



Tree Management & Stewardship Plan

CITY OF MEDINA

Draft







City Council

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Executive Summary

In the fall of 2015, the Medina City Council authorized development of a tree management plan as an element for better management of trees...





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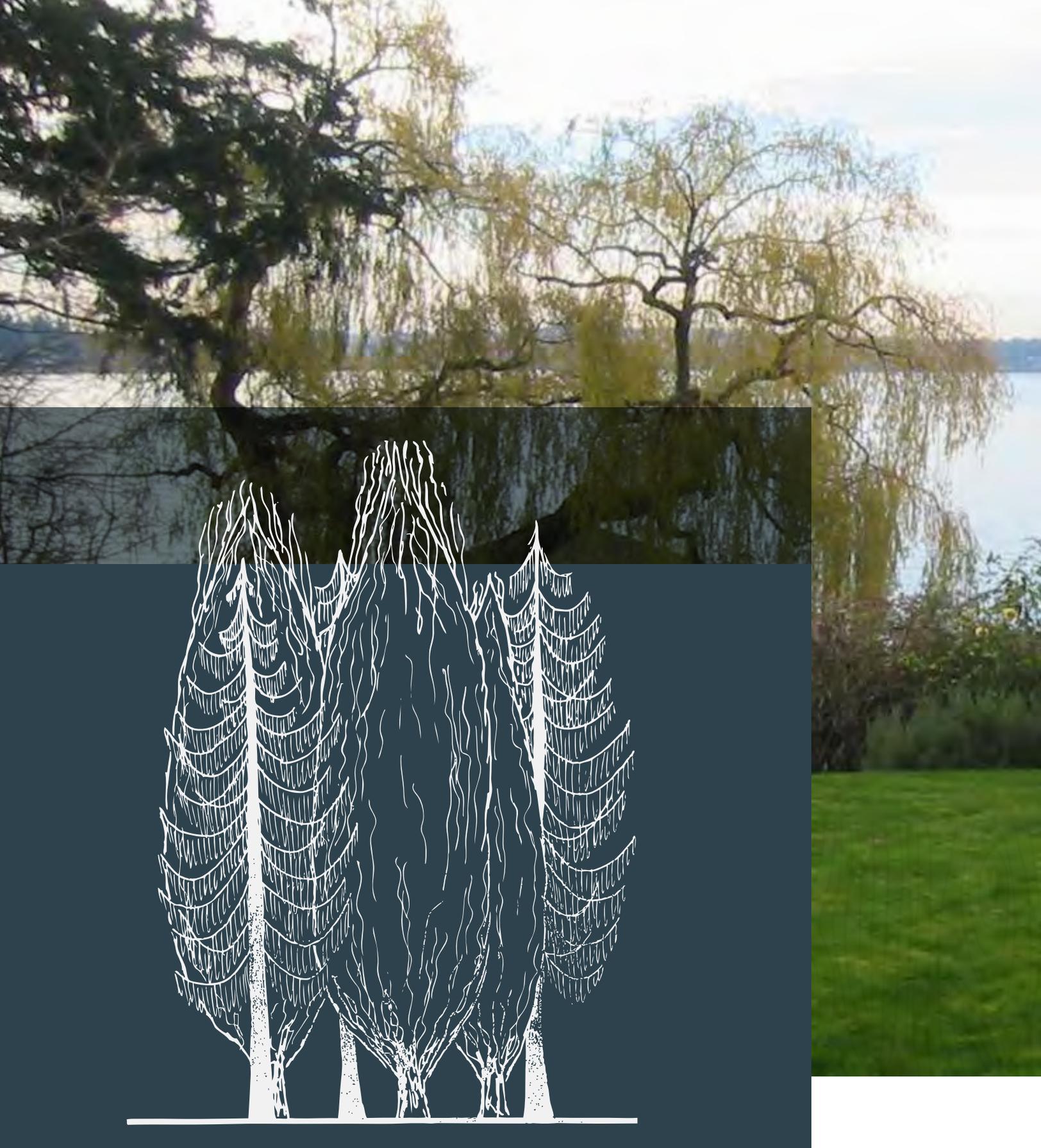
Introduction

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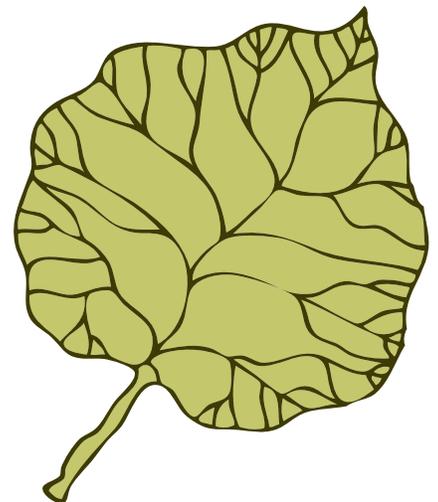
1.1

Purpose

Trees, dense hedges, and a variety of landscaping types contribute to the City’s informal and natural visual character. Trees and vegetation play an important role in helping to reduce the impacts of development by softening and screening development on properties. They provide a sense of privacy and significantly contribute to an aesthetically pleasing environment enjoyed by residents. Studies have indicated that communities with streets bordered by trees and vegetation tend to be judge more positively with the ratings of visual quality increasing with the density and maturity of the trees and vegetation.

Important to the aesthetically pleasing nature of the community and its long-term stability is having a diversity of plant species and variations in the density of trees, including open spaces. Sunlight and views also contribute to the high-quality character of the community. Many property owners cherish having outward views of the lake, golf course, and the skyline of downtown Bellevue; and enjoy the benefits of having sunlight reaching their homes and yards. Having these attributes contribute greatly to the quality of life experienced by residents.

Maintaining an appropriate blend of trees and vegetation with sunlight, views, and open space are essential in meeting the City’s stated goal of maintaining a high-quality residential setting. Consistent with this goal, this document aims to provide tools to aid in creating and maintaining an appropriate balance vegetation and sunlight. The purpose is to provide property owners and the City information and suggestions that can help make smart choices in managing the sometimes competing interests provided by trees and vegetation with those interests provided by views and sunlight.



1.2

Guiding Principle

The guiding principle of the Medina Tree Management and Stewardship Plan is *to pick the right place and then pick the right plant*. Picking the right place ensures the property owner's landscape design goals can be satisfied while considering potential impacts of the placement of the vegetation. Picking the right plants including trees ensures a plant is selected that meets the criteria for the planting site including health, maintenance requirements, and the potential impacts on the surrounding area. This will be discussed in greater detail under the Tree and Vegetation Management chapter.

1.3

Adopted Policies

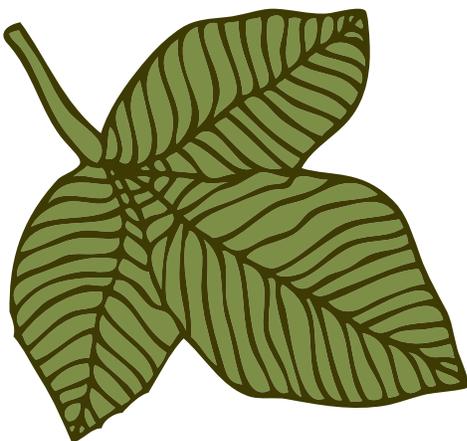
The management principles outlined in this document are intended to work in conjunction with various chapters of the Medina Municipal Code and the Medina Comprehensive Plan. This includes the Medina Tree Code, View and Sunlight Obstructions, Shoreline Vegetation Management, and Critical Areas Regulations. The following policies and regulations highlight elements pertaining to trees and vegetation that can be found within the City's ordinances and regulations:



1.3.1 Medina Comprehensive Plan

The Medina comprehensive plan recognizes the importance of preserving trees and other vegetation while also recognizing the importance of views and access to sunlight. Some pertinent elements include:

- ✿ The City's design objective is to maintain the City's natural, low-density, and informal appearance. Medina's highly visible streets as identified in the Landscaping Plan should be heavily landscaped with native trees and shrubs arranged in an informal manner.
- ✿ The design and treatment of Medina's streets is a major element in the City's appearance. The character and quality of the landscaping of these streets are extremely important in maintaining the City's natural, informal character.
- ✿ The Medina Landscape Plan lists landscaping alternatives to perpetuate the informal, natural appearance of Medina's street rights-of-way, public areas, and the adjacent portions of private property. This plan should be used to create landscaping arrangements, which meet the following goals:
 - ◆ provide a diversity of plant species;
 - ◆ screen development from City streets and from neighboring properties;
 - ◆ respect the scale and nature of plantings in the immediate vicinity;
 - ◆ recognize restrictions imposed by overhead wires, sidewalks, and street intersections;
 - ◆ recognize "historical" view corridors; and
 - ◆ maintain the City's informal, natural appearance.
- ✿ No net loss of wetlands functions, values, and acreage should result from development.
- ✿ It is important that citizens be sensitive to the impact that altering or placing trees may have on neighboring properties. Trees can disrupt existing and potential views and access to sun. Residents are urged to consult with the City and with their neighbors on both removal and replacement of trees and tree groupings to help to protect views and to prevent potential problems.



1.3.2 Medina Shoreline Master Program

The Shoreline Master Program establishes a no net loss of shoreline ecological standard with the intent to preserve the scenic aesthetic quality of shoreline areas and vistas to the greatest extent feasible. The Shoreline Master Program is codified in Chapters 20.60 through 20.67 of the Medina Municipal Code and is required as part of the Washington State Shoreline Management Act. Where new developments and/or uses or redevelopments are proposed, native shoreline vegetation should be conserved to maintain shoreline ecological functions and/or processes. Important functions of shoreline vegetation include, but are not limited to:

- Improving water quality through filtration and vegetative uptake of nutrients and pollutants.
- Providing a source of large woody debris to moderate flows, create hydraulic roughness, form pools, and increase structural diversity for salmonids and other species.
- Providing habitat elements for riparian-associated species, including downed wood, snags, migratory corridors, food, and cover.
- Provide incentives for the retention and planting of native vegetation, and discourage extensive lawns due to their limited erosion control value, limited water retention capacity, and associated chemical and fertilizer applications.



1.3.3 Medina Tree Code

The purpose of the tree management code is to preserve the existing sylvan appearance through long-term retention and planting of trees that contribute to the community's distinct features including proximity to the lakeshore, views, heavily landscaped streetscapes, and large tracts of public and private open spaces. The City of Medina instituted a tree code on private property in 1990 and has maintained this policy ever since.

- ✦ Preserving the existing sylvan appearance through long-term retention and planting of trees;
- ✦ Providing homeowners flexible standards that encourage the preservation of trees while recognizing the importance of having access to sunlight and views;
- ✦ Recognizing that certain factors may require the removal or pruning of certain trees due to circumstances such as disease, danger of falling, proximity to structures and improvements, interference with utility services, protection of view and sunlight, and the reasonable enjoyment of property;
- ✦ Encouraging best practices for the planting and managing of trees appropriately to minimize hazards, nuisances, and maintenance costs while allowing access to sunlight and views;
- ✦ Allowing removal of significant trees in the right-of-way for the following:
 - ◆ Hazard trees;
 - ◆ Nuisance trees;
 - ◆ Trees not suitable under utility lines, or in the city right-of-way;
 - ◆ Trees having less than a 10-inch diameter breast height size; and any non-significant right-of-way trees less than a 36-inch diameter breast height size;
 - ◆ Trees where pruning and trimming for utilities caused significant defects to the primary stem of the tree resulting in significant abnormal growth;
 - ◆ Trees where removal is necessary to allow vehicle access to a property; and
 - ◆ Trees where removal is necessary to restore a view significantly obstructed by the tree.

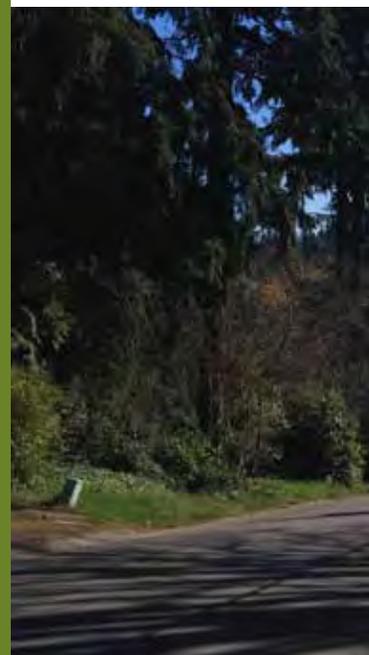




1.3.4 Critical Areas Ordinance

The Critical Areas ordinance designates and classifies ecologically critical areas, provides protection for these designated areas, their functions and values, and supplements the development regulations contained in the Medina Municipal Code with additional controls required by the Growth Management Act. Medina contains critical areas including wetlands, geologically hazardous areas, and fish and wildlife habitat conservation areas. Relevant portions of the Critical Areas ordinance relate to trees in many ways, including:

- ✿ Removal of any vegetation or woody debris from a critical area is prohibited unless part of an approved alteration;
- ✿ Selective vegetation removal such as invasive species is allowed;
- ✿ Trimming of trees to provide view corridors is allowed provided certain limits are followed.



1.3.5 Trees: View and Sunlight Obstruction

The Trees – View and Sunlight Obstruction ordinance was enacted to provide a voluntary mechanism for resolving disputes involving preserving and enhancing views and access to sunlight between property owners. It should not be construed, however, to provide rights beyond those entitled under Washington law. The ordinance recognizes:

- ✿ Among the features that contribute to the attractiveness and livability of the city are its trees, both native and introduced, and the views obtained from a variety of elevations throughout the city.
- ✿ Trees, whether growing singly, in clusters or in woodland settings, provide a wide variety of psychological and tangible benefits for both residents and visitors.
- ✿ Views also produce a variety of significant and tangible benefits for both residents and visitors to the city.



- ✿ Trees, views and access to sunlight and the benefits to be derived from each may come into conflict. Tree planting locations and species selections may produce both intended beneficial effects on the property where they are planted, and unintended deleterious effects on neighboring properties.
- ✿ When a view or sunlight obstruction dispute arises, the parties should act reasonably to resolve the dispute through friendly communication, thoughtful negotiation, compromise and other traditional means.



Background

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2.1

General Information

The City of Medina incorporated in 1955 as a predominately low-density single-family residential community. The purpose of incorporation was to protect this character by establishing more local control. Originally, the area was a collection of small berry farms and orchards that grew into a community after the establishment of a ferry dock. The City occupies a large peninsula in the central shore area of Lake Washington with approximately four and a half miles of shorelines. Much of the topography consists of low areas, rolling hills and steep slopes. In addition to the low-density single-family residential development pattern, the City's character is distinguishable by natural and built features including:

- ✿ Proximity to Lake Washington;
- ✿ Views;
- ✿ Narrow streets with extensive mature landscaping; and
- ✿ Large tracts of public and private open space.



N.E. 8th Street prior to 1910

2.2

The Urban Forest



American Forests defines urban forests as “ecosystems of trees and other vegetation in and around communities that may consist of street and yard trees, vegetation within parks and along public rights of way and water systems. Medina’s urban forest is diverse in its structure as it is in its biological variety. Tall stands of trees with developed sub-canopies and understory layers characterize some of the parks and parcels within the City. Other parts of the urban canopy are formed by singular trees contained in parking lots or within planting strips along avenues. Much of the canopy, especially in the single-family residential areas, is a mix of tall, medium and shorter landscape species. Many of the tall conifer trees are likely remnant stands or individual trees that have been preserved.

