



**City of Bellevue
Department of Planning and Community Development
Land Use Division Staff Report**

Proposal Name: Thorson-Tan Remodel

Proposal Address: 17441 S.E. 47th Street

Proposal Description: The applicant is proposing to expand a single family residence into a critical area buffer measured from the top of a critical, steep slope in order to add 274 square feet of living space which will include a bedroom, bathroom and closet. The proposal includes restoration of an area of approximately 200 square feet within the critical areas buffer with native vegetation to mitigate for the impacts of the residential addition.

File Number: 07-122418 LO

Applicant: Lewis Thorson, Property Owner

Decisions Included: Critical Areas Land Use Permit (Process II. LUC 20.30P)

Planner: Sally Nichols, Associate Planner

State Environmental Policy Act Threshold Determination: **Exempt**

Director's Decision: **Approval with Conditions**


Matthew A. Terry, Director
Dept. of Planning & Community Development

Application Date: June 7, 2007
Notice of Application Publication Date: June 28, 2007
Decision Publication Date: July 19, 2007
Project Appeal Deadline: August 2, 2007

For information on how to appeal a proposal, visit the Permit Center at City Hall or call (425) 452-6864. Comments on State Environmental Policy Act (SEPA) Determinations can be made with or without appealing the proposal within the noted comment period for a SEPA Determination. Appeal of the Decision must be received in the City Clerk's Office by 5 PM on the date noted for appeal of the decision.

I. Project Description

The applicant is requesting approval of a Critical Areas Land Use Permit to expand an existing single family residence into the 50 foot critical areas buffer from the top of a steep slope (a slope with a grade of 40% or greater). The applicant is proposing a 274 square foot addition for a new bedroom, bathroom and closet at the rear of the house. The location is currently occupied by approximately 180 square feet of decking, which will be removed. This type of use could not be accommodated in a different location of the house. The expansion will disturb a small amount of area already maintained as lawn. The new addition will use a foundation system of pipe piles that are driven into the dense to very dense soil layer. The building will extend out from the existing structure approximately 4 feet from the back of the garage and 6 feet from the remaining portion of the existing deck. It will lie approximately 21 to 23 feet back from the top-of-slope.

An analysis of this site was completed by Geotech Consultants, Inc., dated May 8, 2007. The report analyzed the proposal and all probable impacts to the critical slope in accordance with the requirements of Land Use Code (LUC) Section 20.25H. Geotech Consultants, Inc. conducted a site reconnaissance to observe the local topographic features and reviewed a previous geotechnical engineering report that was prepared by Keith Cross, dated November 16, 1983. This 1983 report included information from five test pits that were excavated on the site prior to the construction of the residence and found that it is likely that about 5 to 10 feet of loose fill and native soils overlie the native, dense to very dense silty sand soil layer. Geotech Consultants, Inc., based on their observations, topographic information and the 1983 geotechnical engineering study, concluded that constructing the building addition at its proposed location is adequate if disturbance of vegetation is not closer than 10 feet from the top-of-slope (the edge if the proposed addition lies approximately 21 to 23 feet back for the top-of-slope) and the vegetation is replaced after construction. See the discussion in Section III of this report for analysis of critical areas decision criteria.

II. Site Description and Context

The existing home occupies approximately 2,738 square feet (including 446 square feet of decks greater than 30 inches in height) in the generally northwestern half of the 15,996 square foot lot. The site is located within the Newcastle Subarea with a Comprehensive Plan Designation of Single-Family Medium. It also within the Sky Mountain Subdivision No. 8106250736.

The residential property is located on the eastern side of S.E. 47th Street. The western/northwestern portion of the property, nearly 100 linear feet from the street, is relatively flat with a slight drop to the east. The existing residence is located near the middle of this relatively flat area. A steep slope with a grade of 40 percent or greater is located on the eastern side of this relatively flat area. The slope is heavily forested with coniferous and deciduous trees and native undergrowth. The upper 25 feet of the slope averages 40 percent in grade. The grade then increases to over 50 percent down to the eastern (rear) property line. The top-of-slope critical area buffer has been maintained as lawn. With this proposal, only lawn area will be disturbed and/or removed. No trees, shrubs or native vegetation are proposed to be removed. Other properties in the immediate vicinity are developed with residences within the critical area buffer from the top-of-slope.

Easements: A 2.5 foot easement runs parallel with and adjacent to all interior (side) lot lines and runs 5 feet in width parallel with and adjacent to all rear lot lines for purposes of utilities and

drainage as recorded on the Sky Mountain Subdivision File No. 8106250736. A City of Bellevue Sanitary Sewer Easement run along the top-of-slope in the critical areas buffer.

