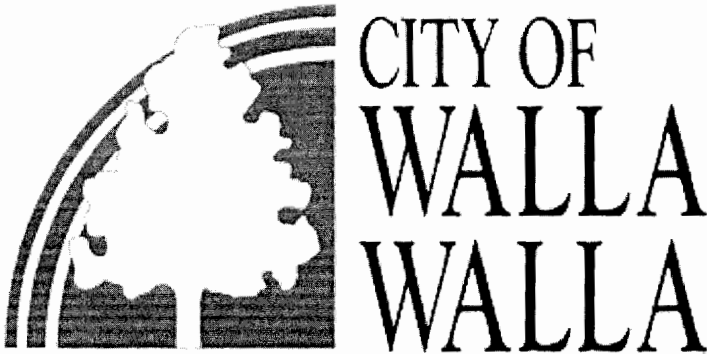


**URBAN FOREST  
MANAGEMENT PLAN**



## Table of Contents

|   |           |
|---|-----------|
| <b>A History of Walla Walla’s Trees.....</b>  | <b>4</b>  |
| <b>Executive Summary .....</b>  | <b>6</b>  |
| - Introduction .....  | 6         |
| - Management Recommendations.....   | 7         |
| 1. Develop a Clear Hazard Tree Mitigation Policy.....                                       | 7         |
| 2. Develop a Cyclic Pruning Program .....   | 7         |
| 3. Develop an Aggressive Planting Program .....   | 7         |
| 4. Increase Community Education and Outreach .....  | 8         |
| a. Community at Large .....   | 8         |
| b. Park, Forestry, Public Works, and Clerical Staff Training Program .....                  | 8         |
| c. Public Officials.....  | 8         |
| 5. Maintain Tree City USA Status.....   | 9         |
| 6. Ensure Cooperation of all City Departments.....  | 9         |
| 7. Require Urban Forestry Planning in New Developments.....                                 | 9         |
| 8. Problems and Prospects for Walla Walla’s Urban Forest.....                               | 9         |
| <b>Program and Policies.....</b>  | <b>12</b> |
| - Introduction .....  | 12        |
| 1. Maintain, Preserve, Conserve, and Improve Existing Urban Canopy in Walla Walla .....     | 12        |
| 2. Remain a “Tree City USA”.....  | 13        |
| 3. Preserve and Protect Native, Significant, and Historical Treescapes .....                | 13        |
| 4. Coordinate all Construction Activities Related to Trees With Urban Forestry Program..... | 13        |
| <b>Management and Maintenance Recommendations.....</b>                                      | <b>14</b> |
| - Introduction .....  | 14        |
| 1. Urban Forestry Funding Program .....   | 14        |
| - Budget for Urban Forestry.....  | 14        |
| - Utilize Waste Wood.....   | 15        |
| - Promote Monetary Value of the Urban Forest .....  | 15        |
| 2. Risk Management Program and Reduction of High Risk Trees.....                            | 15        |
| - Minimize the Number of Poor Quality Species.....  | 15        |
| - High Risk Tree Characteristics.....   | 16        |
| - Implementing a Risk Assessment Program .....  | 16        |
| - Educate City Staff and Public Officials to Enhance Collaboration.....                     | 16        |
| 3. Community Outreach and Education.....  | 16        |
| - Community at Large.....   | 16        |
| - Forest, Public Works, and Clerical Staff.....   | 17        |
| - Public Officials .....  | 17        |
| 4. Cyclic Pruning Program.....  | 18        |

|   |           |
|---|-----------|
| 5. Planting Program .....   | 18        |
| - Locate Planting Sites .....   | 19        |
| - Choose from Recommended Street Trees .....                                    | 19        |
| - Avoid Some Species .....  | 19        |
| - Monitor Urban Forest .....  | 19        |
| - Plant Diverse Species .....   | 19        |
| - Plant Compatible Species .....  | 19        |
| - Recognize Longevity and Maintenance Requirements .....                        | 20        |
| - Mitigate Tree-Sidewalk Conflicts .....  | 20        |
| <b>Appendix A: Tree Inventory Methodology and Findings.....</b>                 | <b>21</b> |
| <b>Appendix B: Park, Cemetery &amp; Golf Course Inventory.....</b>              | <b>39</b> |
| <b>Appendix C: ISA Tree Hazard Evaluation Form.....</b>                         | <b>40</b> |
| <b>Appendix D: Approved Street Tree Lists ( Class I, II, III &amp; IV).....</b> | <b>42</b> |