The benefits of the urban forest include removing carbon from the atmosphere, reducing energy use, improving air quality, moderating stormwater flows, protecting water quality, and providing habitat for wildlife. To provide an understanding of the economic and environmental value of these benefits, Case Trees and Davey Tree Expert Company created the National Tree Benefit Calculated to assign an annual dollar value of the benefits each tree provides based on size, species and location. For example, in the City of Medina, a 10-inch diameter Douglas fir tree is estimated to provide benefits valued at \$107 each year. If the tree grows to a 20-inch diameter, the estimated value increases to \$194 per year. These calculations are intended as starting point for discussing the value trees can provide, but there are many intrinsic benefits not included in the estimated value.

One such intrinsic value not accounted for in the National Tree Benefit Calculations is the value we tend to hold for older more mature trees. These larger trees, when healthy, can capture our imagination. In the Pacific Northwest, native trees can live an average of 580 years. Douglas fir trees can live between 500 and 1,000 years, Western Red Cedar trees have been aged to 1,400 or more years, Red Alder trees can live up to 100 years and more, Big Leaf Maple trees can live 200 years, and Western Hemlock can attain ages of 400 to 500 years. We tend to celebrate the history these trees have experienced over their long lifetimes, and the majesties of the canopies they produce.

2.3

Tree Canopy Coverage



One of the intent statements set forth in the Medina Tree Code (Chapter 20.52) is to protect and preserve the existing tree canopy. In 2014, the City conducted a tree canopy coverage assessment. Findings from the assessment produced the following results:

SUMMARY	ACRES	PERCENT
Land Area	902.13	100.0%
Evergreen Canopy	150.99	16.7%
Deciduous Canopy	136.73	15.2%
Total	287.72	31.9%

The assessment indicated that the total tree canopy coverage at 287.72 acres or 31.9 percent of the city. Of the 287.72 acres of tree canopy coverage, 52.5 percent was determined to be coniferous native evergreen trees consisting mostly of Douglas-fir, western red-cedar, and to a lesser extent some western hemlock and non-native to Puget Sound redwood, Deodar cedar, Atlas cedar, and Leyland cypress. The remaining 47.5 percent of the tree canopy coverage was either deciduous or broadleaf evergreen in composition. Some of the recurring deciduous tree species include the southern magnolia, big leaf maple, red maple, Norway maple, European birch, red alder, flowering cherry trees, sweetgum and other ornamental flowering trees.

When the tree coverage canopy is broken down by general land uses, those areas classified as City parkland have the highest tree canopy coverage at 42.6 percent – particularly the forested areas at Fairweather Park, and the wetland areas on the south side of Medina Park. The thinnest tree canopy coverage occurs along the SR-520 corridor at 12.2 percent, but this is likely due to recent construction activity and is anticipated to increase as new plantings along the highway corridor establish and begin to mature. Total area, tree canopy acres, and the percentage of tree canopy for each general land use category are shown in the table below.

TABLE 2.3 2012 by Land Use Categories

SUMMARY	LAND ACRES	TOTAL CANOPY ACRES	PERCENT
Total City	902.13	287.72	31.9%
SR-520 Canopy	14.55	1.78	12.2%
Golf Course Canopy	130.44	19.84	15.2%
City Parks Canopy	29.35	12.50	42.6%
Schools Canopy	21.83	3.25	14.9%
Retail <i>(Green Store/ Gas Station)</i>	6.19	1.54	24.8%
All Other Areas <i>(Residential, PSE Roads)</i>	699.77	248.82	35.6%



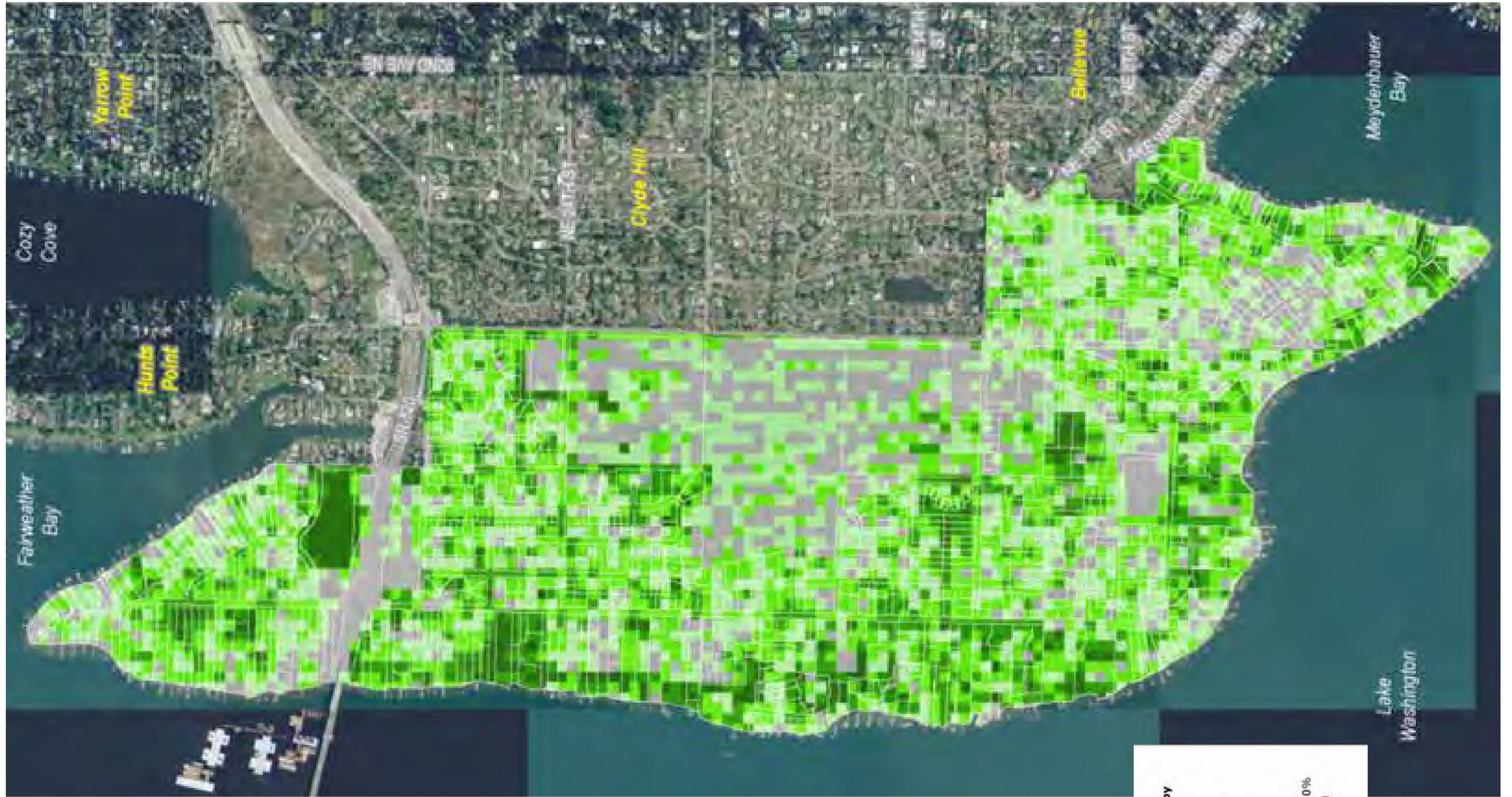


FIGURE 2.3 Canopy Coverage

Figure 2.3 shows the varying degrees of tree coverage around the city used to calculate the acreages and percentages in the tables above.

2.4 Historic Trees

The Medina Landscape Plan lists certain trees inside the city as historic. These included maple trees along NE 7th Street; a giant sequoia at 84th Avenue NE and NE 10th Street; and Lombardy poplar trees along the south side of Overlake Drive West and the west side of 84th Avenue NE. The comprehensive plan calls for these trees to be retained or replaced with an appropriate selection of trees from the suitable tree species list. The Lombardy poplars are reaching the end of their safe useful life expectancy and are going to be removed in the near term. These trees are being replaced with Red Maple trees. The intent is to use the same tree species along a corridor to create a uniform tree canopy along the length of the corridor. This idea of landscape avenues traces back to the oldest ideas in the history of gardens and urban planning.

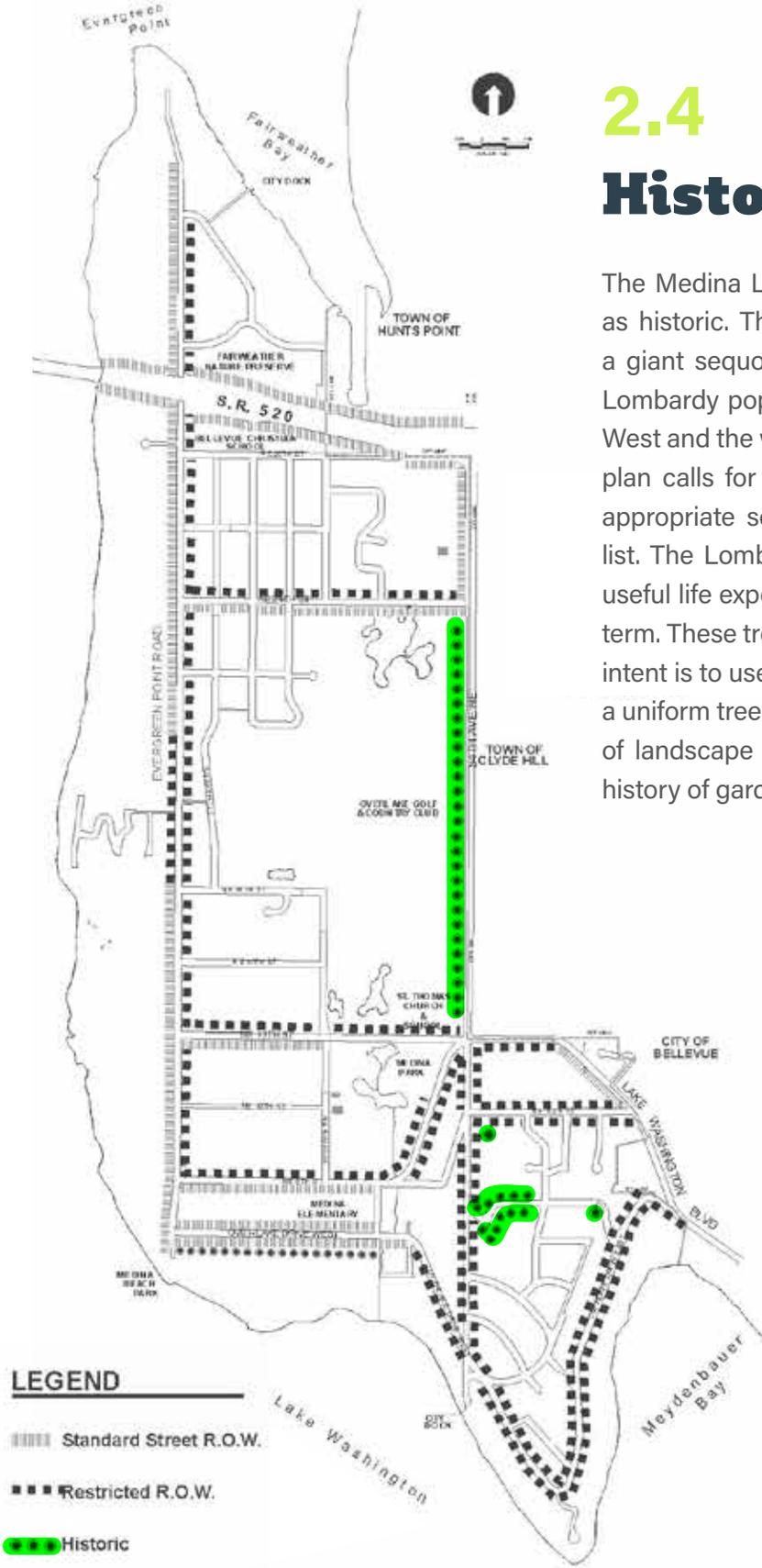


FIGURE 2.4 City of Medina Landscape Plan





Views

IN THIS SECTION

3.1 Identifying Possible Views

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3.1

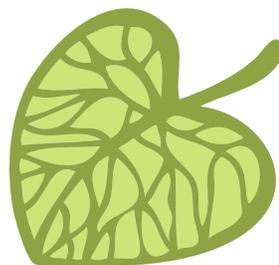
Identifying Possible Views

The idea of a view is simple; it is the ability to see something, a geographical area or prominent feature, from a particular location. The City Codes do not guarantee a property owner a view. However, views are considered an important element to the overall aesthetics and character of the community. To that end, the view and sunlight ordinance provides private property owners a means of protecting views that existed on their property at some point. Prominent features in Medina include Lake Washington, Overlake Golf Course, and City parks. Other less prominent features outside of the City include the Cascade and Olympic mountain ranges, particularly Mount Rainer, and the downtown skylines of Bellevue and Seattle.

Although views are not guaranteed, this management plan considers possible views by dividing and mapping the city into five geographical view classifications listed as follows:

- 1. Highland;**
- 2. Midland;**
- 3. Waterfront;**
- 4. Golf Course; and**
- 5. Parks**

These geographic classifications are developed using topography and elevation as the criteria for identifying particular places from which there may be possible views of predominate features. For example the Highland and Midland classifications identify areas towards the top of terrain features where locations are more likely to have views. However, properties at the base of terrain features may also have views of prominent features if the features are not blocked by topography or other types of natural and manmade landscapes. These are identified by waterfront, golf course, and parks classifications. A more detailed description of these geographical classifications can be found below.



HIGHLAND VIEWS



These are land areas having higher than 150-foot elevation. They are the highest areas within the boundaries of the City.

GOLF COURSE VIEWS



These areas are lots adjoining the golf course, but excluding highland and midland views.

MIDLAND VIEWS



These are land areas having a 120-foot to 150-foot elevation. This 30-ft elevation difference was based on zoning height standards and the potential for neighboring house structures to block views.

PARK VIEWS



These areas are lots adjoining Fairweather Nature Preserve and Park, Medina Park, Medina Beach Park, and View Park, but exclude highland and midland views.