III. Consistency with Land Use Code and Zoning Requirements

A. Zoning District Dimensional Requirements:

The lot is located within the R-3.5 zoning district. The Dimensional requirements of this zoning district are as follows:

	ZONING INFORMATION	
Zoning District	R-3.5	
Comprehensive Plan	SF-M-single family medium	
Gross Site Area	15,996 sq. ft.	
Adjusted Lot Area (calculated using gross site area minus critical areas) LUC 20.20.010 (13)	Approximately 11,200 sq.ft.	
ITEM	REQ'D/ALLOWED	COMMENTS
Minimum Lot Area	10,000 sq. ft.	Proposed: 30-ft., no change
Maximum Building Height	30-ft.	Existing: 31% (3,443 sq. ft.)
Maximum Lot Coverage for Structures	35 %	Proposed: 33% (3,717 sq. ft.)
Maximum Impervious Surface	50 %	Existing: 3,989 sq. ft. Proposed: 4,263 sq. ft. 28.5 % of gross site area/ 38% of adjusted lot area
Building Setbacks		
Front Yard	20-ft.	Proposed: No change to any setbacks
Rear Yard	25-ft.	
One Side Yard	5-ft.	
Both Side Yards	15-ft.	

B. Critical Areas

Land Use Code (LUC) Section 20.25H.120 designates steep slopes of 40 percent or greater that have a rise of at least 10 feet and exceed 1,000 square feet in area as critical areas. These steep slope critical areas have an associated 50' buffer, measured from the top of the slope. The existing house is located within this buffer. According to LUC 20.25H.120.B.2., since this primary structure was legally established prior to August 1, 2006, the critical area buffer and structure setback has been modified to exclude the footprint of the existing structure. The proposed building expansion is an allowed activity according to LUC 20.25H.055.B and shall

meet the requirements of 20.25H.055.C.3.n, which establishes performance standards for expansions of an existing single-family primary structure into critical area buffers, and LUC Section 20.25H.125 which established performance standards for geological hazard areas.

LUC Section 20.25H.055.C.3.n.i: Where allowed, expansions into the critical area buffer and critical area structure setback shall be limited as follows:

(A) The expansion shall be along the existing building line parallel to the edge of the critical area, unless such expansion is not feasible. Only when such expansion is not feasible may expansion encroach further into the critical area buffer and critical area structure setback.

Finding: The proposed building addition generally lies within an area parallel to the edge of the critical area buffer. Because the bulk of the 274 square foot addition replaces an existing deck, only approximately 118 square feet will be a new intrusion into the buffer and it will extend toward the slope approximately six (6) feet for a run of approximately 18 feet.

The proposed building addition needs to be located on the rear side of the existing house for the following reasons:

1. The addition is for the use of an elderly family member with limited strength and mobility, and therefore the bedroom addition needs to be located on the main floor level in order to avoid the use of long flights of stairs.
2. The addition needs to be close to the front entry and exit point of the house for ease of access. It is expected that the closest front entry point may be ramped for future accessibility use when that need arises.
3. The proposed addition is located adjacent to the furnace, hot water heater, and the electric main panel. This close orientation to the main utility sources will save significant construction costs and energy use by minimizing long distance routing of utilities.
4. The proposed addition cannot be located on the southwest wall of the garage due to the limited side yard width and required setbacks and lack of interior connections to the main living areas.
5. The front setback requirements and the driveway location prohibit locating the addition on the front side of the house.
6. The proposed addition cannot be located on the northeast side of the house due to 1) long utility runs, 2) stair runs which occur through the family room, 3) built-in kitchen cabinets and equipment, 4) long distances between the dining room's far wall and the front entry door, and 5) loss of windows which will inhibit light and ventilation and (6) incompatibility with existing room functions. Lastly, placing the addition in this location will more dramatically impact the existing surface water drainage patterns on and off the property.

(B) Expansions shall be the minimum necessary to achieve the intended functions of the expansion, but in no even may the footprint of the expansion within the critical area buffer and critical area structure setback exceed 500 square feet over the life of the structure.

Finding: The proposed addition is the smallest footprint possible to accommodate a bedroom, bathroom and closet. This addition location and size are intended to provide a safe, easy access for an elderly family member. The proposed addition is efficiently small and compact. It will occupy 274 square feet, of which approximately 156 square feet are currently occupied by a deck with a height greater than 30 inches. Efficiently shaped and laid out, the addition is 'couched' into the inside corner of the existing house structure, thus minimizing its visual and physical impact on the existing property. The individual room sizes are modest in size and no non-essential functions are proposed for the project.

(C) Areas of new permanent disturbance and all areas of temporary disturbance within the critical area buffer shall be mitigated and/or restored pursuant to a mitigation and restoration plan meeting the requirements of LUC Section 20.25H.210.

Finding: The new addition will displace approximately 274 square feet of critical areas buffer with a structure. To compensate for the temporary disturbance to the existing lawn around the proposed addition that is either removed or damaged during construction, the applicant must restore this area with lawn or native plant species. No additional lawn square footage will be allowed.