## **A HISTORY OF WALLA WALLA'S TREES**

The stately old trees lining the streets of Walla Walla shade the equally old and stately homes, which today we take for granted and, at times, carelessly dispose of are here because of foresight, hard work and financial sacrifice by early Walla Walla residents. Pioneer Park, once a pasture for cows, was considered a wasteland at one time. However, farsighted citizens saw it as an ideal park site and in 1902 the tract was set aside for a park. A Park and Civic Arts Club formed to raise necessary funds for parks and trees to beautify the city streets. With only 17 members at the start, it soon grew to 500 members. In November 1908 "Pioneer Park" was named and opened to the public and in 1909 the bandstand was built and the slender saplings which are now the huge London Plane Trees (Sycamores) surrounding it were planted. After that, for several years, hundreds of trees came from the Blue Mountains, from Seattle, and even from the U.S. Botanical Gardens in Washington D.C. Most of today's large trees were planted during the first decade of that century and thanks to those who had such foresight; Walla Walla became known throughout this arid region as a city of trees.

As early as 1973 Walla Walla citizens were involved in actions intended to beautify our city streets. A City Beautification Committee introduced an ordinance and regulations to accomplish this task. These regulations dealt primarily with parking strips along the streets. However, by the mid- to late 1970s, vehicular traffic had increased to the point that several street widening projects were proposed requiring removal of dozens of trees along the major arterials. These projects, together with the then obvious pruning by utilities companies of many trees, which had matured enough to interfere with their power lines, had a tremendous effect on Walla Walla's urban forest. Many mature trees were deemed hazardous and were removed.

In 1982 a citizen group, calling themselves ReLeaf Walla Walla, formed in order to address Walla Walla's street trees and to determine what could be done to prevent the loss of so many old trees and reduce the priceless canopy. This group began to inventory all the trees in an effort to record them and to introduce ordinances protecting Walla Walla's street trees. This group also successfully lobbied City Council, which created an Ad Hoc Tree Committee comprised of a cross-section of City professionals and volunteers. The Committee drafted a Street Tree Ordinance, which was then adopted by the Walla Walla City Council in July 2000. The Ordinance provided for the creation of an Urban Forestry Advisory Commission (UFAC) with membership comprised of volunteer citizens. In addition, the UFAC wrote an ordinance pertaining to Heritage Trees on both public and private property. This has been an effective means for private homeowners to protect their special trees from topping, or otherwise detrimental practices.

In addition to a Street Tree Ordinance, the UFAC was given the task of producing an Urban Forest Master Plan, to govern the urban forest under the jurisdiction of the City of Walla Walla. That has been written and is to be presented to the City Council which, it is expected, will approve it and sign it in to law as further evidence that Walla Walla citizens really do appreciate and want to perpetuate our outstanding urban forest.

# EXECUTIVE SUMMARY

## INTRODUCTION

The primary mission of a well-developed municipal forestry program is to provide the residents of the community a healthy, safe and pleasant environment. The environment includes street trees, regulated by Ordinance 12.49, the green spaces in the parks, municipal cemetery and golf course; conservation lands; and other public lands. This Urban Forest Management Plan (UFMP), while having no jurisdiction over private land, should include in its mission the education and involvement of the public to insure that private land also meets the criteria of a healthy, safe and pleasant environment. This education, as well as this Urban Forest Management Plan, should focus on stewardship of our urban forest.

The goals of the Urban Forest Management Plan include:

- Incorporation into the City of Walla Walla Comprehensive Plan, adopted June 9, 1999, and updated in November, 1999.
- Use tree inventories to establish (and publish) the priorities of the Plan.
- Educate the public and analyze results.
- Involve the public in major decisions.
- Report on forestry activities regularly.