WATERFRONT VIEWS



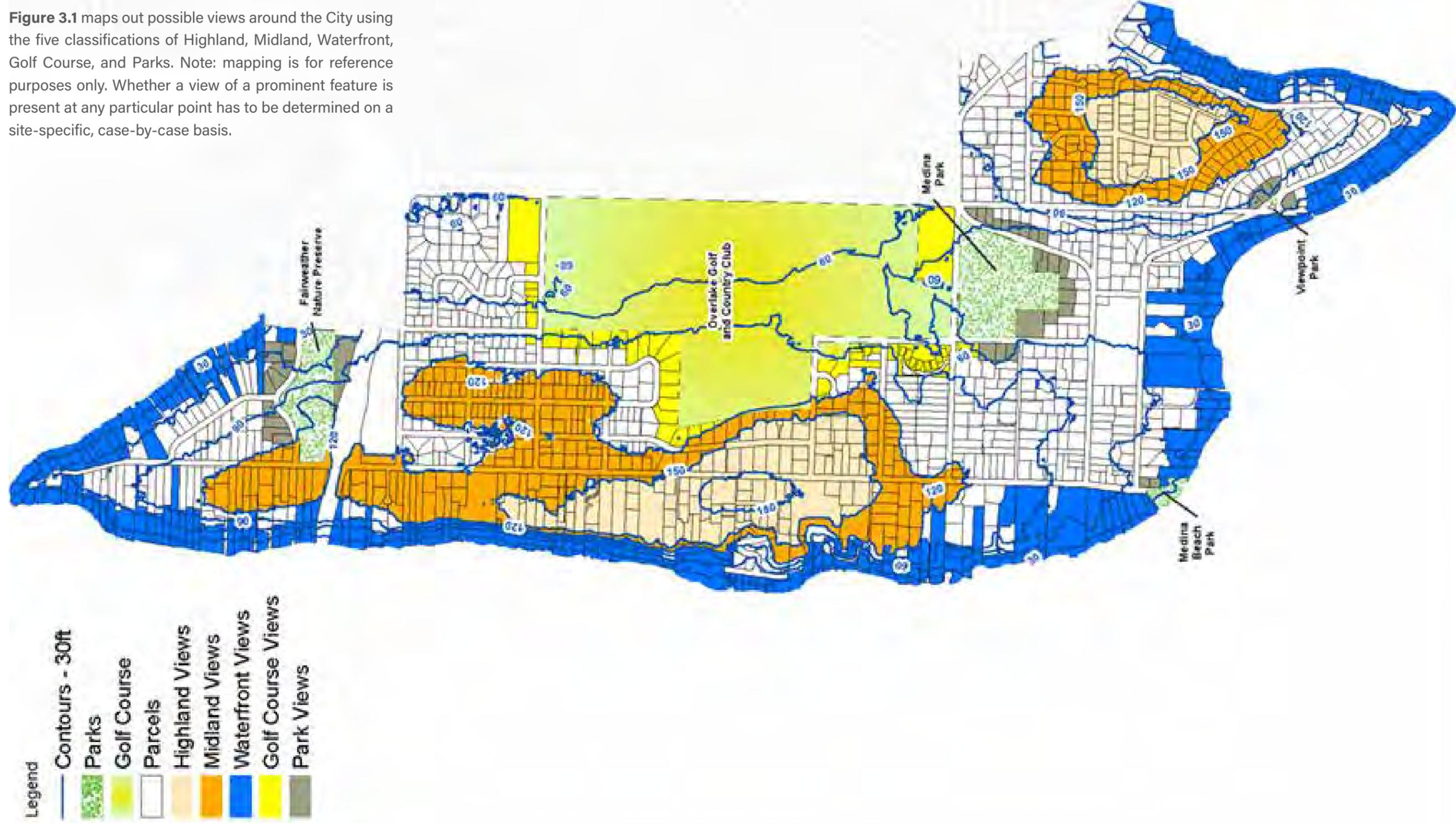
NOTE:

The mapping of possible views is to identify locations from where types of views might exist. A site-specific analysis of individual locations is required to determine whether a prominent feature is viewable from these locations.

These areas are lots adjoining Lake Washington, but excluding highland and midland views.

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Figure 3.1 maps out possible views around the City using the five classifications of Highland, Midland, Waterfront, Golf Course, and Parks. Note: mapping is for reference purposes only. Whether a view of a prominent feature is present at any particular point has to be determined on a site-specific, case-by-case basis.





Tree Canopy and Views

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4.1

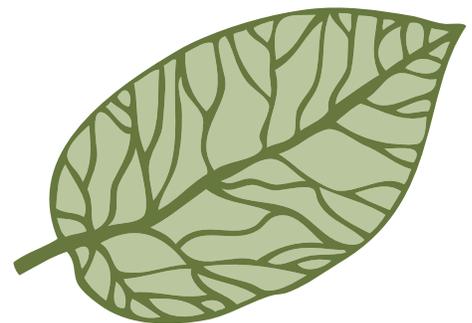
Introduction

The desire for trees and dense landscaping, and the protection of views can sometimes come into direct conflict with each other. Tree planting locations and tree species selections may produce intended beneficial effects on a property, and unintended harmful effects on neighboring properties by blocking views or screening out sunlight. Unobstructed views are not guaranteed and many firmly believe that trees are the view., particularly older, taller and more grand trees, which have the highest probability for blocking views.

4.2

Communicate and Avoid Conflicts

The most effective strategy for balancing view protection and maintaining the tree canopy are courteous, congenial and continued conversations with your neighbors about planting and maintaining trees and other types of landscaping. Whether a private property owner has a right to a view through another person's property is a private matter. In most cases, aggrieved homeowners have few if any right to force a neighbor to trim or remove a view obstructing tree, except as might be provided by local ordinances. However, even with local ordinances, these disputes can still lead to costly litigation. Regardless of the perspective, the best way to avoid conflict and resolve view disputes is to inquire with your neighbor and use the information provided in this plan to help inform planting plans and maintenance of landscaping. The premise is promote neighbors working together to plant different types of trees that might not block a view or agreements to trim trees to make them less disruptive to a view.



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4.3

Views and Tree Canopy Coverage

Before talking to the neighbor, look at Figure 4.2, which overlaps the view types shown in Figure 3.1 with the inventoried tree canopy coverage shown in Figure 2.3. The Figure is intended to provide information about possible views and the density of existing trees that might influence those views.

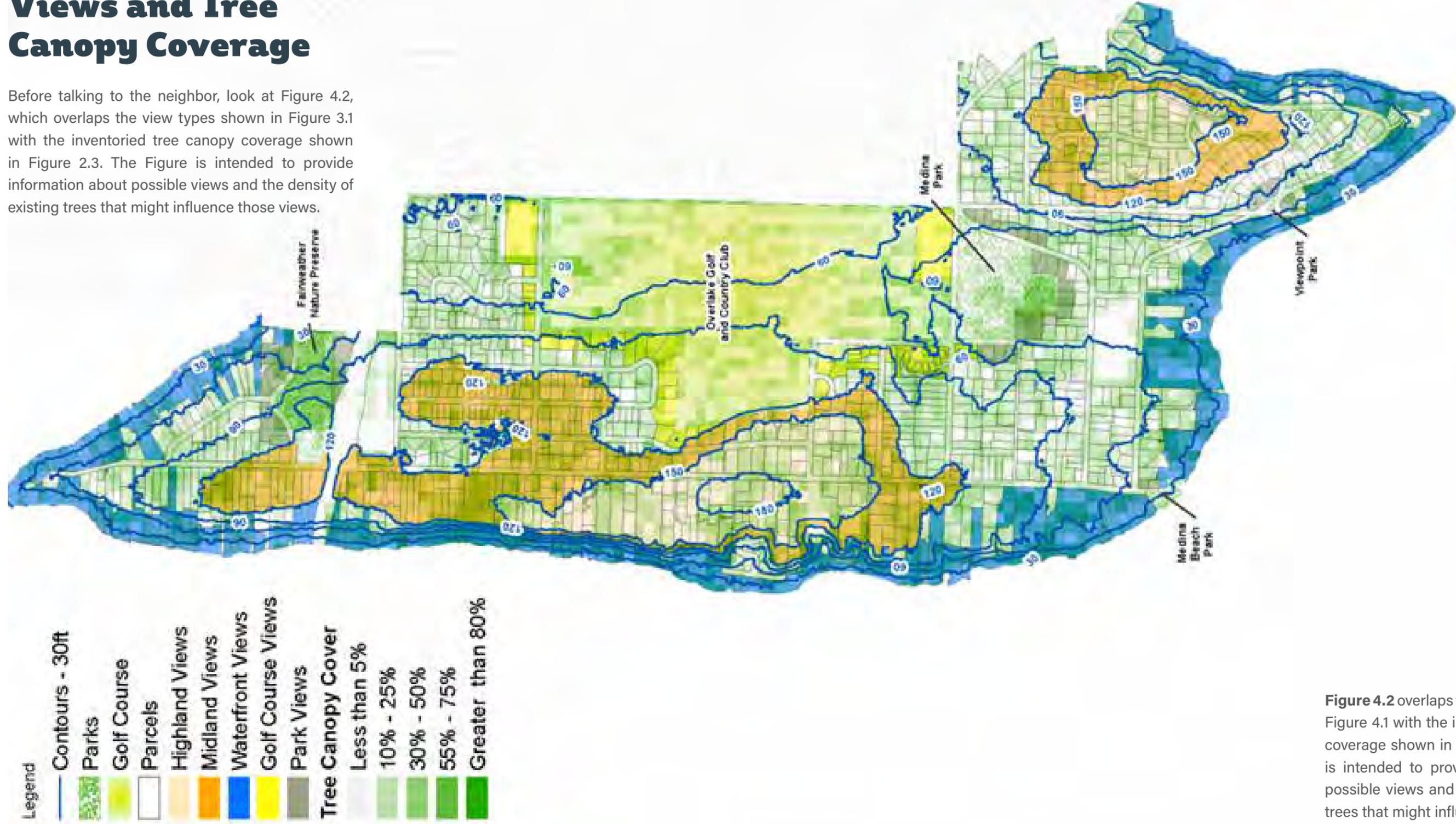
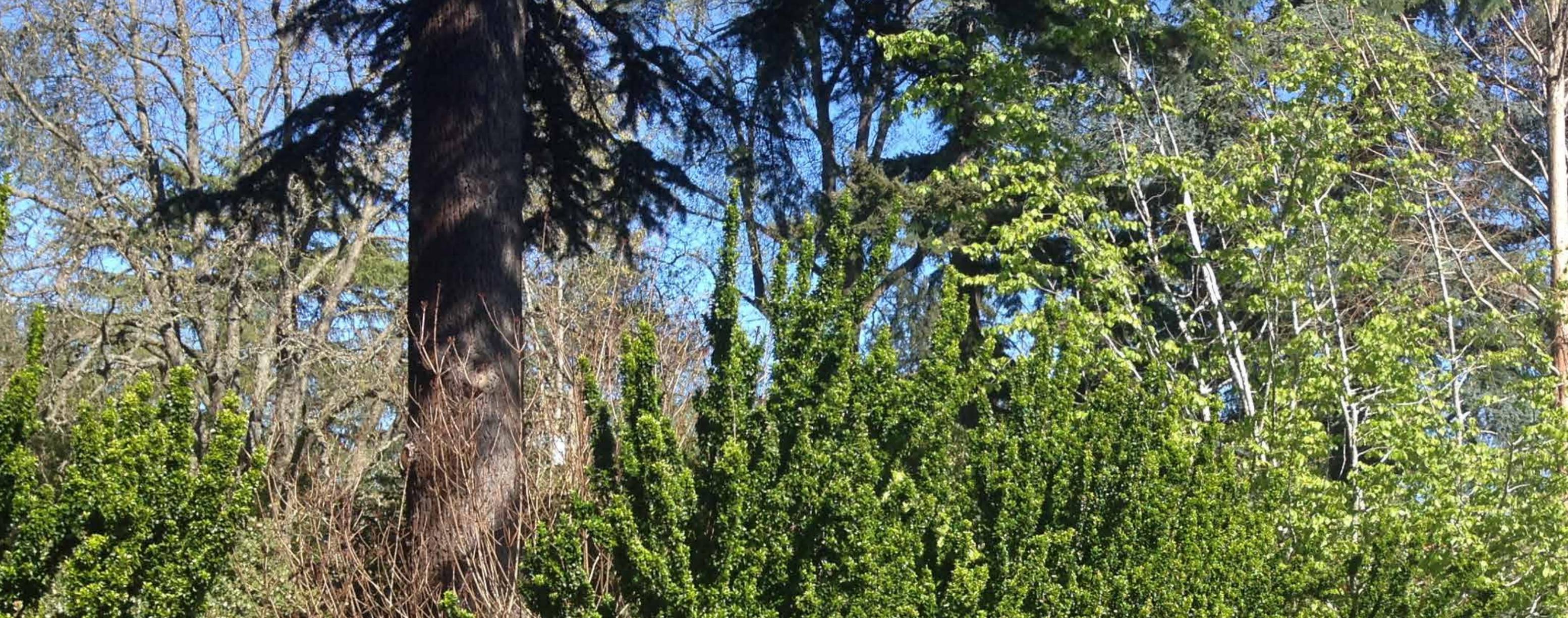


Figure 4.2 overlaps the view types shown in Figure 4.1 with the inventoried tree canopy coverage shown in Figure 2.3. The Figure is intended to provide information about possible views and the density of existing trees that might influence those views.



Tree & Vegetation Management

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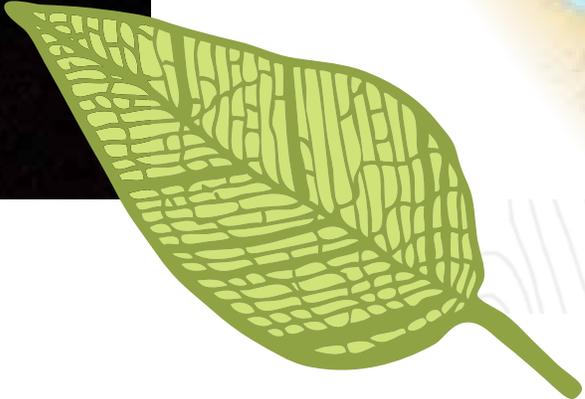
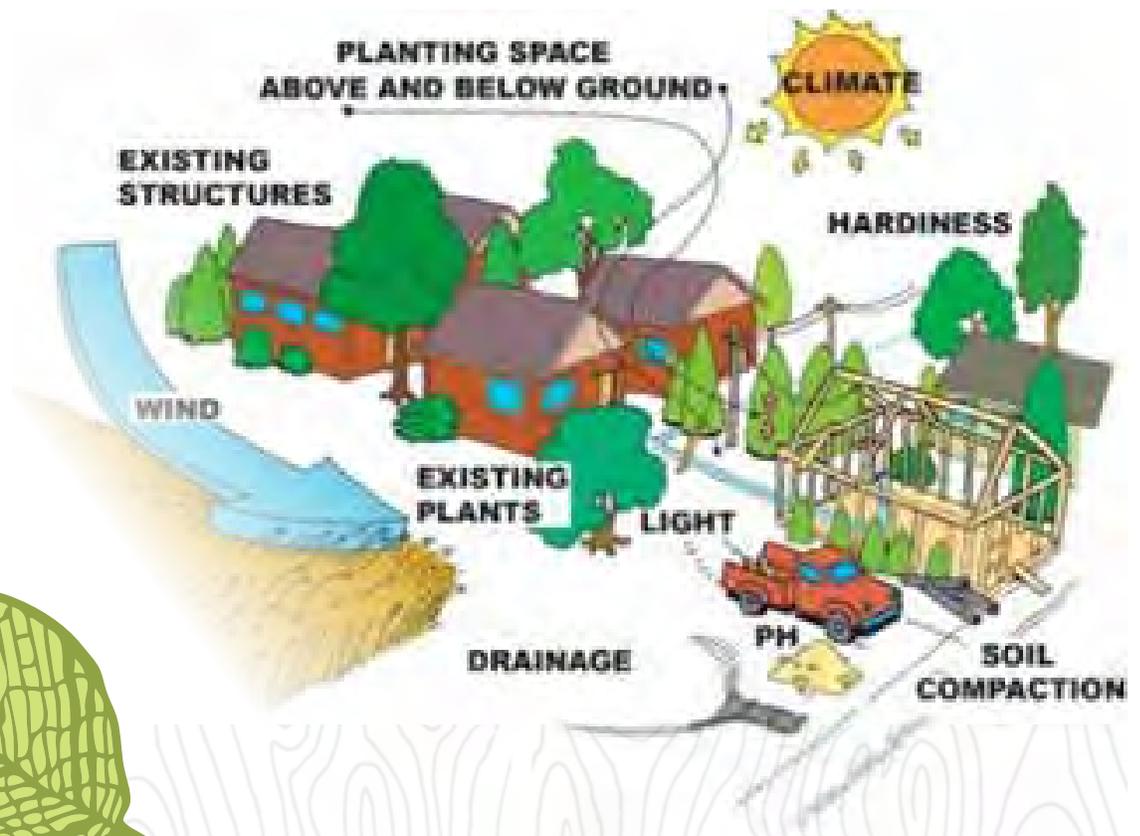
5



5.1

Introduction

As set forth in Section 1.2 of this plan, the guiding principle of this management plan is to ***pick the right place*** and then ***pick the right planting***. Traditionally the recommendation is to pick the tree first and then find the right place to plant it. However, experience in Medina has informed us that sometimes there might not be a right place for a particular tree due to conditions on the site including the possibility of obstructing a neighbor’s view. Conducting an inventory of the space first can provide information to help with selecting trees and other plants that can meet the property owner’s vision for landscaping on their property while ensuring a high probability of plant survival and less a chance for future conflict with a neighbor. Looking around, much of Medina contains mature landscaping that is that reduces the changes for landscaping being entirely renovated. Instead, the introduction of new trees and plants is likely to occur when existing trees or vegetation dies.