To compensate for the permanent loss of buffer square footage, the applicant shall restore approximately 200 square feet of critical area buffer with native vegetation to mitigate disturbance associated with the proposed bedroom addition. The area to be replanted is along the top of the slope at the edge of the lawn area. Currently, the lawn grasses and invasive noxious weeds are creeping down the slope. The applicant is to create a healthy, native border using low shrubs and groundcover plant species that will increase the critical areas habitat. Impacts will be mitigated by application of best management practices for temporary erosion and sedimentation controls and rainy season restrictions on clearing and grading. **See Conditions of Approval in Section VIII of this report regarding restoration plan.**

LUC Section 20.25H.055.C.3.n.ii: For purposes of this section, expansion outside of the critical area buffer and critical area structure setback shall be considered not feasible only when, considering the function to be served by the expansion and the existing structure's layout and infrastructure (including plumbing, drainage and electrical systems):

- (A) Expansion away from the critical area buffer and critical area structure setback within the buildable area of the site will not realize the intended functions of the expansion; and
- (B) Expansion away from the critical area buffer and critical area structure setback including into non-critical area setbacks modified pursuant to LUC 20.25H.040, will not realize the intended functions of the expansion; and
- (C) Expansion upwards to the maximum building height of the underlying land use district within the existing footprint, or together with expansions permitted under subsections (ii)(A) and (B) above, will not realize the intended functions of the expansion.

Finding: The bedroom addition is to accommodate the applicant's elderly parent who has limited mobility and cannot navigate stairs. The new bedroom needs to be on the main floor for access. Expansion away from the critical area buffer is not feasible because of the accessibility issues. According to LUC 20.25H.040, setbacks could be adjusted to accommodate the square footage on the northeast side of the home. However, due to the accessibility issues and the current configuration of rooms in the house, locating a bedroom on this side of the house would not realize the intended function of the expansion. Additionally, expansion upwards is not feasible due to accessibility issues for the intended user.

Performance Standards: LUC Section 20.25H.125 – Performance Standards – Landslide Hazards and Steep Slopes. In addition to generally applicable performance standards set forth in LUC 20.25H.060 and 20.25H.070, development within a landslide hazard or steep slope critical area or the critical area buffers of such hazards shall incorporate the following additional performance standards in design of the development, as applicable. The requirements for long-term slope stability shall exclude designs that require regular and periodic maintenance to maintain their level of function.

A. Structures and improvements shall minimize alterations to the natural contour of the slope, and foundations shall be tiered where possible to conform to the existing topography;

Finding: The proposed addition will be located in an relatively flat area with a grade less than 10 percent. The addition will impact approximately 118 feet of the existing relatively level lawn area and the grade will be restored to its existing configuration. In order to minimize excavation impacts resulting from foundation construction, Geotech Consultants, Inc. have suggested in their report, dated May 8, 2007, that the applicant use a pipe pile foundation system with piles driven into the underlying dense to very dense soil. See Conditions of Approval in Section VIII of this report regarding foundation requirement.

B. Structures and improvements shall be located to preserve the most critical portion of the site and its natural landforms and vegetation;

Finding: Based on the report by Geotech Consulting, Inc., the proposed addition will not impact local soil or slope stability to any significant degree due to the use of the piling system and the fact that it lies over 20' feet from the top of the slope. No new loads will be placed on the ground surface at the addition. The proposed project will not require removal of any trees, shrubs, groundcover (other than lawn) or native vegetation.

C. The proposed development shall not result in a greater risk or a need for increased buffers on neighboring properties;

Finding: The stability of adjacent critical areas and critical area buffer will not be negatively impacted as a result of the addition. The adjacent single-family residences are all constructed within the 50 foot critical area buffer, and the proposed addition will still maintain a buffer greater than those existing on

neighboring properties.

- D. The use of retaining walls that allow maintenance of existing natural slope area is preferred over graded artificial slopes where graded slopes would result in increased disturbance as compared to use of retaining walls; and

Finding: No grading outside of the addition footprint is proposed. No rockeries or retaining walls are proposed, not will any retaining walls be required for this project.

- E. Development shall be designed to minimize impervious surfaces within the critical area and critical area buffer.

Finding: The proposed addition is the minimum necessary to achieve a functional space. There will be no patio off the proposed addition and the new impervious surface will be limited to the area of the building addition. Because the addition is replacing an existing deck, the amount of new impervious surfaces from this 274 square foot project will be approximately 118 square feet. Total impervious surfaces for the entire site would still remain under 30 percent.

- F. Where change in grade outside the building footprint is necessary, the site retention system should be stepped and retaining should be designed to minimize topographic modification. On slopes in excess of 40 percent, grading for yard area may be disallowed where inconsistent with the criteria;

Finding: No work will be done on any sloped area of the site. The work being done will occur on land that is already graded and is relatively flat. No retention of earth is required and no building walls from the new addition will be used for retention.