In 1999, Natural Path Forestry Consultants, Inc. was commissioned to conduct a street tree inventory and analysis. In 2000 they were commissioned to conduct an inventory and analysis of all trees in the park system, municipal cemetery and golf course. From this inventory the appraised value of Walla Walla's urban forest was calculated at \$13,256,726. The average price per tree was \$2,497. Inventory findings indicate the overall health of Walla Walla's street and park trees is below average. The primary reasons for this low rating are: an abundance of topped trees, high volumes of dead wood in the crowns of many trees, extensive trunk decay in older trees, and damage to younger trees.

The consultants identified 115 different tree species in Walla Walla, which is average compared to neighboring communities. The variety of species can still be expanded. The dominant local species are considered high maintenance because of their greater hazard potential due to weak structure, short life spans, and consistent production of large volumes of dead wood.

## **MANAGEMENT RECOMMENDATIONS**

Using the inventory data collected and employing standard urban forestry principles, the Parks & Recreation Department has developed a strategy for improving the quality, size and diversity of Walla Walla's urban forest. This strategy is included in the following recommendations:

### **1. Develop a Clear Hazard Tree Mitigation Policy**

There are a number of potential hazard trees in Walla Walla. Hazard mitigation should guarantee the timely removal of hazardous or potentially hazardous trees, as well as heighten staff and public awareness of hazard abatement procedures. This is critical for the maintenance of safe public areas, and would significantly reduce the number of potentially hazardous trees and the liability associated with them. The removal of dead and declining hazardous trees also provides room for new diverse plantings which will increase the overall health of the urban forest. Additionally, spending on the maintenance of healthy trees is far more efficient and responsible than the maintenance of dead and declining trees.

### **2. Develop a Cyclic Pruning Program**

A regular pruning cycle is a critical component of an effective UFMP. The City of Walla Walla would benefit from an ongoing cyclic maintenance program by:

- Guaranteeing every public tree in the plan is regularly reviewed by staff and contractors.
- Shifting from reactive to proactive forestry management.
- Improving the condition of a large number of trees.
- An increase in the overall value of the forest due to the City demonstrating "reasonable care" in maintaining its urban forest.
- The recommended pruning cycle should be a five or seven year rotation.

### **3. Develop an Aggressive Planting Program**

The City of Walla Walla must actively pursue tree planting as a major component of neighborhood and City-wide tree revitalization. There are approximately 5,308 existing street trees and 1,017 available planting spaces on the City streets. The Parks & Recreation Department's goal is to have trees planted in all available sites.

This goal is elusive, due to urban growth, budget constraints, maintenance costs, improper tree planting sites and unexpected tree mortality. A realistic objective is to have eighty percent of all available spaces planted over the next twenty years by planting an estimated 41 trees per year. It is critical to plant incrementally on an annual basis to avoid creating an even age stand of any species. The optimum distribution of any species in a population has the largest number of trees in the smallest diameter sizes. This allows the species to perpetuate itself for some time in the future as older trees mature and require replacement.

The challenge the City of Walla Walla has is how to fund this expense given available funds. The City, during the last several years, has approached planting new trees through construction projects, working with the Rotary Club of Walla Walla who works with a local nursery to plant new trees on public and private properties annually, and by partnering with PacifiCorp to replace street trees removed due to their condition or because the tree is inappropriate underneath power lines. Until funding becomes available in the future the schedule for planting and the approach to planting new trees will need to continue through these and other innovative sources.