5.2

Picking the Right Place

In picking the right place to plant a tree or other plants, a three step process is recommended.

5.2.1 Step One

The first step in planting new trees and landscaping is to determine the above ground form and space for the plant. Some questions that can be asked to help inform this decision include:

- ✦ *How should the outdoor space be shaped by the planting?*
- ✦ *Is the tree or plant going to provide canopy over a space, a focal point in the landscape, a backdrop to an outdoor space or frame a view?*
- ✦ *How tall would the plantings need to grow at maturity to shape the space effectively?*
- ✦ *How tall would a tree need to be to frame the view?*
- ✦ *How are the outdoor spaces going to be used?*
- ✦ *Is the space going to be used for active recreation like a lawn area, is the space going to be a more passive woodland garden with a pathway or is the space going to be used to grow food and herbs?*
- ✦ *Is the planting site on a slope?*
- ✦ *Are the plantings to provide privacy screening?*



- ✦ *Is the planting site a transition between two outdoor spaces?*
- ✦ *Is there a lawn area or a vegetable garden nearby but not necessarily on your site?*
- ✦ *In which direction are these elements in relation to the sun's path through the sky?*
- ✦ *What size tree or bushes would provide the appropriate scale to the house & yard?*
- ✦ *What form of planting would provide a compelling focal point?*
- ✦ *Would it be advantageous to have the plant lose its leaves to gain sunlight and air-circulation in winter or would it be better to be evergreen to provide privacy screening to year round?*

Use these questions and others to identify the form and spatial considerations of an appropriate plant species selection. When examining height use tools to model the mature plants at their mature size; for example you can use a helium balloon and string to model the mature tree or shrubs height.

5.2.2 Step Two

The second step in planting new trees and landscaping is to determine soil conditions. See Section 5.4.3 for further discussion about soils.

5.2.3 Step Three

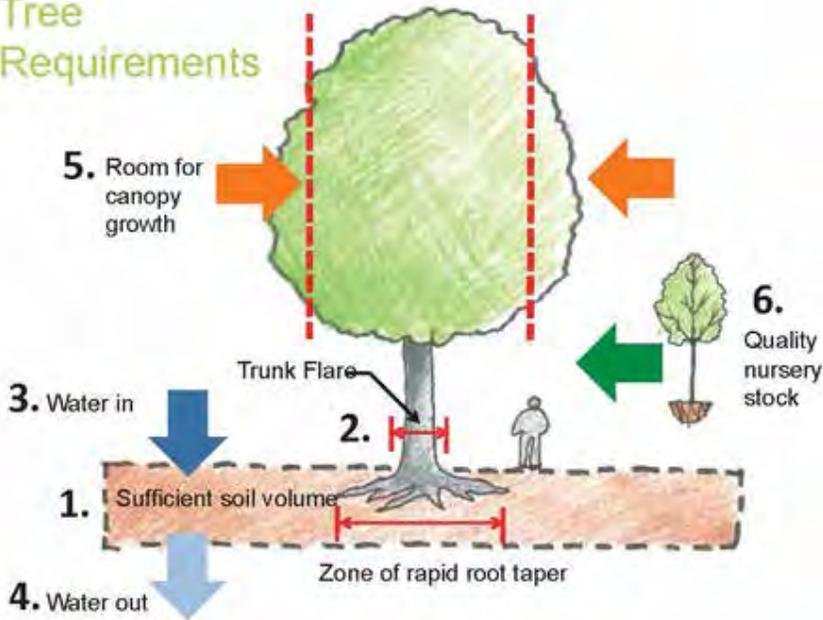
The third step in planting new trees and landscaping is to evaluate potential impacts on neighboring properties. See Section 4 for discussion on views. In addition, when discussing views, consider specific view features or landmarks, the extent of existing views, the direction of views, ground slope direction and steepness, existing trees and vegetation, desired sunlight access and desired airflow in relation to typical seasonal wind directions. Below is a diagram of wind statistics from Windfinder.com based on daily observations at Seattle-Tacoma Airport from January 2007 to April 2016. Data take between 7:00 am and 7:00 pm.

TABLE 5.2.3A Seattle Area Climate Data

	JAN	FEB	MAR	APR	MAY	JUN
Average high in °F	45	48	52	58	64	69
Average low in °F	36	37	39	43	47	52
Av. precipitation in inch	5.2	3.9	3.31	1.97	1.57	1.42
Days with precipitation	19	15	16	13	11	9
Hours of sunshine	74	99	154	201	247	234
	JUL	AUG	SEPT	OCT	NOV	DEC
Average high in °F	72	73	67	59	51	47
Average low in °F	54	55	52	47	41	38
Av. precipitation in inch	0.63	0.75	1.65	3.27	5	5.43
Days with precipitation	5	6	8	14	17	19
Hours of sunshine	304	248	197	122	77	62

**Climate data for Seattle, WA - 98164 - 1961-1990 normal - weather*

Tree Requirements



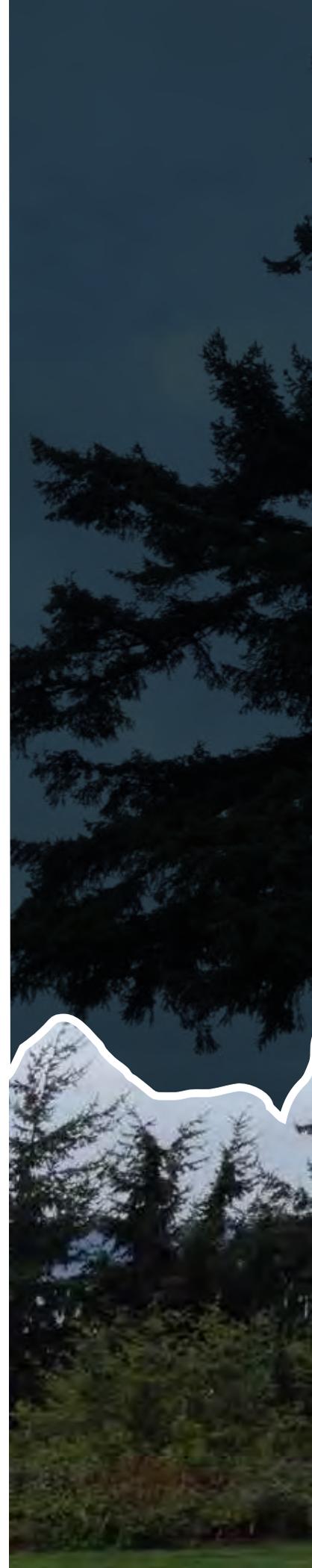
Desired sunlight access is also consideration that should be given to inform the right place. For instance, outdoor gathering spaces like a patio or deck are nice if they have direct sunlight from October through May, but are shaded June through September. Airflow is an important consideration in outdoor spaces too. If the outdoor space is shaded it is likely to benefit from having the breeze blocked as well. Below is a table from U.S. climate data (2016) that shows the typical temperature, precipitation and sunshine in the Seattle area.

TABLE 5.2.3B Title Here

Month of year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
	01	02	03	04	05	06	07	08	09	10	11	12	1-12
Dominant wind direction	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Wind probability >= 4 Beaufort (%)	20	23	27	20	13	12	6	6	9	16	22	24	16
Average Wind speed (mph)	8	8	9	9	8	8	7	7	8	8	9	9	8
Average air temp. (°F)	42	44	48	51	59	62	66	68	62	53	46	42	53

5.2.4 Other Considerations in Picking the Right Place

Medina is a community with mature landscaping. Often, a mature landscape contains vegetation that requires the removal of unhealthy or declining trees, shrubs and other plants. In replacing existing vegetation, consideration should be given to more appropriate plant species that will thrive amongst more mature plants and trees. Shadier and drier conditions often exist for these understory locations. Inventorying and understanding the conditions where a tree or other plant might be placed is important in picking the right tree or other plant.





An example of successional planting with newly planted trees to eventually replace the four mature trees as a landscape backdrop and a way to frame the adjacent view

5.3

Picking the Right Tree (Plants)

5.3.1 Important Considerations

After inventorying locations and selecting the right places, begin with the place where a tree or other plants will be installed. Pay particular attention towards overhead space and mature height and width of the plantings. Look for overhead power lines. When a tree or bush reaches its mature size, will it require pruning to maintain clearance for pedestrians and/or vehicles? Is the vegetation performing a screening function? If so, is the screening best for all four seasons or only summertime? These are some questions that should be answered prior to initiating the plant selection process. Answering these questions prior to the initiation of the plant selection process will also prevent the unnecessary removal of healthy trees planted in inappropriate locations. One of the easiest ways to determine if a tree at maturity will block views is to use a helium balloon and a measured length of string; a day without a breeze is helpful for field measurements with helium balloons.

It is best to select a plant that meets the criteria required by the planting site and desired by the landscape design. Be able to specifically describe the planting site to a nurseryman before you begin looking for the proper plant. The resulting landscape will mature with fewer hassles if this approach is followed.



Tree Tip!

Use simple tools, like helium balloons, to model mature heights of tree species.

5.3.2

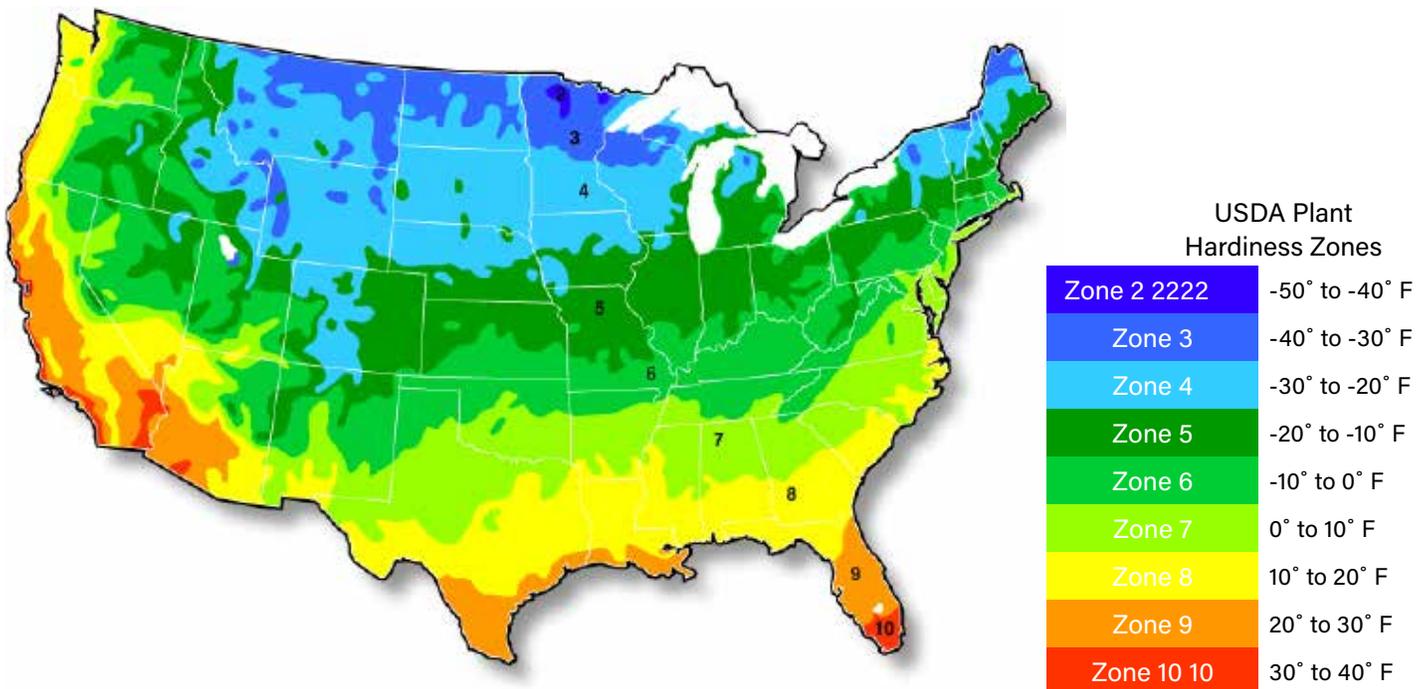
Hardiness Zones

There are two plant hardiness guides used in the Pacific Northwest, the United States Department of Agriculture's (USDA) plant hardiness zones and the Sunset zones. The USDA zones are based on average annual extreme minimum temperature of 15 to 20 degrees Fahrenheit for the years 1976 through 2005. The Sunset zones are based on length of growing season, timing and amount of rainfall, winter low temperatures, summer high temperatures, wind and humidity. Medina is within the USDA plant hardiness zone of 8b and the Sunset zone of 5.

5.3.3

Native Versus Non-Native Species

Native plant species are preferred plantings because they have evolved to survive in the conditions of the Pacific Northwest. Typically native trees handle extreme weather events with fewer problems than non-native trees. Non-native plants grow well in the Pacific Northwest too, but can be prone to challenges of summer drought and winter soil saturation, low soil nutrients and the myriad of disease pathogens typical to the Pacific Northwest. Pests, both exotic and native, take advantage of a tree's stress. In order to diminish pest's impact upon the urban forest, a diversity of tree and plant species is the best approach to establish a resilient landscape which will remain healthy and viable into maturity. Diverse plant species also provide a more informal forested appearance, which is one of the goals of the Medina Comprehensive Plan. Please see appendix 1 for a list of resource organizations to expand your diversity of native plants.