- G. Building foundation walls shall be utilized as retaining walls rather than rockeries or retaining structures built separately and away from the building wherever feasible. Freestanding retaining devices are only permitted when they cannot be designed as structural elements of the building foundation.

Finding: The work being done will occur on land that is already graded and is relatively flat. No retention of earth is required and no building walls from the new addition will be used for retention.

- H. On slopes in excess of 40 percent, use of pole type construction which conforms to existing topography is required where feasible. If pole-type construction is not technically feasible, the structure must be tiered to conform to the existing topography and minimize topographic modification;

Finding: This standard is not applicable because no work will be done on any steep slopes.

- I. On slopes in excess of 40 percent, piled deck support structures are required where technically feasible for parking or garages over fill based construction types;

Finding: This standard is not applicable because no work will be done on any steep slopes.

- J. Areas of new permanent disturbance and all areas of temporary disturbance shall be mitigated and/or restored pursuant to a mitigation and restoration plan meeting the requirements of LUC Section 25.25H.210.

Finding: To mitigate the disturbance within a critical areas buffer associated with the proposed bedroom addition, the applicant shall restore approximately 200 square feet of critical area buffer with native vegetation. The proposed restoration will likely provide an increase in slope stability, improved stormwater infiltration, and more appropriate wildlife habitat within the critical area buffer area than is currently provided by the lawn area.

The existing critical areas buffer area and the proposed location of the building addition are currently occupied by either deck or maintained lawn. The applicant may replace lawn around the house that is disturbed due to the construction with lawn. No additional square footage of lawn may be planted.

Impacts will be mitigated by application of best management practices for temporary erosion and sedimentation controls and rainy season restrictions on clearing and grading. **See Conditions of Approval in Section VIII of this report regarding the restoration plan and rainy season restrictions.**

IV. Summary of Technical Reviews

A. Clearing and Grading:

The Clearing and Grading Division of the Planning and Community Development Department has reviewed the proposed site development for compliance with Clearing and Grading codes and standards. The project does not meet the Clearing and Grading threshold of 50 or more cubic yards of cut and fill or over 1,000 square feet of disturbance to warrant a separate Clear and Grade permit (Clearing & Grading Code 23.76.025). Clearing and Grading approval will be included in the building (BR) permit.

V. Public Notice and Comment

Application Date: June 7, 2007
Public Notice (500 feet): June 28, 2007
Minimum Comment Period: July 12, 2007 (14 days)

The Notice of Application for this project was published in the Seattle Times and the City of Bellevue Land Use Bulletin on June 28, 2007. It was mailed to property owners within 500 feet of the project site. No public comments were received.

VI. Decision Criteria

The proposal, as conditioned below, meet the applicable regulations and decision criteria for a Critical Areas Land Use Permit pursuant to LUC Section 20.30P.

A. The Proposal obtains all other permits required by the Land Use Code; and

Finding: The applicant must obtain a single-family remodel building permit (BR) for the bedroom, bathroom and closet addition. The clearing and grading review will be included in this permit.

B. The proposal utilizes to the maximum extent possible the best available construction, design and development techniques which result in the least impact on the critical area and critical area buffer;

Finding: The proposed addition will be built on Pier Foundations and does not include any grading outside of the building footprint. No additional rockeries or retaining walls are required to support the expansion. **See Conditions of Approval in Section VIII of this report for pier foundation requirement.**

C. The proposal incorporates the performance standards of LUC 20.25H to maximum extent applicable, and;

Finding: As discussed in Section III of this report, the proposal meets the performance standards of LUC Section 20.25H.055 for expansion into a critical area buffer and LUC Section 20.25H.125 for expansion into buffers associated with geological hazards.

D. The proposal will be served by adequate public facilities including street, fire protection, and utilities; and;

Finding: The proposed expansion will not impact the existing service level.

E. The proposal includes a mitigation or restoration plan consistent with the requirements of LUC 20.25H.210; and

Finding: The applicant may only replace the existing lawn around the proposed addition that is either removed or damaged during construction. No additional lawn will be allowed. As mitigation for the proposed addition, the applicant shall restore approximately 200 square feet of buffer area along the top of the slope. This additional planted area will help to provide increased slope stability, improved stormwater infiltration, and more appropriate wildlife habitat within the critical area buffer and critical area. A Landscape Maintenance Device will be required to be submitted prior to the issuance of any associated permits. **See Conditions of Approval in Section VIII of this report regarding the Restoration Plan and Landscape Maintenance Security.**

F. The proposal complies with other applicable requirements of this code.

Finding: As discussed in Section III of this report, the proposal complies with all other

applicable requirements of the Land Use Code.

