as identified through environmental review, and the potential for erosion and slope failure.
- **Tree protection priority:** In designing a development project and in meeting the required minimum tree density, the applicant shall protect trees within the net buildable area in the following order of priority. Trees to be preserved and protected must be healthy and vigorous, wind-firm, and not in conflict with utilities.
 - Groves.
 - Individual trees which provide wildlife habitat as identified through environmental review.
 - Individual trees and groves which occur within required setbacks.
 - Trees that protect against windthrow, including trees sheltering interior trees or trees on adjacent property from strong winds that could otherwise cause them to blow down.
 - Trees which provide a buffer and separate incompatible uses or reduce sound and wind levels.

The tree protection plan shall be drawn to scale using the tree survey as a base and containing the following information:

- Exact location and conditions of protected trees, numbered.
- Tree protection fencing detail (see Appendix C).
- The location, materials, dimensions, and layout of the protective barriers.
- Table of protected trees (use tree survey table and include only those protected trees, example below).
- Net buildable area & tree unit calculation (see table below).
- A statement describing how trees intended to remain will be identified, marked, and protected before the start of and during development as further described in KMC 18.57.090.

EXAMPLE: PROTECTED TREES

Symbol	Tree #	Common Name	Botanical Name	Size (dbh)	Retain (y/n)	Tree Unit Value	Note/Condition
	4	Douglas Fir	Pseudotsuga	34"	Yes	10.0	Healthy
	5	Western Red Cedar	Thuja plicata	12"	Yes	1.8	
	8	Douglas Fir	Pseudotsuga	38"	No	12.0	

Windthrow Evaluation & Prevention (KMC 18.57.080)

Tree windthrow means the process of uprooting, breaking, and overthrowing of a tree by force of wind during a storm event. Increased tree windthrow potential as a result of impacts to trees on a site shall be evaluated based on the following risk factors:

- Root system disruption that will extend within an area of 1 to 2.5 times the radius of the canopy.
- Topography of the site.
- Whether the tree is deciduous or evergreen.
- Height of the tree relative to the neighboring trees.
- Whether the tree is part of a grove.

The tree windthrow evaluation shall be conducted by a qualified tree protection professional. This assessment shall also evaluate increased windthrow potential for trees on neighboring lots that are within 50 feet of the closest trees being removed on the site, including trees that share a root system with tree(s) on the site.

When significant windthrow potential is identified for trees that could impact neighboring properties or are on neighboring properties, the applicant shall identify measures to minimize windthrow as part of the tree protection plan. Measures could include but are not limited to demonstrating that the critical root zone (CRZ) fencing is adequate to prevent root disruption or that the CRZ is expanded to provide root protection; saving groves when applicable; taking steps to preserve existing grades around trees; and/or tunneling rather than trenching for utilities. The City may deny a request to remove a tree(s) if mitigation measures are inadequate to minimize windthrow.

If potential windthrow damage is for the site itself, the applicant shall identify measures to reduce impacts to future structures on site.

Tree Protection During Construction (KMC 18.57.090)

Prior to any clearing, grading, or tree removal, trees to be retained shall be protected as follows, unless otherwise approved by the City:

- **Critical Root Zone (CRZ):** The CRZ of individual trees, groves, or otherwise designated protected tree areas shall include no less than the area of a circle with a radius that extends one foot out from the tree for every inch of trunk dbh, *OR* the area of a circle with radius extending from a tree's trunk to a point no less than the end of a tree's longest branch, whichever is greater (see Appendix B).
- **Tree Protection Fencing (TPF):** Before construction activities the applicant shall:
 - Place 3 inches of composted woodchips over the CRZ of all retained trees.
 - Erect and maintain readily visible protective fencing at least 3 feet beyond the outer edge of the CRZ for all individual trees, groves, or other designated protected tree areas.
 - Fencing shall completely surround the required tree protection area.
 - Fencing shall be a minimum of 4 feet high. Chain-link fence or orange plastic fence fastened to steel stakes driven securely into the ground shall be required.
 - Any deviation from TPF methods shall be authorized in advance by the City.
 - Keep protective fencing in place until the City authorizes the removal.
 - Ensure that any landscaping done within the root protection zone subsequent to the removal of the fence shall not disturb existing trees including roots within the CRZ.
- **Placing Materials Near Tree:** No activities or stockpiling of materials is allowed within the TPF.
- **Grade:** Grading activities shall be limited as follows:
 - The grade shall not be filled or cut within the CRZ of any protected tree without prior review by a qualified tree protection professional and written approval from the City.
 - Impervious surfaces shall not be installed within the protective barrier of protected trees without advance written approval by the City.
 - Utility trenches shall be located outside of the root protection zone of retained trees. Boring or tunneling under the CRZ may be considered an alternative, but shall require advance approval from the City.

Tree Unit Density (KMC 18.57.060)

The minimum tree density required for each site is 30 tree units per acre of net buildable area. To determine the **Net Buildable Area** and number of tree units required, see the calculation formula and table below.