5.4

Evaluating Picking the Right Place and the Right Plant

A healthy landscape begins with careful planning. With a little research and a simple layout, a landscape plan can be created that will cool your home in summer and tame the winter winds. A well-planned yard will contain trees that grow well in the soil and moisture of your neighborhood and when properly placed will avoid collisions with power lines and buildings, and views. In preparing a well thought-out plan, there are multiple elements to take into consideration.

5.4.1 Privacy and Screening

Throughout the City, trees and shrubs are planted in the form of a hedge to provide screening for privacy and protection. Problems arise as the trees and shrubs grow larger. Their roots can infiltrate cracks and seams of existing utilities and structures. Trees and shrubs can also grow unevenly as differences in soil, drainage, and exposure can result in variable growth. Nearby vegetation can shade and compete for nutrients with plantings intended for first and/or second story screening. These problems are best addressed through appropriate planning, selection and maintenance of hedges.

Privacy screening in Medina has steadily been changing from an informal variety of evergreen plantings used to buffer one house's views into another into a formal form of trimmed hedges (typically pruned and more formal in appearance due to the limited available width) separating the houses along a shared property line. Leyland cypress is a common choice for these more formal hedges. When any formal hedge is planted which requires regular maintenance to maintain

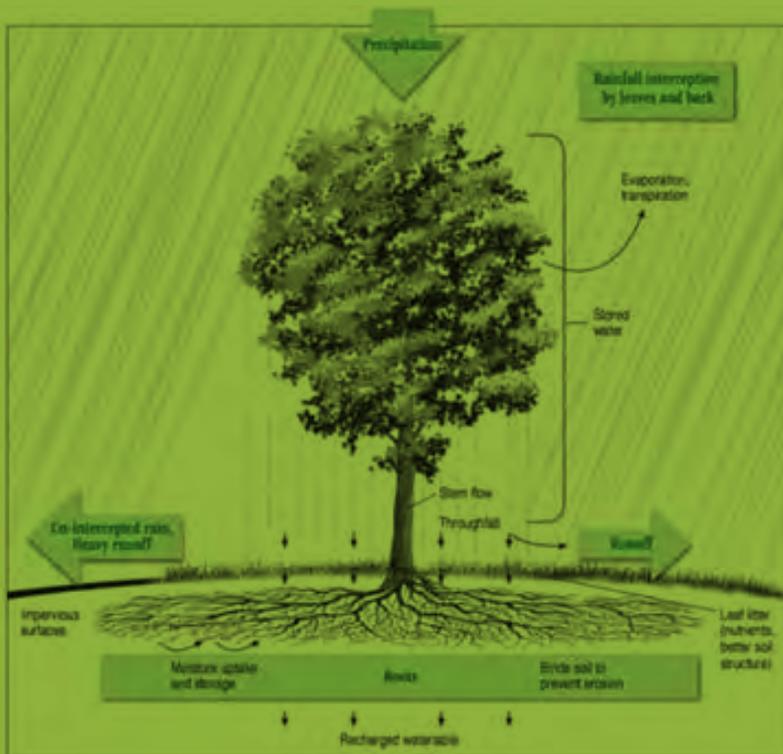
its width and height, it is recommended that neighbors meet to discuss the acceptable height range (on a slope this might be a height at a certain elevation), acceptable width range, trimming interval and the potential sharing of maintenance costs. As always, it's best to record the discussion in writing. Trimmed trees to be used as a hedge are exempted as a significant tree because they do not significantly contribute to the City's tree canopy coverage. Also, occasionally a hedge, in part or whole, needs to be replaced due to a lapse in maintenance, disease or pest infestation diminishes its health and creates a break in the trimmed hedge.

Newly planted hedges should be coordinated between neighbors to provide privacy benefitting both neighbors and to standardize the maintenance regime. For instance, unless coordination occurs between neighbors a newly planted hedge may end up being maintained improperly by the adjoining neighbor. This could lead the hedge to become diseased, infested with pests or simply poorly maintained, all of which can make a nice looking

5.4.2 Runoff Control

The hard surfaces of rooftops, driveways, decks, etc. are impervious to water infiltration, thereby increasing the volume and flow of water runoff from a storm. Rapidly moving water can erode soils and increase siltation leading to water pollution in Lake Washington. Trees and plants play an important role in stabilizing soils and preventing erosion. Some steps in reducing storm water runoff include:

- Promote tree canopy coverage so that leaves can intercept rainfall, reducing the initial load and slowing down the rates to allow time for more infiltration.
- Use more vegetation, such as groundcover, to slow water runoff and increase infiltration.
- Low impact development – the goal of low impact development is to mimic a site’s predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source of rainfall. The incorporation of trees and other vegetation are important features of low impact development.



hedge turn ugly. A regularly pruned and trimmed hedge will maintain a uniform and contained appearance. An example hedge maintenance agreement is in the Appendix.

When space is available, it is recommended to combine a variety of evergreen and deciduous plant materials into an informal screen rather than install a formal, clipped hedge. The maintenance will be less with the informal screen and the habitat value more rich. This is also required in the City’s rights-of-way; the tree code specifically requires informal tree plantings within the rights-of-way.



5.4.3 Soils

There are a variety of soils in the City of Medina. Figure 5.4.3 maps the general location of soils as inventoried by the United States Department of Agriculture. Actual soil types are likely to vary within a property so the actual soil conditions should be determined by a site-specific investigation.

One method for determining soil conditions is to dig a hole and conduct three simple soil tests, and a simple infiltration test. The hole should be two to three feet deep and two feet in diameter. This is the depth in which almost all roots inhabit soils in the Pacific Northwest, and is also the minimum diameter for a typical 2-inch caliper deciduous tree root ball. The ease of digging the hole helps estimate the ease of roots penetrating the soil. If the soil digs easily for at least two to three feet, the soil is a fairly de-compacted growing medium. If a hard layer is encountered during digging then additional measures are needed to improve the soil condition to improve root growth.

To determine the characteristics of the soil, after digging the hole the soil grab a small amount of soil in your hand and wet it allowing for excessive water to drain away. Next, rub the wetted soil between your fingers. If the majority of the texture is:



Sticky Soil



The soil likely contains clay



Smooth Soil



The soil is likely dominated by silt.



Gritty & Rough Soil



The soil is likely sandy.

Keep the wetted soil in your hand and perform what is known as the “Ball squeeze test”. Squeeze a moistened ball of soil in the hand. Coarse texture soils, which are either sand or loamy sands, break with slight pressure. Medium texture soils, sandy loams and silt loams, stay together but change shape easily. Fine textured soils, which are clayey or clayey loam, resist breaking.

For the last test, perform the “Ribbon test”. Squeeze a moistened ball of soil out between thumb and fingers. If you can form a ribbon less than one inch and it feels gritty the soil is a coarse, sandy soil like a sandy loam. If it feels equally gritty and smooth then it is a loam. If it feels more smooth than gritty it is a silt loam. If you can form a ribbon one to two inches long and it feels gritty it is a medium texture soil. If the one to two inch long ribbon soil feels more gritty than smooth it is a sandy clay loam, but if it feels equally gritty and smooth it is a clay loam. If it feels more smooth than gritty it is a silty clay loam. If the ribbon formed is greater than two inches the soil is a fine texture, clay soil. If this ribbon of soil feels grittier than smooth it is sandy clay, but if it is equally gritty and smooth then it is considered clay. If the two inch or greater ribbon soil is very smooth it is silty clay.

Before refilling the hole it is best to perform a simple infiltration test which will take approximately 3.5 hours. First pre-soak the soil by wetting it down. Next, add water to a 12-inch depth within the hole and continue adding water to maintain a 12-inch depth for 30 minutes. This completes the soil wetting process. Record the number of inches the water depth has fallen at one and two-hour increments after completing the adding of water to the hole. If the number of inches the water depth has fallen is greater than three inches then refill the hole to a 12-inch depth and record the change in water depth every 15 minutes for one hour. If the number of inches the water depth fell was between one and three inches then record the change in water depth every 30 minutes for one hour. If the number of inches the water depth fell during the pre-soak process was 1 inch or less then record the change in water depth at the end of 1 hour.

Another simpler and less time consuming option to the infiltration test is available as follows:

1. Wet the hole by filling with water to a depth of 12 inches for 15 minutes.
2. Allow the water to drain.
3. Re-fill the wetted hole with water to a depth of 12 inches or more and time how long it takes for the water to drain.
4. If the infiltration rate is more than 15 minutes per inch of water depth, then the drainage is very poor. If the water level is an inch lower in less than two minutes, the drainage is considered very fast. The average rate for good drainage is seven to eight minutes per inch of water.

Soil type descriptions within Medina per the USDA Natural Resources Conservation Service:

ALDERWOOD SERIES

These consist of moderately deep to a densic contact, moderately well drained; high saturated hydraulic conductivity above the densic layer and low saturated hydraulic conductivity in the densic material. Soils formed in glacial drift and outwash over dense glaciomarine deposits. Alderwood soils are on glacially modified hills and ridges on glacial drift plains and have slopes of 0 to 65 percent.

Used mostly for woodland, field crops, hay and pasture orchards, vineyards, wildlife habitat, watershed, and non-farm uses. The natural vegetation is Douglas-fir, western hemlock, western red cedar, and red alder with an understory of salal, Oregon-grape, western bracken fern, western sword fern, Pacific rhododendron, red huckleberry, evergreen huckleberry, and Orange honeysuckle.

KITSAP SERIES

These consist of very deep, moderately well drained; slow or medium runoff; slow permeability soils formed in lacustrine sediments. Kitsap soils are on terraces and terrace escarpments and have slopes of 0 to 70 percent. These soils are usually moist but are dry in the moisture control section for 45 to 60 consecutive days following summer solstice. The mean annual soil temperature is estimated to range from 50 to about 53 degrees F. These soils range from moderately acid to neutral throughout.

Used mostly for forests and some cropland and pasture. Native vegetation is Douglas fir, western hemlock, western red cedar, red alder, big leaf maple, and willows, with understory of western bracken fern, western sword fern, salal, Oregon-grape, trailing blackberry, red huckleberry, vine maple, evergreen huckleberry, red elderberry, and wild ginger.

ARENTS ALDERWOOD MATERIAL

A kind of manmade soil, with deep mixing of different types of Alderwood soils due to ploughing, digging, etc.

BELLINGHAM SERIES

These consist of very deep, poorly drained soils; ponded or very slow runoff; slow permeability formed in loess, alluvium, and lacustrine sediments. A water table occurs at or near the surface from November through April unless the soil is drained. These soils are in depressions. Slopes of 0 to 3 percent.

Used primarily for cropland and pasture. Grass-legume hay is the principal crop. Native vegetation is predominantly red alder, western red cedar, big leaf maple, western hemlock and Douglas-fir with an understory of western sword fern, trailing blackberry, western bracken fern, thimbleberry, salmonberry, huckleberry, and Douglas spiraea.

SEATTLE MUCK

These consist of very deep very poorly drained; very slow to ponded runoff; moderate permeability organic soils formed in herbaceous and woody deposits in depressions in river valleys and glacial till plains. Slopes are 0 to 1 percent.

Most Seattle soils have been cleared and drained for use as cropland or pasture. Hay, corn silage, blueberries, and truck crops are common crops. In the natural state the vegetation consists of red alder, western red cedar, black cottonwood and Sitka spruce with an understory of sedge, rush, cattail, hardhack, trailing blackberry, red elderberry, devils club, Siberian miners lettuce, trillium, salmonberry, and lady fern.

URBAN LAND

These consist of deep, well and somewhat poorly drained, runoff is medium to rapid; over-all permeability is slow soils on uplands. They formed in material weathered from crystalline rocks. Slopes range from 0 to 25 percent.

Used for growing general crops and as pasture. Native vegetation consists of black oak, yellow poplar, hickory, dog-wood, and Virginia pine.

Figure 5.4.3:

USDA Soil types in the City as mapped by the National Soil Conservation Service





5.4.4 Root Control

Root growth is a function of three main factors: available space, location of available water and oxygen, and the species genetics. Plants that have an aggressive root system can create problems for underground utilities and structures such as drainage pipes, roads, sidewalks and patios. It can also be a nuisance to neighboring properties by invading and competing with desired vegetation on other properties.

Roots typically cause a nuisance by clogging a pipe, exacerbating a crack in concrete or lifting pavement out of its original plane to create a tripping hazard.

When a pipe is clogged it is recommended to have the pipe scoped to determine if tree roots are the cause of the clog. Images of tree roots clogging pipes along with a diagram or plan locating the clog within the pipe on the property provides details helpful in determining if the best course of action is to simply regularly grind the roots out of the pipe or replace the pipe or remove the tree. If removing the tree is the most prudent action, then the pipe diagram will help determine which tree's roots might be clogging the pipe. Modern pipes have better seals which are more likely to keep roots out of the pipes. There is also a technique called "pipe bursting" for replacing pipes without trenching the entire distance for the pipe replacement. In addition, HDPE pipes are seamless which minimizes future root intrusion, breakage, leaks, calcification build-ups and other problems you get with old pipe materials.

If a foundation is cracked and a root is beginning to penetrate the crack it is best to excavate at least 12 inches beyond the face of the foundation, prune the root and fill the crack. Additionally, one could place a drainage board on the exterior of the foundation wall to provide a physical barrier if another root explores the filled crack as well as to reduce moisture penetrating the crack. Tree roots seek nutrients, water and anchoring – it is best to regularly inspect a foundation for cracks and minimize the opportunity for roots to expand any cracks as soon as they are found.