#### **4. Increase Education Awareness and Community Outreach**

- a) **Community at Large:** The urban forestry program needs to be linked to the community, whose collective decisions have a cumulative impact on the vitality of the urban forest. Educating and involving as much of the community as possible in enhancement and maintenance increases community awareness of the benefits of trees while encouraging the urban forest's long-term health and growth. This recommendation includes; working with local realtors, landscapers, and nurseries to help promote and educate the public on tree planting and proper maintenance.
- Expand and strengthen partnerships
  - Continue Arbor Day celebration and education programs with elementary schools.
  - Focus on education to promote tree planting and proper tree care.
  - Expand education opportunities.
  - Develop new programs to enlist volunteers.
- b) **Park, Forestry, Public Works, and Clerical Staff Training Program:** Staff requires the expertise and information to make informed decisions in the field and provide information requested by the public. Appropriate training in conflict resolution and mediation as well as risk management can minimize problems which arise if an individual objects to the enforcement of policies regarding tree removal or pruning.
- c) **Public Officials:** The goal of a municipal tree-risk-reduction program is to minimize potential hazards for all users of public space where street and park trees are located. Elected officials have the responsibility of approving policies that guarantee the safety of our public rights-of-way, a mandate that is, at times, difficult to enforce when dealing with a topic as sensitive as tree removals.



## **5. Maintain Tree City USA Status**

Tree City USA is a national award which recognizes communities that achieve a certain level of urban forestry management. Tree City status is often a requirement for being awarded state and federal urban forestry assistance grants. There are four criteria for receiving Tree City USA status:

- Have an Urban Forestry Advisory Commission.
- Have a tree ordinance in place.
- Hold an annual Arbor Day celebration.
- Spend a minimum of two dollars per year per capita on urban forestry.

The City shall strive to gain additional recognition annually through national award programs; i.e. Growth Award which recognizes even higher levels of community tree care programs.

## **6. Ensure Cooperation of all City Departments**

Activities by other City departments and divisions, such as Public Works and Engineering, have a great effect on the urban forest. An interdisciplinary approach to management is necessary to preempt complications and allow for mitigation of negative impacts before they occur. This will insure that the overall health and condition of the urban forest is not compromised and service to the public is maximized.

## **7. Require Urban Forestry Planning in New Developments**

Planners and developers of new subdivisions should be required to adhere to acceptable species lists, and to vary plantings to insure species diversity. Parks and Recreation staff and the Urban Forestry Advisory Commission will need to continue working with Development Services staff and the Planning Commission to improve existing requirements for developers to include plantings.

## **8. Problems and Prospects for Walla Walla's Urban Forest**

In the interest of preserving and expanding our urban forest, several challenges need to be addressed which will need to involve an awareness and education of citizens in both the public and private sectors. It is desirable for the plan to be implemented through education rather than through regulations. The following areas are of concern to the Urban Forestry Advisory Commission (UFAC):

Walla Walla's urban forest is aging. An inventory of these trees revealed a lack of middle-aged trees. There are numerous trees that are old and will soon need to be removed. Due to the increase in new plantings over the last 10 years there are many young trees, many of which are

small and decorative species. The planting of large, hearty trees to continue the development of a tree canopy over the streets is a goal of the UFAC. This involves cooperation with Pacific Power in order to accommodate utility lines in areas where they are above ground. The following items will be needed to address this tree canopy goal.

- A funding plan needs to be available for the purchase of replacement trees when trees are removed from street planting strips.
- Suggestions for appropriate species of trees be made available to anyone replacing or planting new trees.
- Working toward eventually placing utility wires underground should be a goal in residential neighborhoods and commercial areas.
- Topping of trees has been a fairly common practice locally. It is known to be destructive to trees, shortening their lifespan substantially. Topping is no longer permitted in planting strips (Municipal Code 12.49). The practice of topping trees on private property needs to be disallowed on behalf of the preservation of our community trees. Public education is needed to implement an “anti-topping” campaign.
- The relationship with Pacific Power must continue to be carefully monitored by the City and UFAC. Pacific Power must be made aware of the goal of a tree canopy on City streets and trim with that in mind. The trimming in 2000-2001 destroyed the canopy possibility in many areas of town.
- Any new housing, business or public building must be landscaped with large trees where possible. It should be the goal that all properties have trees. Incentives could be developed to encourage this goal.
- It is hoped that citizens in both residential and commercial areas will become more aware of the positive impact of trees on the appearance of an area and their value in keeping a house or business cooler in hot summer months. This seems particularly important as we enter an era when power needs to be conserved.
- Residents and businesses need to accept responsibility for the maintenance of trees through watering and trimming. Just planting them isn’t enough; they must be cared for to assure survival.
- A funding plan must be developed for the removal of unsightly tree stumps.
- The City and the County need to develop compatible tree removal and replacement policies. County areas adjacent to the City need to have similar policies in effect for the overall appearance of those areas, as well as the preservation of the urban forest.