NET BUILDABLE AREA & TREE UNIT CALCULATION TABLE

		Total Site Area		Acres
Areas within or on perimeter of site to be dedicated for public rights-of-way		-		Acres
Critical areas & buffers to remain undeveloped		-		Acres
Stormwater facilities (except underground)		-		Acres
Dedicated recreation areas/tracts		-		Acres
Regional utility corridors		-		Acres
Other areas to remain undeveloped		-		Acres
		Net Buildable Area		Acres
Net Buildable Area	X 30 =			Required Tree Units
	-			Tree Units <i>Retained</i>
	=			Replacement Tree Units Req.

If the number of existing trees is not at least 30 tree units per acre, a sufficient number of replacement trees shall be planted to equal at least 30 tree units.

3. Tree Replacement

Replacement trees may be utilized to satisfy the minimum tree unit density only when an applicant demonstrates existing trees cannot be protected and/or the existing trees on site do not satisfy the minimum tree unit density.

Replacement trees are measured differently than protected trees. Instead of measuring dbh, replacement trees are measured by caliper inches according to industry standards (ANSI). The caliper on replacement trees is measured 6" above the ground for 4" and smaller trees, and 12" above ground for larger replacement trees.

The tree replacement plan shall include the following:

- Identify the location of protected trees.
- The site replacement tree calculation as described in KMC 18.57.060 with an explanation including the number, caliper, and species.
- Exact location, common name, botanical name, and caliper of each tree species to be planted (see example replacement table).

EXAMPLE: REPLACEMENT TREES

Symbol	Common Name	Botanical Name	Size (caliper inches) OR Height (conifer)	Quantity	Tree Unit Value
	Venus Dogwood	Cornus kousa x nuttallii	3"	4	2.4
	Sargent Cherry	Prunus sargentii	2"	7	3.5
	Douglas Fir	Pseudotsuga	9'	1	1.5

Replacement trees are also subject to the following standards:

- **Replacement tree planting conditions:** Replacement trees should be planted in areas with soil, climate, exposure, and moisture conditions appropriate to the replacement tree species' growing requirements as determined by a qualified tree protection professional, licensed landscape architect, or certified nurseryman.
- **ANSI Statement:** A statement that describes replacement tree quality as conforming to the American Standards for Nursery Stock (ANSI).
- **Replacement Tree Planting Location Priority:**
On sites where the number of existing trees falls below the minimum density requirements, then replacement tree planting shall be required. The applicant's proposed location of transplanted or replacement trees shall be subject to review by a qualified tree protection professional, licensed landscape architect, or certified nurseryman, and City approval as part of the tree protection plan. Replacement trees should be planted according to the following priority:
 - On-Site.
 - Designated Tracts. Trees located in separate deeded tree tracts specifically set aside for the preservation and planting of trees and/or the required recreation open space area if trees do not interfere with recreation activities.
 - Perimeter Landscaping. In which case, replacement trees shall not count toward and shall be in addition to perimeter landscape requirements.
 - Landscaping. This may include entrance landscaping, traffic islands, and other common open space areas. Trees located in a public right-of-way may be credited as replacement trees only if street trees are not a requirement.
 - Off-Site. In cases where an applicant believes that lot size prevents installation of the required number of trees, the applicant may propose to the City payment of a fee in lieu for installation of trees in a public park or other public space. The city manager shall review and make the final decision on the applicant's proposal, based on a recommendation from a qualified tree protection professional.
- **Replacement Conifer Tree Types:** Replacement trees shall be of a similar type of genus to the conifer trees that are removed; i.e., a Western Red Cedar (*Thuja plicata*) may be replaced with a tree in the genus *Thuja*.
- If replacement trees are planted as groves within designated tracts, then the applicant may reduce the total tree units by 10 percent.

Financial Guarantees, Post Construction, & Maintenance

Bond Quantity Worksheet & Tree Value Appraisal

The qualified tree protection professional shall complete the City of Kenmore landscape bond quantity worksheet, identifying materials and quantities necessary to implement and construct the tree management plan. The worksheet should account for tree protection fencing and tree protection professional inspection and follow-up.

The City of Kenmore landscape bond quantity worksheet shall also include the appraised value of each retained tree using the most recent edition of the Guide for Plant Appraisal published by the International Society of Arboriculture, in collaboration with the Council of Tree and Landscape Appraisers.

Financial guarantees

A financial guarantee is required for all plans requiring 15 or more tree units. The amount of the financial guarantee will be based on the approved City of Kenmore landscape bond quantity worksheet, taking into account the value of all replacement and existing trees.

The financial guarantee period for maintenance shall be 3 years, plus an additional 60 days.

Post Construction Replacement & Maintenance

Replacement trees or groves that are damaged or die within a period of 3 years after planting or transplanting must be replaced in kind at a ratio of one-to-one within 6 months of the tree's death or the date of discovery of the damage.