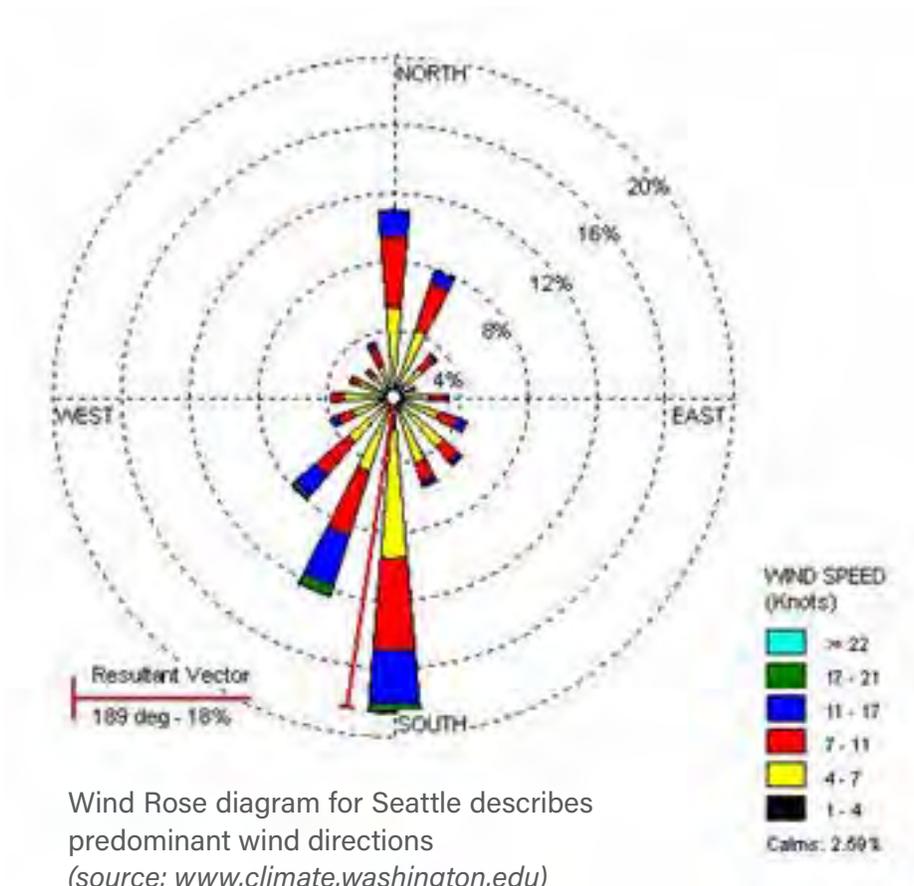
Tree roots lift pavement because the underside of pavement changes temperature more quickly than soil and this difference causes condensation to accumulate beneath pavement. Roots exploit this condensation as a water source when they have an opportunity. The best way to prevent roots exploiting the condensation which forms beneath pavement is to ensure that the base course of pavement is prepared and compacted appropriately and that the planting area for a tree is de-compacted to a depth which will support drainage and tree root plate anchorage. A second common reason for tree roots lifting pavement is due to the planting area remaining compacted from construction activities and the root zone only able to easily expand in the upper six inches of soil. As the roots expand in this setting they must expand horizontally to resist the leverage of their vertical growth. In the Pacific Northwest most native trees root zones occupy the space within two to three feet of the surface with occasional anchoring roots penetrating as deep as possible.

Root pruning is an acceptable arboricultural practice but, like pruning branches, it must be minimized to maintain the health of the tree.

5.4.5 Maximizing Energy Savings by Shading and Wind Protection

The Seattle/Bellevue/Medina weather typically experiences average minimum and maximum temperatures ranging between 25° F and 90° F with monthly average wind speeds of six miles-per-hour. This weather can be buffered with appropriate placement of trees and shrubs in relation to a house to save energy and increase the livability of both indoor and outdoor spaces. The common approach is to use deciduous trees to shade the west and southwest sides of a home during the summer and to use evergreen trees along the north side of a house to diminish winter winds.

Deciduous trees should be located close to the house on the west and southwest side of the house. This will allow for the house to take advantage of the sun's lower inclination during the winter and higher inclination during the summer. Evergreen trees planted on the north side of the house do not need to be taller than the house to diminish wind related heat loss. Additionally foundation shrubs are useful for diminishing cold air intrusion.





5.4.6 Landscaping within the Shoreline

Vegetation along the shoreline helps to cool the nearshore water and stabilize soils, which filter pollutants and fine sediments, contributing to improved water quality. Trees and shrubs provide habitat for many species and provide food for aquatic species. The shoreline master program includes provisions for shoreline vegetation conservation to protect and restore vegetation along shorelines that contribute to the ecological functions of shoreline areas. These activities include “the prevention or restriction of plant clearing and earth grading, vegetation restoration, and the control of invasive weeds and nonnative species.”

5.4.7 Over-Mature Tree Management and Succession Planting

Medina contains some very mature landscaping. Some of these mature plants are reaching the end of their safe useful lifespans. In order to maintain the established appearance, property owners might choose to begin planting sapling trees which will eventually mature to replace the over-mature canopy trees. This kind of planting will ensure that the landscape will retain the design intent and function without interruption if and when the senescent trees meet a risk level requiring their removal.

5.4.8 Imminent Threat

The City’s codes contain a process for an emergency tree removal where the tree poses an imminent threat to life or property. The process includes common sense and documentation. An imminent threat is the tree in the act or about to be in the act of falling or breaking in a manner that puts people or property at immediate risk. Prior permission is not required to remove a tree hazard that poses an imminent threat although it is recommended to notify City Hall if time allows. Documentation of an imminent threat should take place and include photographs and/or video showing the condition of the tree prior to its removal. This information should then be provided to the City after the tree is removed as evidence of the imminent threat. If the imminent aspects of the hazard are not documented prior to the tree’s removal, it could constitute a violation. If the evidence supports the tree posing an imminent threat, the tree removal is exempt from any further permitting.

5.4.9 Safely Living with Trees

The Puget Sound has a great climate and environment to grow very large trees, some over one-hundred feet tall with a diameter of six-feet and greater. These large trees have a tremendous mass and if they were to fall they could cause a lot of damage to people and property. Fortunately our native trees have adapted to withstand many of the normal weather conditions we regularly experience with the areas ubiquitous fungi responsible for the majority of whole tree failures. The Douglas fir, for instance, typically sheds twigs, sometimes large branches and occasionally loses its top or leader in storms. Oftentimes you can see the tops of Douglas fir trees with a canted lean to the same direction. This is from the wind straining the tops during a storm event. The tops retain the deformity caused by the strain long after the wind storm has subsided.

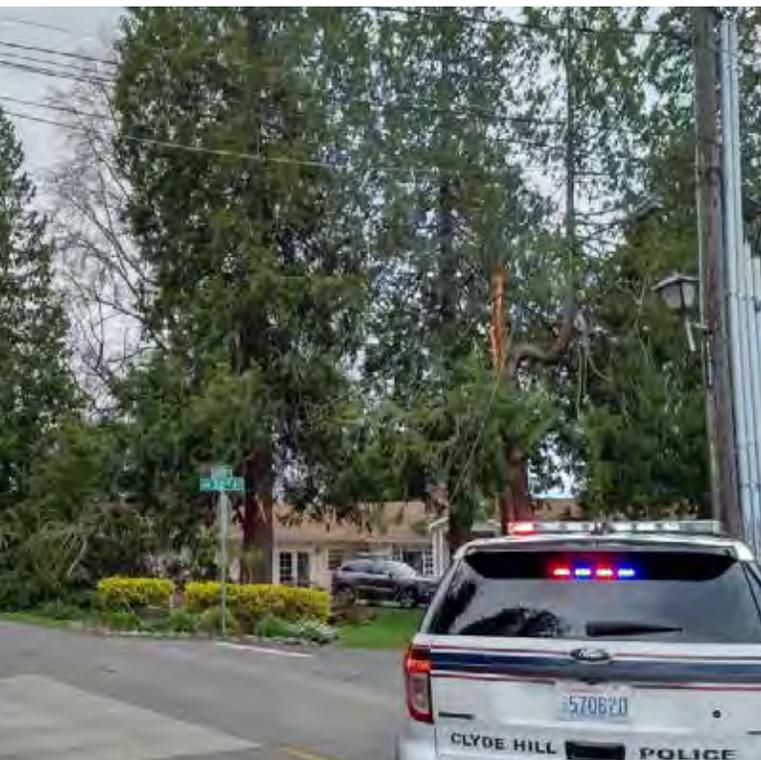


While wind produces the most failure of twigs and branches, soil saturation combined with high wind can cause whole tree failure. This is particularly the case when nearby trees have been removed. Windfirmness is a term used to describe a tree's ability to withstand the region's normal storm conditions. Removal of nearby trees may increase the remaining trees' exposure to wind causing the stem to break at or near the base of the trunk. Occasionally the root plate of a tree may fail because soil conditions prevent roots from penetrating deep into the soil and the soil becomes saturated from precipitation. Oftentimes loamy soil is shallow above either a compacted till or a lens of compacted clay and these two conditions coupled with saturated soil and wind can lead to a root plate failure.

Superficial landslides can be caused by trees failing and their roots pulling up soil, however large landslide events are more contingent upon soils, slope and hydrology. Trees and vegetation should be established on slopes to attenuate surface erosion but vegetation cannot protect against erosion or landslides. If areas of bare ground appear on steep slopes erosion control fabric or mats may provide immediate erosion control. Vegetation can be planted through the fabric or mats to ensure longer term surface erosion is controlled. The Washington State Department of Ecology website contains additional information regarding managing vegetation on coastal slopes.

Trees too close to a roof or exterior wall can cause damage during their swaying in winds. They can also increase the growth of moss and also provide vermin with the ability to access the home. Clearance of six feet between the house and tree branches is likely to diminish all three of these concerns.

Lightning protection systems for trees are very unusual in Western Washington. Most lightning strikes in Western Washington cause damage to the tree but do not start fires.



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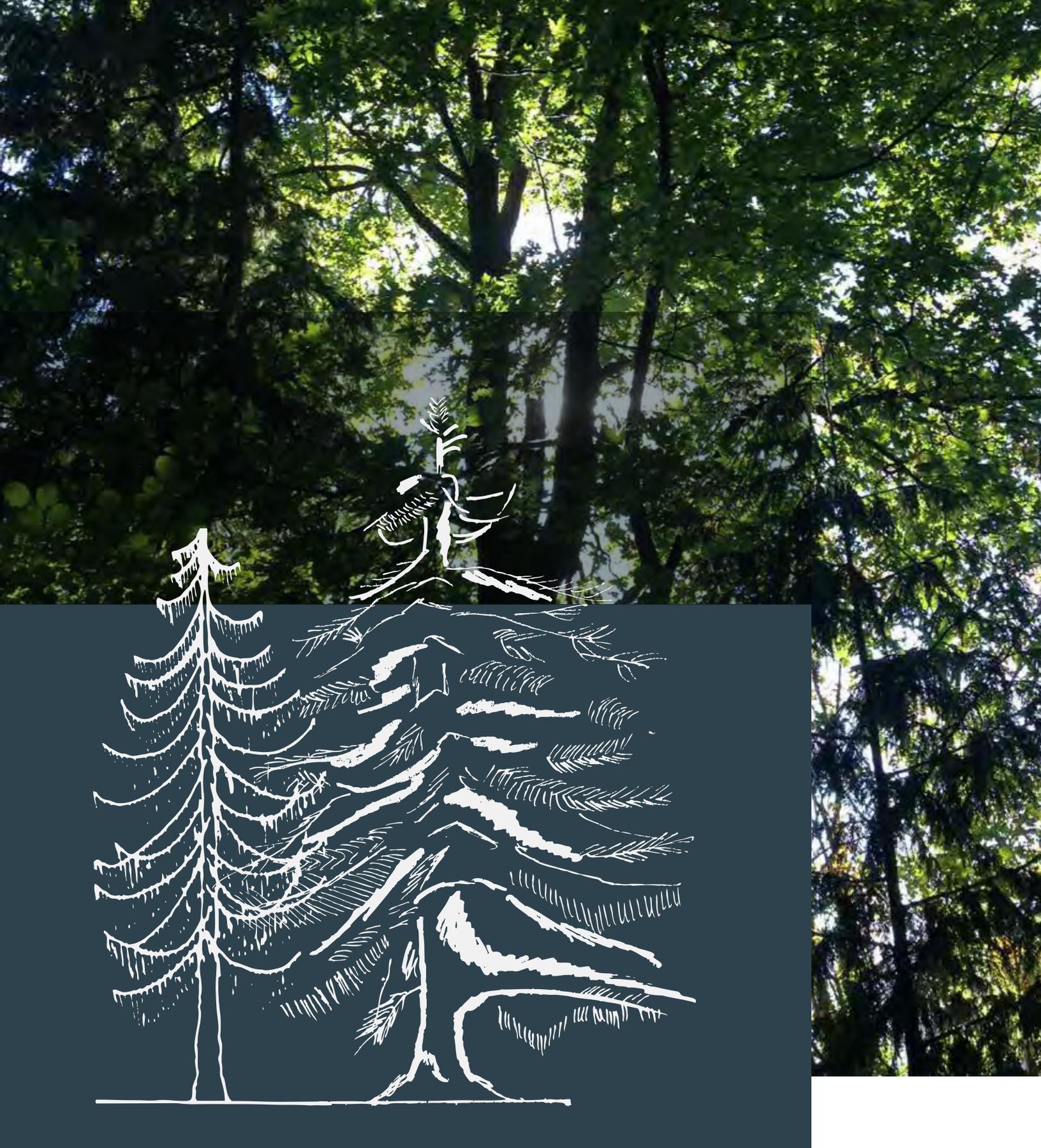
Tree Protection Measures During Construction

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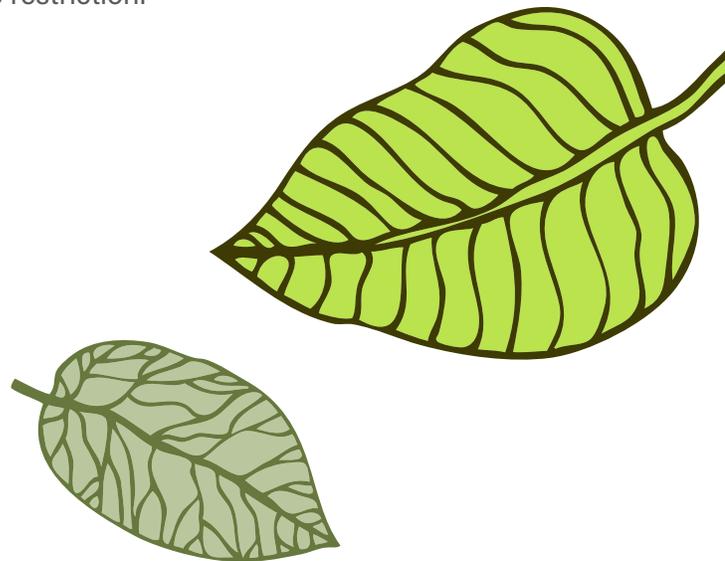


6.1

Tree Protection Measures Required

Medina Municipal Code Chapter 20.52.330 requires tree protection measures are implemented during construction. These include establishment of tree protection zones and install protective fencing, limit grading levels, install tree wells, designate construction site set-up away from significant trees, least impactful trenching activities, implement a care program, and others.

These requirements may be deviated from with an arborist recommendation and approval by the City. Arborists may provide a limit of disturbance (LOD) for specific trees during a construction project. The LOD is likely to acknowledge a protected root zone (PRZ), a critical root zone (CRZ) and existing root zone restrictions. The protected root zone restriction will be larger than the critical root zone. One typical example of a deviation from standard tree protection measures is when a paved driveway runs through the tree protection area. This area is already compacted and in many occasions would be considered a root zone restriction, limiting the expansion of roots beneath the paved driveway. Another example might be if an existing house foundation is within the LOD. The existing house foundation would also be considered a root zone restriction and would likely be discounted from the LOD. If a proposed development used a similar location to place its foundation the tree would likely incur minimal root zone compromise because of the previous house foundation providing a root zone restriction.