VII. Conclusion and Decision

After conducting the various administrative reviews associated with this proposal, including Land Use Code consistency, City Code and Standard compliance reviews, the Director of Planning and Community Development does hereby approve with conditions the proposed expansion into the critical area buffer. **Approval of this Critical Areas Land Use Permit does not constitute a permit for construction. A Building Permit is required and all plans are subject to review for compliance with applicable City of Bellevue codes and standards.**

A Critical Areas Land Use Permit setback modification automatically expires and is void if the applicant fails to file for a Building Permit or other necessary development permits within one year of the effect date of approval.

VIII. Conditions of Approval

The applicant shall comply with all applicable Bellevue City Codes and Ordinances including but not limited to:

Applicable Ordinances	Contact Person
Clearing and Grading Code- BCC 23.76	Tom McFarlane, 425-452-5207
Land Use Code- BCC Title 20	Sally Nichols, 425-452-2727
Noise Control- BCC 9.18	Sally Nichols, 425-452-2727

The following conditions are imposed under the Bellevue City Code referenced:

1. Pier Foundation Requirement: : A foundation plan showing the pier foundations which extend into the dense to very dense glacial till is required to be submitted and approved by the City of Bellevue Building Division prior to the issuance of any building permit.

Authority: Land Use Code 20.25H.125.A
Reviewer: Sally Nichols, Planning and Community Development Department

2. Restoration Plan: As mitigation for the proposed addition, the applicant shall restore approximately 200 square feet of buffer area with native vegetation (Attachment 5). The plant species and appropriate plant spacing shall be chosen from the Plant Legend for Shade in Areas with Geologic Hazards, Page A1-Shade, from the City of Bellevue Critical Areas Handbook (Attachment 4). This additional planted area will help to provide increased slope stability, improved stormwater infiltration, and provide more appropriate wildlife habitat within the critical area buffer.

A restoration plan showing the approximate location, spacing and species of the new plantings is required to be submitted and approved by the City of Bellevue prior to the issuance of any building

permit. Planting should take place in fall prior to November 1 or in the spring after April 30.

Authority: Land Use Code 20.25H.125
Reviewer: Sally Nichols, Planning and Community Development Department

3. Landscape Maintenance Security: The applicant must submit a combined Landscape Installation and Maintenance Security in the amount of 100 percent of the costs of the restoration work; including labor and materials. The security may be released after the vegetation has successfully been installed and maintained for a minimum period of five years. The goal is to achieve an 80% survival rate at the end of year five.

Authority: Land Use Code 20.25H.125
Reviewer: Sally Nichols, Planning and Community Development Department

4. Rainy Season Restrictions: Due to the proximity to a steep slope, no clearing and grading activity may occur during the rainy season, which is defined as November 1 through April 30 without written authorization of the Department of Planning and Community Development. Should approval be granted for work during the rainy season, increased erosion and sedimentation measures, representing the best available technology must be implemented prior to beginning or resuming site work.

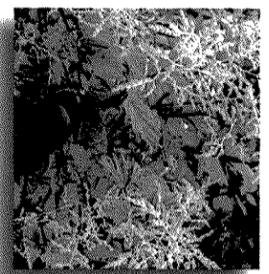
Authority: Bellevue City Code 23.76.093.A
Reviewer: Tom McFarlane, Planning and Community Development Department

5. Noise Control: The proposal will be subject to normal construction hours of 7 a.m. to 10 p.m., Monday through Saturday, except for Federal holidays and as further defined by the Bellevue City Code. Upon written request to PCD, work hours may be extended to 10 p.m. if the criteria for extension of work hours as stated in BCC 9.18 can be met. Use of heavy equipment will be prohibited outside of normal construction hours.

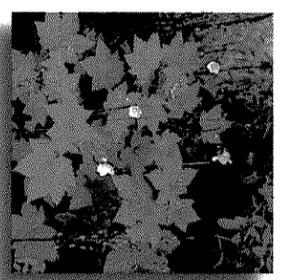
Authority: Bellevue City Code 9.18
Reviewer: Sally Nichols, Planning and Community Development Department

IX. Attachments:

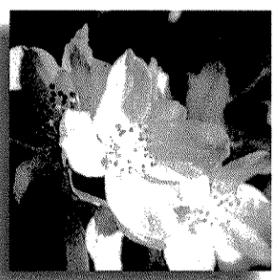
1. Vicinity Map
2. Zoning Map
3. Site Plan/Site Notes
4. Geological Hazards – Critical Areas Handbook
Steep Slope Planting Template for Sunny and Shady Sites
5. Location of Restoration Landscape