- Our City parks have inadequate funding for tree maintenance. New funding sources need to be developed, perhaps in the private sector.
- The Parks & Recreation Department needs to employ a certified arborist to implement the Urban Forest Management Plan findings and recommendations.

# PROGRAM AND POLICIES

## INTRODUCTION

As forestry budgets decline across the nation, an ever-increasing proportion of those budgets are spent on removing trees. As fewer dollars are spent on the planting and maintenance work needed to sustain forest growth and health, the decline of the urban forest continues.

While paved streets support the City's social and economic life-force, the urban forest is its soul. Urban vegetation provides citizens with a sense of place and an emotional connection to the physical surroundings which they come in contact with every day. Since the community draws a wide range of aesthetic, health and economic benefits from the urban forest, a healthy urban forest is as crucial a component of Walla Walla's infrastructure as efficient transportation and public safety systems. This section of the Management Plan details below a set of goals for developing an urban forestry program.

### **1. Maintain, Preserve, Conserve, and Improve Existing Urban Canopy in Walla Walla**

- Maintain the street tree inventory produced in 1999; and municipal cemetery, golf course, and park system inventory produced in 2001.
- Expand inventory to include all public lands.
- Develop maps that clearly identify all public jurisdictional urban forest areas.
- Achieve tree spacing in parking lots to require a 20% canopy at tree maturity.
- Due to the loss of urban canopy resulting from utility line conflicts, the City needs to formulate policies which will promote expanding the canopy through tree longevity and large species plantings.
- Review and revise the Urban Forest Management Plan every five years.
- Remove trees only in accordance with objective tree-removal criteria, and by following a clear process of evaluation, consultation and public notice.
- Prepare annual work plans and distribute to the Urban Forestry Advisory Commission for review and approval.
- 
- Require tree care contractors to be Licensed Tree Care Specialists (Municipal Code 12.49).
- Assure a diversity of tree species and age.

- Encourage, through partnerships, the development of “Community Pattern Inventory” of special places.
- Formulate hazard mitigation policies.
- Set priorities for cyclic pruning.
- Establish a no net loss street and park tree policy for all public agencies.

**2. Remain a “Tree City USA”**

- Meet required criteria.
- Seek sufficient and ongoing funding.

**3. Preserve and Protect Native, Significant, and Historical Treescapes**

- Promote protection guidelines for conservation of historical treescapes through the City of Walla Walla’s Heritage Tree Ordinance. (Municipal Code 12.50)
- Plant potential trees or groves to attain significant historical and aesthetic value.
- Promote memorial and honorary tree groves.

**4. Coordinate all Construction Activities Related to Trees With Urban Forestry Program**

- Communicate with and encourage developers to conserve as many trees as possible on new developments.
- Comply with City requirements for business treescapes.
- Inform developers about the species of trees best suited to their site.
- Coordinate with the Development Services Department to review existing and proposed new regulations for landscaping and tree plantings.

# MANAGEMENT AND MAINTENANCE RECOMMENDATIONS

## INTRODUCTION

Trees are a major component of Walla Walla's infrastructure and are critical to urban ecosystems. Good urban forestry management involves setting goals and objectives and developing specific management strategies. Fundamental to a community forestry program is the inventory. In 1999 and 2000 the City obtained grant funding from the Department of Natural Resources to hire a consultant to inventory and assess the condition of City street, park, golf course, and cemetery trees.

The inventory is an effective, efficient day-to-day and long-range management tool. The tree inventory supplies the urban forestry program with data tables and summaries to be used for planting, maintenance and removal schedules; service requests, budgeting, project bidding, and contract reports; and establishes a systematic maintenance program. The management and maintenance recommendations are based on the inventory data collected, and subsequent updated information.