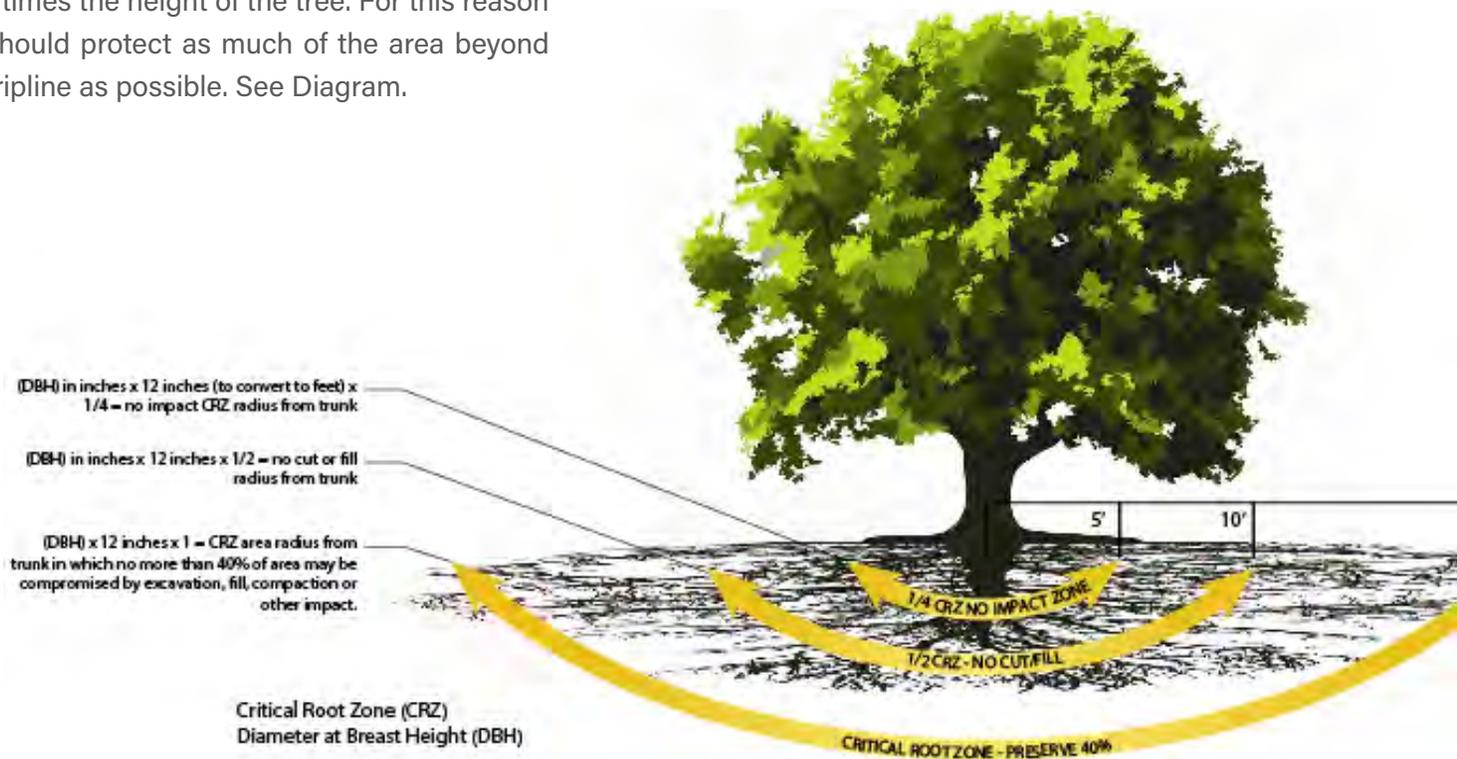


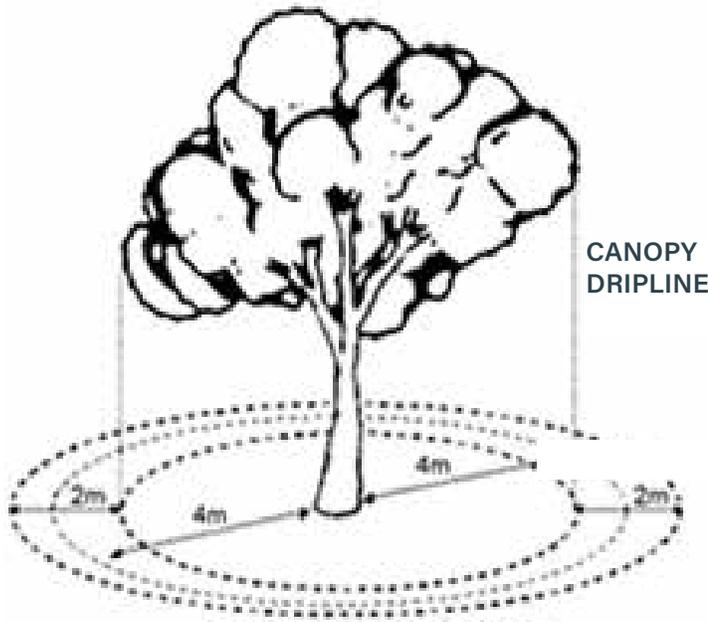
6.2

Protecting Trees During Construction

Trees can be damaged or killed unintentionally by a wide range of construction activity. Some are obvious such as breaking branches or gouging the trunk. However, the worst damage is often to the root system. Typically, approximately 90-95 percent of a tree's root system is in the top three feet of soil, and more than half is in the top one foot. This part of root system is called the Protected Root Zone (PRZ) and construction damage should be minimized to ensure continued health of the tree. One common method used to identify the PRZ is to define it as the "dripline"—the area directly below the branch tips of the tree. However, many tree roots extend beyond the branch tips, sometimes to a distance of two or more times the height of the tree. For this reason you should protect as much of the area beyond the dripline as possible. See Diagram.

You can boost your trees' chance for survival if you make sure they are as healthy as possible before construction activity begins. Some considerations that can boost a tree's chance for survival include supplemental water if rainfall is not adequate for the species. Fertilization if soil tests or obvious nutrient deficiency symptoms indicate they are nutrient stressed and de-compaction of root zone. Oftentimes, maintaining arborist mulch of two to four inches depth over the root zone will provide all of the nutrients necessary to support the tree. It will also diminish the need for supplemental water.





EXTENT OF TREE PROTECTION ZONE

Supplemental water should be targeted for penetration to deep roots by watering slowly for an extended amount of time. For example, a tree which has been planted for five years would likely do better with supplemental water being given at a rate of 0.1 gallons per minute for four hours every two weeks rather than one gallon per minute for 18 minutes every other day. It's the same amount of water except that the former application allows the water to penetrate more deeply into the soil.

Fertilization is only suggested if the tree is obviously lacking in nutrients. Typically this will be observed through needle or leaf color, particularly in summer. Native trees do not need supplemental fertilization because they have adapted to thrive in geologically young and nutrient poor soils.

Soil compaction is the single largest killer of urban trees. Tree roots need un-compacted soil to provide stability and expand roots to support continued growth. Uncompacted soil allows roots to absorb water and other necessary

nutrients. Compacted soil prevents roots from expanding and limits the water holding capacity, which diminishes the ability of a tree to reach and maintain health at maturity.

Prevent soil compaction by carefully selecting storage areas, ensure they are generous in size, and plan to keep vehicular and pedestrian travel away from trees. When there is a conflict between the desire to keep a tree and allow for travel within the root zone there are some solutions. By placing sheets of plywood over a layer of a six inch or greater depth of arborist mulch the compaction is minimized. The plywood and arborist mulch typically spread the load and prevent the soil from becoming too compacted during the construction. Irrigate the protection root zone of the trees regularly during construction—keep them from becoming water-stressed.

Improper handling or disposal of materials used during construction also can harm roots. For example, wood products treated with pentachlorophenol and creosote can be deadly to tree roots.

For all digging operations, exposed roots should be cut cleanly to promote quick wound closure and regeneration. Vibratory plows, chain trenchers, and hand tools do a better job at this than bulldozers and backhoes. Minimize damage by avoiding excavation during hot, dry weather; keeping the plants well-watered before and after digging; and covering exposed roots with soil, mulch, or damp burlap as soon as possible.



Right-of-Way Tree Stewardship

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7



7.1

Introduction

The Medina Comprehensive Plan outlines a landscape plan that perpetuates the informal and natural appearance of Medina’s street rights-of-way. The trees and vegetation within the rights-of-way represent a resource enjoyed by the general public and the adjoining property owners alike, and are a defining characteristic of the community. Responsible planting and maintenance of these trees and vegetation are important to the well-being of the community. Private property owners play an important role in both planting and maintenance since their land and trees adjoining a majority of the street rights-of-way. This plan sets forth a stewardship program and opportunities for partnerships in planting and managing trees and vegetation within the city’s street rights-of-way.

7.2

Guiding Principles

The following are guiding principles for managing trees and vegetation within the City’s rights-of-way:

- Public Safety.
- Science-Based Decision Making – picking the right place and then picking the right tree.
- Industry-Recognized Best Management Practices (ANSI A 300 standards for tree care operations)
- Plant Diversity.
- Maintaining the community’s tree canopy coverage for the long-term.



7.3

Role of the City



The primary role of the City in planting and maintenance of trees and vegetation inside the city rights-of-way is public safety. RCW 35.21.310 grants powers to the City to require property owners to remove or prune trees or vegetation that overhangs or obstructs sidewalks or streets, as well as causes a fire hazard or other menaces to public health, safety or welfare. Examples of vegetation management and safety includes, but is not limited to:

- Keeping signs visible to drivers.
- Keeping road users (vehicles, bicycles and pedestrians) visible to each other.
- Improving visibility of wildlife near the road.
- Keeping sidewalks and pedestrian paths clear and free from overhanging vegetation.
- Removing trees close to the roadway which could result in a severe crash if hit.
- Improving winter road maintenance when snow and ice hit.
- Helping public drainage systems function as designed.
- Preserving pavements through daylighting and root system control.
- Controlling noxious weeds.

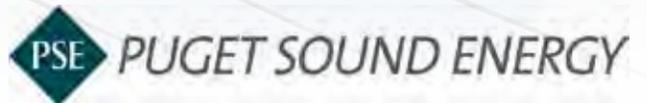
The City's Public Works Department takes a leading role in maintaining trees and vegetation in open and closed rights-of-way in the planter strips along 84th Avenue NE, along City Parks, and around city owned trails.



7.4

Role of Private Property Owners

Medina Municipal Code Section 12.32.070 provides property owners an allowance to plant trees, bushes, and other vegetation with city rights-of-way, but requires them to maintain a safe line of sight for vehicles attempting to enter the street and for pedestrians. Additionally, MMC 20.52.420 assigns responsibility to property owners the maintenance of all trees, shrubs, and other landscaping within the city right-of-way adjoining their property that was planted by the property owner, a previous property owner, or through an agreement with the City. Regardless of who planted the vegetation, all adjoining property owners have responsibility to ensure trees, shrubs and landscaping in the adjoining right-of-way does not interfere with the free passage of vehicles and pedestrians, or causes risk of danger to the public or property.



7.5

Puget Sound Energy Overhead Powerline Maintenance

Puget Sound Energy (PSE) is included in the stewardship plan because they play an important role as an entity in maintaining right-of-way trees by keeping vegetation clear of overhead power lines. The clearance zone is generally a vegetation-free 12-foot radius around the power lines. However, the appropriate clearance is determined by the line voltage and the growth potential of trees near the lines. To keep powerlines clear of threatening vegetation, PSE schedules regular pruning and tree clearance around its distribution and transmission power lines on a three to six year cycle.

Additionally, according to PSE, more than two-thirds of tree-related outages are caused by trees located outside of the normal right-of-way. Besides the schedule clearance, PSE has established a Tree Watch program to help keep utility lines clear. Through the Tree Watch program, PSE coordinates with local communities and property owners to remove diseased and dying trees that are at risk of knocking into power lines beyond the rights-of-way.

Maintaining power lines clear of trees and vegetation by electric utility companies is a power granted to them by the state legislature under RCW 64.12.035.

7.6

Planning Before Planting

Similarly as discussed in Chapter 5, inventory the space in the adjoining right-of-way before selecting the types of trees and landscaping to be planted. Planting locations for right-of-way trees must consider limitation due to spacing requirements from other trees, as well as the amount of general ground space available, proximity to traffic control signs, locations of overhead utility lines and underground utility lines, and proximity to other types of infrastructure. Pre-planning is the most important step in planting and maintaining trees within city rights-of-way.

Things to consider when conducting an inventory of the space:

7.6.1 Available Space

The Medina Municipal Code suggests a minimum 300 square feet of area and a 10-foot minimum separation between trees. Actual requirements may vary depending on the type and species of vegetation selected.

The following is a guide for minimum width of planting strips based on minimizing potential damage to infrastructure:

SMALL SIZE TREES AT MATURITY: A five-foot wide strip is the minimum width for small sized trees based on a maximum trunk diameter of one foot with one foot wide root flair at the base of the trunk all around the trunk.

7.6.2 Infrastructure Conflicts

Trees and other vegetation within the right-of-way can block traffic control signs, and sidewalks as the plants matures. They can also interfere power lines and grow over travel lanes. Plant trees and other vegetation with the mature size and maintenance requirements in mind to avoid potential future conflicts with infrastructure.

MEDIUM SIZE TREES AT MATURITY: A seven-foot wide strip is the minimum width for medium sized trees based on the expected mature diameter of the tree trunk at two feet and the root flair around the base of the trunk at one and one half feet wide.

LARGE SIZE TREES AT MATURITY: Minimum width of a strip is nine feet for large sized trees based on a trunk diameter of three feet and a root flair width of two feet around the trunk.

7.6.3 Plant Diversity

To improve the quality of the urban forest as a whole, it is important to consider what else has been planted in the area. Species and plant diversity plays a major role in long term stability of the City's urban forest. Overuse of a single type of tree greatly increases the vulnerability of the tree itself and the urban forest as a whole to pests and disease. When there is a low diversity of trees and plants, it only takes one parasite or disease that affects a particular species to wipe out many of the trees in that area.

7.6.4 Selecting Appropriate Trees in the Right-of-way

When planting a tree within the right-of-way, it is important that the species of the tree is appropriate for the location. Key considerations include overhead power lines and a prohibition against trees with invasive root systems. The City of Medina Suitable Tree Species Lists identifies acceptable tree species in Lists 5, 6 and 7 that may be planted within the City rights-of-way. List 7 contains tree species that may be located near overhead power lines.

7.6.4 Irrigation Systems

Newly installed trees are dependent upon supplemental irrigation until established, typically for two years. The method and amount of watering that is applied may vary depending upon soil composition, heat, wind, planted in turf or ground cover, periods of abnormal rainfall or in poorly drained soils. Installing an irrigation system to support plantings within the City right-of-way requires a permit.

7.7

Right-of-Way Tree Removal & Maintenance

7.7.1 Tree Right-of-Way Pruning/ Trimming

Pruning trees within City rights-of-way by property owners is allowed provided American National Standards Institute (ANSI) standards developed by the International Society of Arboriculture (ISA) are followed. A permit is required whenever the pruning exceeds the following on a tree which is six-inches diameter breast height or larger:

1. Pruning removes more than 25 percent of the natural canopy of the tree; or
2. Pruning removes any limb having a diameter greater than three inches; or
3. The pruning is determined to endanger the life of the tree.

7.7.2 Tree Right-of-Way Removal

MMC 20.52.400 prescribes conditions under which a property owner can remove a tree located within a City right-of-way. These include:

1. Hazard trees;
2. Nuisance trees;
3. Trees not suitable under utility lines, or in the city right-of-way;
4. Any tree having less than a 10-inch diameter breast height size;
5. Any trees not included on the "City of Medina Suitable Tree Species List" for the right-of-way having less than a 36-inch diameter breast height size;
6. Trees where pruning and trimming for utilities caused significant defects to the primary stem of the tree resulting in significant abnormal growth;
7. Trees where removal is necessary to allow vehicle access to a property; and
8. Trees where removal is necessary to restore a view significantly obstructed by the tree provided

Trees within a City right-of-way not meeting any of these conditions are required to be preserved.