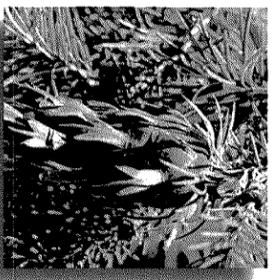
Oceanspray



Thimbleberry



Mock Orange



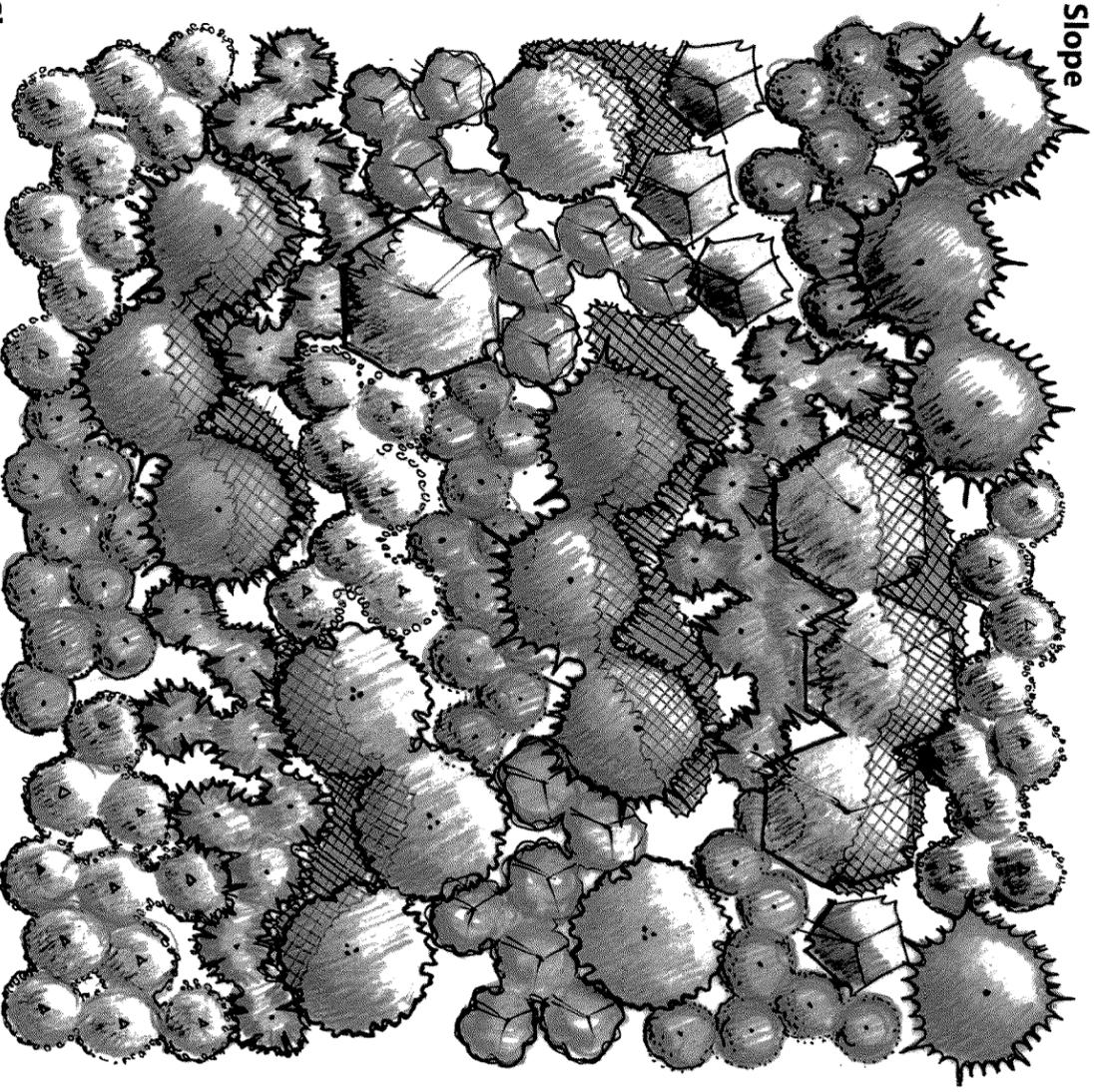
Douglas-fir

Geological Hazards

Steep Slope Planting Template
for *Sunny* and *Shady* Sites

GEOLOGICAL HAZARDS (STEEP SLOPE) PLANTING TEMPLATE

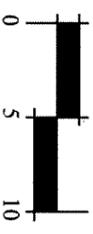
60' X 60' TYPICAL PLANTING



Top of Slope

Toe of Slope

SCALE 1"=10'



Steep slopes commonly have fragile, erodible soils. Planting can be difficult to establish in these areas as gravity, wind, and rain have a tendency to pull nutrient-rich soil down the slope. In addition, sunny sites require drought-tolerant plants, while both sunny and shady sites require plants with strong, root systems to keep soil intact. On the next two pages you will find one legend designed for sunny, steep sites and one designed for shady, steep sites. The plants chosen for these templates are known for drought tolerance and soil-binding characteristics. With the successful establishment of plants on steep slopes, the potential for erosion decreases. For additional information on Steep Slopes, refer to the section on *Geological Hazard Areas in Chapter One* and the City's Critical Areas Ordinance. Note, these templates are to be used for stable and undisturbed sloping sites. If your site has experienced a landslide or substantial erosion, do not use this template; consult a professional.