### 1. Urban Forestry Funding Program

The City has approximately 5,308 trees located in the public right of way adjoining residences, businesses, parks, schools, churches and vacant lots. The total appraised value of the trees is \$13,256,726 using the 2001 International Society of Arboriculture standards. Many of these trees were planted in the early 1900s and few have received the necessary maintenance to promote good health and vigor. Consequently, a majority of our street and park trees are showing clear signs of decline and many others require removal.

This appraised value is low for the number of trees present because of existing species and the health and structural condition of the trees. The conditions of the trees range from excellent to dead, per rating. There were 115 species inventoried and approximately 59% are in fair or below fair condition. This represents excellent population diversity but the total numbers of each species is very low because silver maple species and black locust comprise 16.9% of the total street tree population of the urban forest.

- **Budget for Urban Forestry:** Community trees should be maintained as a community asset with funding directly from the City's general fund. The criteria for remaining a Tree City USA require the City spend a minimum of \$2 per capita per tree. This amount can include volunteer and in-kind labor, and donations. The City budget format does not currently include a separate budget line item for urban forestry as tree maintenance funding as part of the park maintenance budget.

Staff is proposing the park and tree budgets eventually become separate budget line items. This will enable the department to identify dollars spent per capita and the amount of general fund expenditures invested in our urban forest. How this compares to other communities our size is an important comparison.

The City in 2002 budgeted \$150,000 and in 2003 an additional \$100,000 toward park tree pruning and removal. This action by the City Council was the first significant monetary commitment by the City in decades toward major maintenance of Walla Walla's urban forest. The annual financial commitment will need to continue in the \$100,000 range until such time as all the park trees have been pruned of dead and hazardous limbs and/or removed. Once the "bubble" in tree maintenance is addressed a cyclic pruning schedule will need to be developed and funded if we are going to protect our urban forest.

- **Utilize Waste Wood:** The City continues to provide opportunities to avoid taking waste wood to the landfill. A partnership with Court Services provides a service to split waste wood and sell it to the community. The City needs to continue to utilize alternative methods for the disposal of waste wood.
- **Promote Monetary Value of the Urban Forest:** Trees are the sole infrastructure component of the City that increases in value with age. Proper care and maintenance of existing trees increases the appraised value of our urban forest. The selection of high quality species plays a critical role in increasing the monetary value of an urban forest.

## 2. Risk Management Program and Reduction of High Risk Trees

The top management priority for the City, in the short term, is the implementation of a risk management program and the reduction of high-risk trees on the public right-of-way. Such a program establishes strategies for continually evaluating and monitoring trees that pose risks and defines what level of care is reasonable. It will increase the safety of the public right-of-way through mitigation of potential problems. The program will identify high-risk trees, initiate their timely removal, and heighten general awareness of the care required by our urban forest.

Mitigation of high risk trees is accomplished by regular inspections of street, park, cemetery, and golf course trees to identify structural faults and defects, and coordinate their timely removal. Cyclic pruning and progressive planting programs are also important components of a risk management program. The primary focus of establishing a strong risk management program is demonstrating "reasonable care" for public safety.

The tree inventory identified six percent of Walla Walla's tree population as dead or very poor which will need to be removed. Typically this number is around three percent which points out the magnitude of the problem.

- **Minimize the Number of Poor Quality Species:** A focus of the risk management program is to gradually replace inappropriate or poor quality trees. A tree may be considered "poor" quality for a variety of reasons including: growth characteristics; life span; failure patterns; poor form; forked trunk; and susceptibility to disease, insects, and decay. If several of these features are present, the tree may be considered a maintenance and hazard liability.

These species should not be planted along public right of ways because as they mature, there is a high-risk of structural failure associated with them. A risk-reduction program is not just the removal of trees that are in imminent threat of falling, but the removal of high risk trees before they become a problem. By removing these trees when the opportunity arises, the City effectively reduces risk.

- **High Risk Tree Characteristics:** There are approximately 349 trees in Walla Walla that meet the criteria for removal due to their high risk characteristics. A "high risk tree" is any tree or tree part that demonstrates a high risk of failure or fractures that would result in damage or injury to persons or property. The level of risk present is determined from an assessment done of the structure of the tree by the Municipal Arborist.