7.7.2 Keeping Streets and Walking Routes Clear of Vegetation

The U.S. Department of Transportation published a Guide for Local Highway and Street Maintenance Personnel (Revised 2008), which provides information on maintaining vegetation along roadways. It includes on a property which is located at a street intersection, a corner sight triangle is required for keeping intersections clear of obstructions. Corner sight triangles are based on posted speed limits and whether intersections are controlled or uncontrolled by signage.

The illustration above shows a corner sight triangle at an intersection.

The corner sight triangle for this situation is determined by the length of the two legs, A and B, in the figure that follows. These distances are based on the vehicle speed as shown in the tables below. So, if road A has a speed limit of 25 mph

and road B has a speed limit of 35 mph, and there are no traffic controls at the intersection, the length of leg A would be 115 feet and for leg B 165 feet. The triangle formed would be the sight area to be kept clear of obstructions.

The conventional procedure used in measuring stopping sight distance assumes that a driver's eye is 42 inches above the road surface. The procedure also assumes that a driver must be able to detect an object that reaches 24 inches above the road surface on the road ahead. The illustration to the right shows this measurement taking place. Vegetation below the line of sight can be allowed within the corner sight triangle, but once grows into the line of sight, it must be cleared in order to reestablish a proper line of sight at intersection. These principles also apply to driveways that enter onto public roadways.



NO TRAFFIC CONTROLS	
Speed Limit	Length of Leg
25 mph	115 feet
30 mph	140 feet
35 mph	165 feet

TRAFFIC CONTROLS - LEFT TURN FROM STOP	
Speed Limit	Length of Leg
25 mph	280 feet
30 mph	335 feet
35 mph	390 feet

In addition to keeping clear lines of sights, minimum vegetation clearances for traffic movement must be maintained. The illustration below shows minimum right-of-way clearances for vehicles using the travel lanes and for pedestrians walking on sidewalks.

Sidewalks should be clear of vegetation for the full width of the sidewalk and to a minimum eight foot tall height to allow for pedestrian travel. There are some areas of Medina where pedestrians share the roadway without the separation afforded by a sidewalk. It is particularly important in these areas that proper clearances are maintained to re-assure pedestrians of having unimpeded road shoulder or sidewalk to use.

The industry standard for pruning of right-of-way trees for clearance is once every five to seven years for mature and semi-mature trees. Saplings and immature trees should be pruned at least every two to three years to ensure good architecture for the tree specimens. Challenges arise when structural pruning is deferred and a judgement must be made which weighs the probability of a pruning cut creating a decay pocket in the stem or major branch versus the benefit of making the pruning cut. This challenge is best avoided by training a tree into good architecture when the pruning cuts are small, can heal quickly and are unlikely to lead to any long term disease infection. Larger pruning cuts enhance the likelihood of disease infection and take longer for the tree to heal.

7.8

Opportunities for City/ Private Stewardship Partnerships

Stewardship of the City's urban forest is shared by residents, local businesses, government, and public agencies. The City encourages residents to pursue stewardship partnerships with the City in planting and maintaining right-of-way trees. In looking to establish partnerships, the following goals and policies shall provide guidance:

Guidance 1

Shared responsibility in engaging in the planting and maintenance of trees within the right-of-way.

Guidance 2

The partnership must implement the guiding principles in Section 7.2.

Guidance 3

Use of the Medina Tree Fund shall be for enhancement and diversifying tree plantings within City rights-of-way and for public safety purposes.

Guidance 4

The partnership must contribute to the health and well-being of Medina residents as a whole and not for the specific benefit of individual property owners.

Guidance 5

The partnership must involve at least one of the tree removal criteria set forth in Section 7.7.1, except partnerships involving view obstruction must be consistent with Guidance 4.

Guidance 6

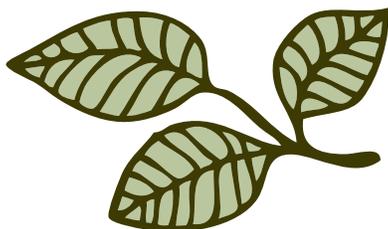
Partnerships shall involve cost-sharing measures to be negotiated on a case-by-case basis.

Guidance 7

Partnerships should consider the goals and policies of the Medina Comprehensive Plan.



The City encourages residents to pursue stewardship partnerships with the City. These stewardship partnerships would highlight the City's goal of providing right-of-ways which are maintained for health, safety and human welfare. A diversified streetscape of predominantly native vegetation with a rich vertical habitat of groundcovers, shrubs, understory trees and over-story or canopy trees is a goal within the City's Comprehensive Plan.



The right-of-way trees in Medina are steadily maturing creating the informal forested appearance called for in the comprehensive plan. Unfortunately some of these trees maturing in the right-of-way include volunteer trees which no one planted, some of which are inappropriate for their location. They may be inappropriate because they are a hindrance to vehicle or pedestrian travel or they were a species which outgrew its intended place.

The City invites stewardship partnerships between private property owners or a neighborhood organization to address neighborhood specific concerns. These partnerships can work to alleviate persistent and emerging problems with right-of-way trees which cannot be alleviated through regular pruning.

Some trees are growing in the wrong place. The right-of-way might benefit from a safety standpoint through these inappropriate trees being removed and replaced with more appropriate right-of-way tree species. Additionally there are a number of large maturing trees which are located beneath overhead power lines which are pruned repeatedly to control their height. These trees will never be allowed to achieve their mature stature and will be required to be un-naturally maintained to a dwarfed stature. The City Tree Code allows for their removal with an approved right-of-way tree removal permit.

Safe unobstructed use of the rights-of-way is the responsibility of adjoining property owners. All owners of the property adjoining a city right-of-way shall ensure the trees, shrubs and landscaping in the right-of-way adjoining their property do not interfere with the free passage of vehicles and pedestrians or cause any risk of danger to the public or property.

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Educational Resources

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8



8.1

Who Can Help? Who Should Help?

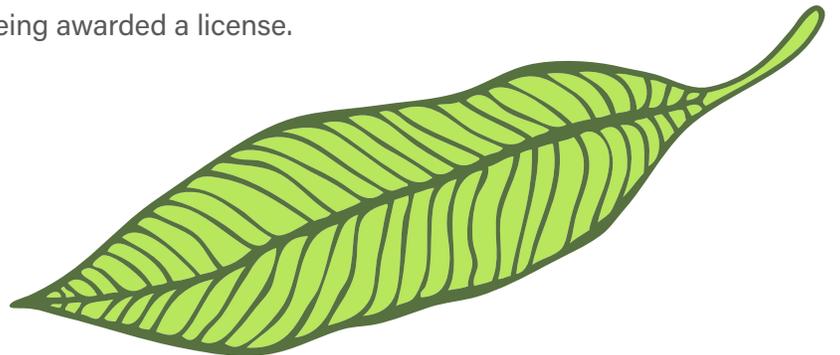
Arborists, gardeners, horticulturists and landscape architects are experts who focus on different aspects of caring for the landscape. In smaller scale efforts they can be consulted or contracted individually but larger scale efforts may require consulting more than one of these experts. Here are some generalizations for when to consult with one of these experts.

Arborists focus on trees and woody vegetation. The International Society of Arboriculture certifies arborists. Many perform the tree trimming and removal work as well as consult regarding tree risk assessment, tree health and tree maintenance procedures. There are also consulting arborists who specialize in tree risk assessment, tree health analysis and providing recommendations for tree maintenance procedures.

Gardeners focus on landscape maintenance throughout the year. Typically they also have pesticide licenses to apply pesticides commercially. Gardeners are also most regularly in the garden, usually visiting to maintain the landscape one a week or every two weeks. For this reason they typically spot problems as they are developing. Gardeners with good communication skills are helpful in coordinating quick solutions to regular problems in the landscape.

Horticulturists have extensive training in plant propagation, plant health care and plant maintenance. Many landscape maintenance companies have one or more horticulturists on staff to help provide long-term solutions to persistent problems in the landscape. They can also tailor landscape maintenance to use integrated plant management, which reduces pesticide use and irrigation while increasing plant health.

Landscape architects can be most helpful when establishing a new design during new development or if the landscape has a unique style which needs to be modified with care. The state licenses landscape architects and requires applicants practice for many years and pass multiple exams prior to being awarded a license.



8.2

Resource Organizations

Depending on the task at hand or the question in mind there are outstanding resources to help provide guidance. A list appears in appendix 1.

8.3

Bi-Annual Vegetation Management Checklist

A bi-annual vegetation management checklist is a great way to regularly ensure that your landscape is healthy and safe. It is recommended to maintain a photo journal of your landscape from set locations and directions for records. This record will become immensely valuable in measuring plant growth, comparing changes in seasonal color, which may indicate health issues, and maintenance practices. A photo journal of the garden is also a valuable tool to analyze health concerns and can be helpful when deliberating landscape design changes or changes to maintenance regimes. Spring and fall are the best times to perform these inspections but it is also good to change times to increase the range of observations. See Appendix 2 for an example bi-annual vegetation management checklist.

8.4

Hedge Maintenance Agreement

The example hedge maintenance agreement in appendix 3 is designed to provide neighbors with a worksheet to discuss and agree on the details of an existing or proposed hedge. It specifically describes common forms of hedges, including length, height and top as well as who's responsible for what maintenance tasks.

Appendix

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APPENDIX 1

Resource Organizations

1. Master gardeners – Washington State University King County Extension
2. Northwest Horticultural Society
3. University of Washington – Center for Urban Horticulture
4. International Society of Arborists – Pacific Northwest Chapter
5. American Society of Consulting Arborists
6. American Society of Landscape Architects - Washington Chapter
7. Washington Association of Landscape Professionals (WALP) is the association for landscape contractors
8. American Society of Civil Engineering - Seattle Section Geotechnical Group
9. King County Native Plant Guide
10. Washington Native Plant Society
11. Washington State Nursery and Landscape Association
12. Washington Department of Ecology – Shorelands and Environmental Assistance

APPENDIX 2

Example Bi-Annual Vegetation Management Checklist

TASK	SPRING COMPELITION DATE/NOTES	FALL COMPELITION DATE/NOTES
Mitigate high risk trees through pruning or, with an approved tree removal permit, removal		
Prune for clearance of pathways, sidewalks, driveways and windows, roof, and walls		
Remove noxious weeds		
Cut back perennials and/or trim flowering shrubs as appropriate		
Inspect landscaping for changes in drainage patterns including standing water and/or flood damage		
Fertilize trees and shrubs, as necessary – not as desired but as necessary		
Plant new trees and shrubs to fill in areas where trees and shrubs died or are declining		
Direct tree care company to remove dead, diseased and broken or crossing branches, if necessary		
Cable or brace large weak branches to prepare for severe weather		
Add arborist mulch to ground plane around tree and shrub planting areas for weed suppression and soil temperature and moisture regulation		
Inspect trees and shrubs for insects and diseases, and treat appropriately using Integrated Pest Management procedures		
Winterize irrigation system in October/November; De-winterize irrigation system in April/May		
Inspect irrigation backflow device per King County requirements; All backflow preventers must be tested annually by a State of Washington certified backflow assembly tester and after repair or replacement		
Consider dethatching, aerating, topdressing, over-seeding and fertilizing lawn		

APPENDIX 3

Hedge Maintenance Agreement

Owner #1 _____

Address _____

Owner #2 _____

address _____

Hedge is to be _____ feet long along our shared property line. Hedge is to
[remain entirely on owner #1 property]
[remain entirely on owner #2 property]
[span the property line no wider than _____ feet at its widest point].
See graphic.

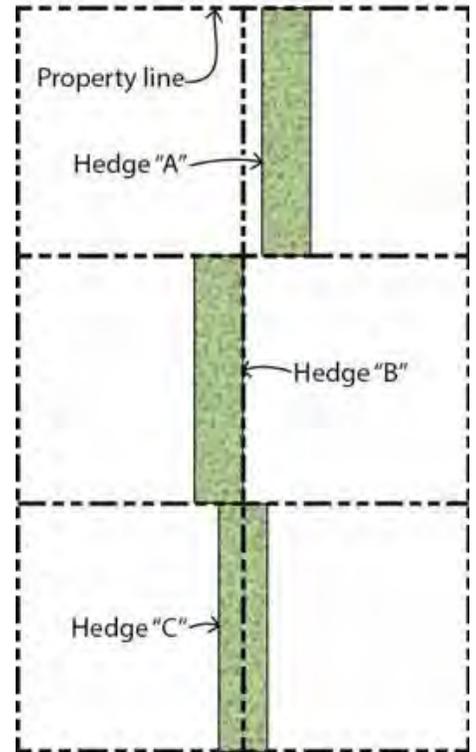
Hedge top shall have a maximum height of _____ feet and be maintained
within _____ feet of the maximum, no more than 20% of the maximum
height. Hedge top shall be [rounded] [level or squared]. See graphic below.

Hedge transition from top to sides shall use [rounded corners] [squared
corners] [angle or bevel _____ feet in length]

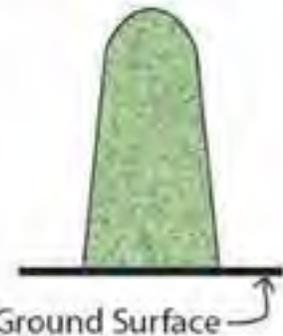
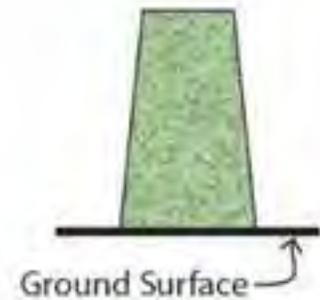
Hedge sides shall be maintained within _____ feet of the maximum. Hedge
sides shall be [vertical] [battered with lower edge _____ feet beyond vertical
plane of upper edge].

Hedge top shall be maintained [select one of the following]:

- a) stepped with a maximum height of _____ feet and a vertical step of
no more than _____ feet
- b) parallel to the ground surface
- c) level with a maximum height of _____ feet at the hedges [highest]
[lowest] point



examples of hedge location options



examples of hedge side and top maintenance options

Hedge shall be trimmed _____ times per year. Persons performing trimming shall have access from [both yards] [owner #1 yard only] [owner #2 yard only] to perform work. Clean up shall leave yard(s) in same or better state as prior to trimming work. If both yards are to be accessed for work, notification of trimming shall be given _____ days prior to work and work time window shall be no more than _____ day(s).

Cost of trimming shall be:

- a) shared _____% by owner #1 and _____% by owner #2 on a per [trimming] [year] or [_____ year] basis,
- b) paid by owner #1,
- c) paid by owner #2.

Removal and/or replacement of hedge shall only occur if party or parties paying the cost of trimming decide to remove the hedge.

Removal and replacement of hedge shall occur if hedge height exceeds maximum by 20%. Cost of removal and replacement shall be paid in same manner as cost of trimming.