PLANT LEGEND FOR SUNNY SITES

LATIN NAME/ COMMON NAME	TYPICAL SPACING/ AVERAGE HEIGHT	CHARACTERISTICS
TREES		
<i>Acer macrophyllum</i> / Big-leaf maple	9 feet on center/ 75 feet	Yellow fall color, provides understory shade, largest leaf of all maples
<i>Alnus rubra</i> / Red alder	9 feet on center/ 60 feet	Vigorous grower, provides cover quickly for other plants
<i>Pseudotsuga menziesii</i> / Douglas-fir	9 feet on center/ 100 feet	Highly adaptable, fast grower
SHRUBS		
<i>Corylus cornuta</i> / Beaked hazelnut	6 feet on center/ 11 feet	Edible acorn, wildlife food. Small understory tree,
<i>Holodiscus discolor</i> / Oceanspray	4.5 feet on center/ 7 feet	Yellowish fall color Spectacular blossom, attracts hummingbirds and butterflies
<i>Philadelphus lewisii</i> / Mock orange	4.5 feet on center/ 8 feet	Fragrant white blossom
<i>Rubus parviflorus</i> / Thimbleberry	4 feet on center/ 8 feet	Delicious edible berries, fast grower, likes sun
<i>Symphoricarpos albus</i> / Snowberry	4.5 feet on center/ 5 feet	White berries, proven performer in tough conditions
GROUNDCOVERS & PERENNIALS		
<i>Arctostaphylos uva-ursi</i> / Kinnikinnick	*24 in. on center/ 6-8 in.	Evergreen groundcover, great for rockeries and full sun areas
<i>Fragaria chiloensis</i> / Coastal strawberry	*24 in. on center/ 4-6 in.	Tough, highly adaptable groundcover w/ red stems and edible berries
<i>Festuca idahoensis</i> / Idaho fescue	*24 in. on center/ 2.5 feet	Bluish leaves, clumping
<i>Polystichum munitum</i> / Sword fern	*24 in. on center/ 5 feet once mature	Semi-evergreen fern, highly adaptable
<i>Epilobium angustifolium</i> / Fireweed	*24 in. on center/ 1.5-2 feet	Big purple flowers on a tall stem

* Indicates plants are to be triangularly spaced for the area shown. See page 23 for triangular spacing.

PLANT LEGEND FOR SHADY SITES

LATIN NAME/ COMMON NAME	TYPICAL SPACING/ AVERAGE HEIGHT	CHARACTERISTICS
TREES		
<i>Acer macrophyllum</i> / Big-leaf maple	9 feet on center/ 75 feet	Yellow fall color, provides understory shade, largest leaf of all maples
<i>Alnus rubra</i> / Red alder	9 feet on center/ 60 feet	Vigorous grower, provides cover quickly for other plants
<i>Thuja plicata</i> / Western red cedar	9 feet on center/ 150 feet	Fragrant, adaptable to many sites
SHRUBS		
<i>Acer circinatum</i> / Vine maple	4.5 feet on center/ 20 feet	Bright red fall color, small understory tree, grows well in shade
<i>Amelanchier alnifolia</i> / Western serviceberry	4.5 feet on center/ 20 feet	Fragrant flowers, edible red to purple berries
<i>Corylus cornuta</i> / Beaked hazelnut	6 feet on center/ 11 feet	Edible acorn, wildlife food, small understory tree, yellowish fall color
<i>Oemleria cerasiformis</i> / Osoberry	4.5 feet on center/ 10 feet	Berries attract birds, first shrub to leaf out in spring
<i>Sambucus racemosa</i> / Red elderberry	4 feet on center/ 15 feet	Edible berries, fast grower, graceful form with age
GROUNDCOVERS & PERENNIALS		
<i>Arctostaphylos uva-ursi</i> / Kinnikinnick	*24 in. on center/ 6-8 in.	Evergreen groundcover, great for rockeries and full sun areas
<i>Asarum caudatum</i> / Wild ginger	*24 in. on center/ 6-8 in.	Tough groundcover, great for planting under shrubs and trees
<i>Polystichum munitum</i> / Sword fern	*24 in. on center/ 5 feet once mature	Semi-evergreen fern, highly adaptable

* Indicates plants are to be triangularly spaced for the area shown. See page 23 for triangular spacing.