One task of the Municipal Arborist is to anticipate tree failures before they occur. There are no absolutes in determining hazards – only professional judgment based on experience recognizing structurally unsound trees. The International Society of Arboriculture hazard tree appraisal guide will be the assessment that the City will use to evaluate street and park trees.

- **Implementing a Risk Assessment Program:** To reduce liability, the City will need to carry out a regular program of monitoring potentially high-risk trees. The City must identify areas that will be more of a problem in years to come, and locate the most problematic trees. By reviewing the inventory data on a section by section basis for each of the high-risk species, it is possible to target areas that may need more attention than others.
- **Educate City Staff and Public Officials to Enhance Collaboration:** In order to make good risk management decisions, staff and public officials must be kept informed on the topic. The general public must also be made aware of risk management policies.

### 3. Community Outreach and Education

**Community at Large:** The urban forestry program needs to be linked to the community, whose collective decisions have a cumulative impact on the vitality of the urban forest. Educating and involving as much of the community as possible in enhancement and maintenance increases community awareness of the benefits of trees while encouraging the urban forest's long-term health and growth.

- Develop educational materials for local realtors, landscapers, and nurseries to provide to their clients on how to select the correct tree for the planting area, correct pruning methods, street tree regulations to help promote and educate the public.
- Expanded partnerships will continue to be integral to the success of Walla Walla's UFMP. Current partnerships with Pacific Power & Light and the Rotary Club of Walla Walla must be strengthened, maintained and expanded, and new partnerships established. Pacific Power & Light should be encouraged to continue working with the City to educate citizens on planting the right tree in the right place.
- Arbor Day should continue to focus on partnerships with elementary schools.
- An important function of Walla Walla's Parks & Recreation Department and Urban Forestry Advisory Commission is the focus on educational tree planting and tree care information. This includes development of educational programs and materials; and presentations to realtors, nurseries, landscapers, civic groups, schools and citizens on the aesthetic, economic and conservation benefits of tree planting and proper maintenance.



- Education opportunities during large special events should be expanded.
- Develop a tree steward program to enlist volunteers in the maintenance of young trees.
- Establish a program to develop neighborhood “block captains” to advise, assist and educate residents throughout the community on proper tree maintenance, the importance of trees, and to encourage new plantings.

**Forestry, Public Works, and Clerical Staff:** City staff are the most directly affected individuals by day-to-day risk management operations and policies. Staff requires the expertise and information to make informed decisions in the field and provide information requested by the public. Appropriate training in conflict resolution and mediation as well as risk management can minimize problems which arise if an individual objects to the enforcement of policies regarding tree removal or pruning.

Encourage staff training in the following areas:

- Communication and listening skills, conflict resolution and negotiations.
- Tree risk management workshops.
- Distribute articles from current trade and professional journals to appropriate staff.
- Training and use of the tree-inventory software program to facilitate management of the urban forest.
- Ongoing field training for operations staff.

**Public Officials:** The goal of a municipal tree-risk-reduction program is to minimize potential hazards for all users of public space where street and park trees are located. Elected officials have the responsibility of approving policies that guarantee the safety of our public rights-of-way, a mandate that is, at times, difficult to enforce when dealing with a topic as sensitive as tree removals.

Recognizing the difficulty of responding to a homeowner who appeals to reverse tree removal or other hazard-mitigation decisions, the following information is provided in support of public safety concerns and consequent actions.

- On average, home ownership changes every seven years. Government administrations may change even more frequently. Tree-risk-reduction policies are written to guarantee a consistency of response spanning fluctuations in home ownership and political leadership.
- Conflict naturally arises with the implementation of a new program.
- Tree risk reduction policies are established to protect not only current and future residents, but also all users of our public spaces and responsible government agencies.

- Veering from an established risk reduction policy to avoid short-term conflicts with homeowners undermines its purpose and can place the City in a difficult legal position.
- Additional information about the municipal tree risk reduction program, assessment of tree value and safety in our public spaces can be found in the Appendix's and by consulting the Municipal Arborist. Legal opinions regarding public safety liability can be obtained from the City Attorney's office.
- Appeals to urban forestry decisions may be made to the Urban Forestry Advisory Commission as per the Municipal Code 12.49.