Existing trees that are damaged or die within a period of 3 years after completion of construction activities and as a cause of construction activities as determined by a qualified tree protection professional shall be replaced in kind at a ratio of two-to-one within 6 months of the tree's death or date of discovery of the damage.

Fines & Penalties

Any violation of any provision of the tree management code constitutes a civil violation under KMC 1.15, and is subject to the enforcement procedures of KMC 1.20. Any person or entity that removes a tree in violation of the tree management code shall be assessed a civil penalty in the amount of \$2,000 per inch in diameter at breast height of tree removed. For example, if a 20-inch tree is removed, then the penalty would be \$40,000.

Criminal penalties and penalties for each separate offense are identified in KMC 18.58.100.

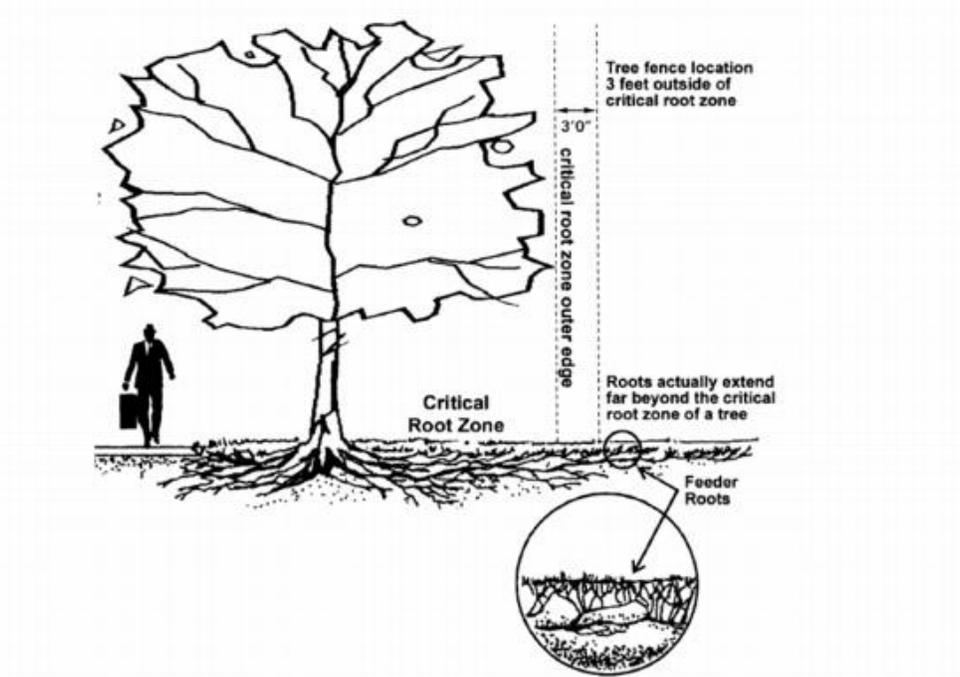
Note: This informational bulletin is intended for guidance only and is not intended to replace the Kenmore Municipal Code or any adopted rules and regulations.

APPENDIX A

TABLE 18.57.060A – EXISTING TREES TO REMAIN
Conversion from diameter (dbh) in inches to tree units for trees protected on site

dbh	Tree Units	dbh	Tree Units
1-5	1.0	30	8.2
6-10	1.2	31	8.6
11	1.4	32	9.0
12	1.8	33	9.5
13	2.0	34	10.0
14	2.3	35	10.5
15	2.6	36	11.0
16	2.9	37	11.5
17	3.2	38	12.0
18	3.5	39	12.5
19	3.8	40	13.0
20	4.2	41	13.5
21	4.6	42	14.0
22	5.0	43	14.5
23	5.4	44	15.0
24	5.8	45	15.5
25	6.2	46	16.0
26	6.6	47	17.0
27	7.0	48	18.0
28	7.4	49	19.0
29	7.8	50	20.0
<i>For every 1 inch greater than 50 dbh, add an additional 2 tree units (i.e. 62 dbh = 44 tree units)</i>			

APPENDIX B



Critical Root Zone (CRZ)

This section shows a cross-section of the typical root zone for a deciduous tree. Eighty-five percent of the tree's roots are within the top 18 inches of the soil. Roots typically spread up to two times the height of the tree and sometimes more. However, the critical mass of roots is usually found within the critical root zone.

APPENDIX C

Tree Protection Fencing (to be provided per KMC 18.57.090.B)

APPENDIX D

Table 18.57.060B Replacement Trees.
 (Conversion from caliper inches to tree units for replacement *trees*.)

Deciduous Tree Caliper in Inches	Tree Units for Deciduous Trees	Coniferous Tree Height in Feet	Tree Units for Conifers	Tree Units for Native Conifers
1.5"	0.4	4' – 6'	0.5	0.8
2"	0.5	6' – 8'	0.7	1.0
3"	0.6	8' – 10'	1.0	1.5
4"	0.7	11' – 12'	1.5	2.0
5"	0.8			
6"	1.0			
7"	1.2			
8" +	1.5			