A1-Shade

THE PLANTING TEMPLATES

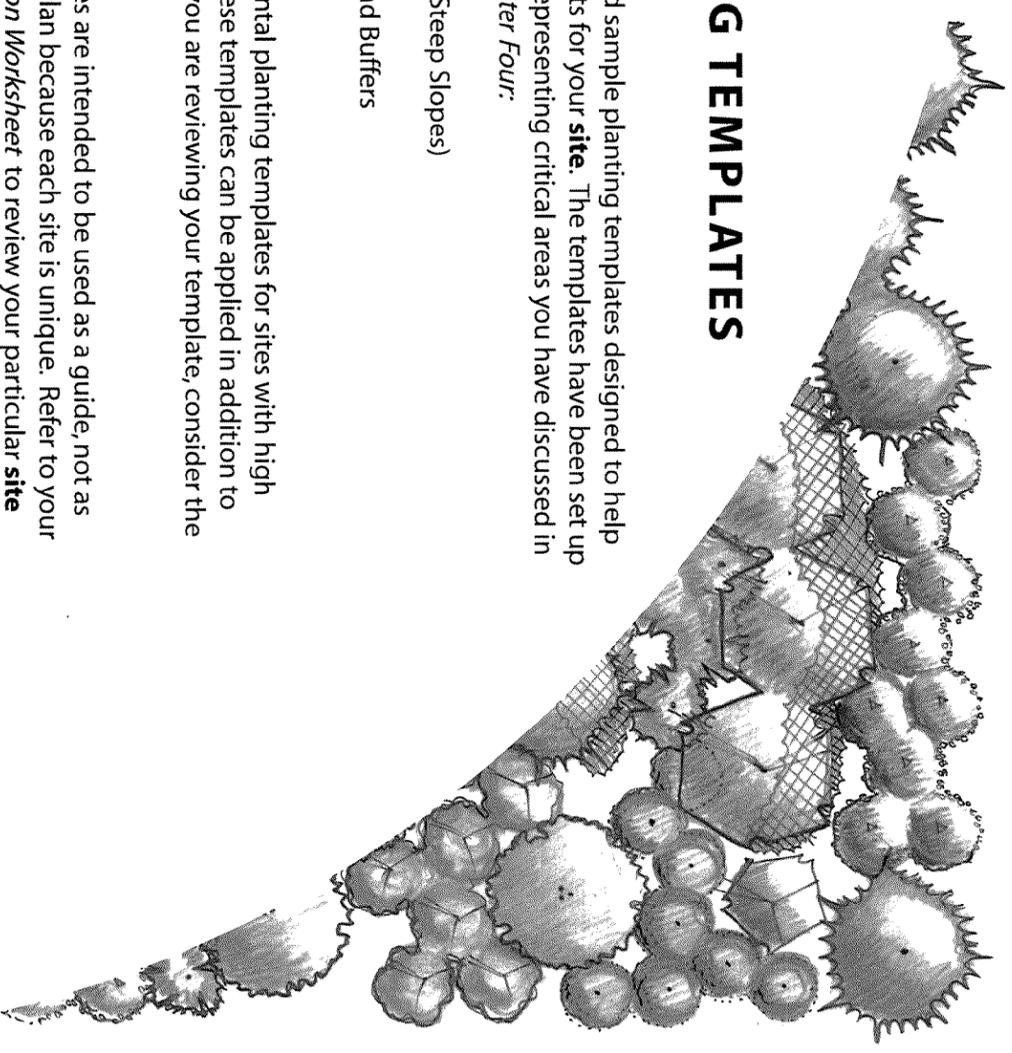
In this appendix you will find sample planting templates designed to help you select and arrange plants for your **site**. The templates have been set up on a sixty foot square grid representing critical areas you have discussed in *Chapters One through Chapter Four*:

Geological Hazards (Steep Slopes)
Shorelines
Wetlands and Wetland Buffers
Stream Buffers

Also included are supplemental planting templates for sites with high invasive weed coverage. These templates can be applied in addition to your main template. While you are reviewing your template, consider the following:

- ◇ Remember, the templates are intended to be used as a guide, not as a stand-alone planting plan because each site is unique. Refer to your completed *Site Evaluation Worksheet* to review your particular **site conditions** before completing your planting plan.
- ◇ Look at the way the plants are arranged on the template. Do you find certain plant species closer to the water's edge and other plant species farther away? The planting templates have been designed to keep in mind each plant's preference for wetter or drier conditions. Some plants are found in both circumstances, as these plants are considered highly adaptable. Try to mimic the relationships shown as much as possible in your planting plans and refer to the *Master Plant List* in *Appendix C* for additional information about each plant species.
- ◇ Is your site sunny or shady? Most templates have a *sun legend* and a *shade legend*. Be sure to choose the appropriate legend for your site.
- ◇ Are you an experienced plant professional? Refer to the *Master Plant List* in *Appendix C* for possible plant substitutions. If substituting, make sure the ecology is the same for the plant template choice and the substitution (a column in the *Master Plant List*).

On the next page you will find a list of the templates included in this appendix.



How many plants do I need?

As a general rule, when planting 1,000 square feet, you will need an average of:

- **8 trees** at 12-foot on center spacing,
- **30 shrubs** at 6-foot on center spacing, and
- **285 groundcovers or perennials** at 2-foot on center spacing.

Adjust numbers of planting according to your site conditions.