#### **4. Cyclic Pruning Program**

It is recommended the City of Walla Walla maintain a five to seven-year cyclic pruning program. Pruning done to rid trees of dead, dying or diseased wood prolongs the life of trees and reduces replacement costs. The benefits of cyclic pruning are:

- Every street and park tree is inspected regularly.
- The condition ratings of a large number of Walla Walla's trees will be upgraded simply by pruning street and park trees.
- A reduction of service requests, storm damage, risk and cost. Forestry management will shift from reactive to proactive.
- The value of our urban forest will increase. Actual time and money spent maintaining trees will decline as problems are addressed before they become costly.
- Avoid appearance of negligence in court by demonstrating "reasonable care" in maintaining the urban forest. In most court cases involving personal or material damage from trees that have failed structurally, the owners of such trees are usually not found negligent if they can demonstrate they are exhibiting "reasonable care" in maintaining their urban forest.

#### **5. Planting Program**

The key to maintaining a healthy, sustainable urban forest is the implementation of regular, annual tree plantings, regardless of grant money or catastrophic events. Consistent annual additions of trees to the urban forest are important in order to maintain a perpetual canopy. It is imperative that to improve the planting program, the City must make tree plantings a major component of neighborhood and City-wide revitalization.

The first step in this goal is to reach a street tree stocking level of eighty-six percent within sixteen years. The ultimate goal of the planting program is to fill ninety percent of all planting sites over the next twenty years. Data from the street tree inventory suggests that planting 41 trees per year will achieve that standard in the foreseeable future.

- **Locate Planting Sites:** There are 1,017 planting sites currently available in the last inventory. The inventory will continue to be up-dated as trees are removed and/or planted.
- **Choose from Recommended Street Trees:** A total of 115 different species were inventoried in the City. The City's diversity of species is above average relative to other similar sized cities in the Northwest. However, the number of high-quality species can be greatly increased. The City should emphasize trees listed in the Appendix section of this document for future plantings. The list is divided into four size categories based on planting strip width and overhead power lines.

In landscaped areas, such as parks and City entrances, large group plantings can be incorporated. In addition to the trees listed in the Appendix, conifers and ornamental shrubs should be considered for these areas subject to clear view triangle requirements. This additional list will serve to broaden the planting diversity in the City.

- **Avoid Some Species:** A number of species should be avoided when selecting street trees. The primary reasons for avoiding these species are they have a high maintenance cost; high storm damage potential, and a high hazard potential. These species are an economic and hazard liability to cities that they should not be encouraged. Species to avoid include: Poplar, Cottonwood, Tree of Paradise, Silver Maple, and Black Locust.
- **Monitor Urban Forest:** The first step toward diversifying the composition of an urban forest is to monitor the number of trees within each species. The tree inventory can be used to track how many trees represent each species, as well as the percentage of each species represented in the total tree population. When population imbalances occur, a strategy should be devised to correct the over planting or under planting of a particular species.
- **Plant Diverse Species:** Over-represented species should be planted sparingly. It has long been known that a monoculture of trees is more likely to be heavily damaged by disease and insect infestation than a polyculture stand. As a general rule, any given species should constitute no more than eight percent of the City's total tree population. This rule can also be applied at a micro level. Species concentrations should be monitored closely both for the City overall, and at the neighborhood level.
- **Plant Compatible Species:** Some urban planners and landscape professionals argue in favor of monoculture plantings in order to achieve a more uniform and organized streetscape.

Although aesthetics should always be secondary to considerations of species adaptability, a Municipal Arborist can create a more even appearance, while not compromising diversity, by selecting a variety of species which have similar forms. When selecting trees for their visual effect, one must consider the tree's size, texture, form, and coloring.

- **Recognize Longevity and Maintenance Requirements:** All trees have a “useful” life expectancy. After a certain age, all trees exhibit signs of decline. As the trees get older and their potential hazards increase, the cost of maintaining them becomes increasingly prohibitive. When large numbers of trees are planted within a short time period, they become expensive and difficult to manage when they mature.

Multiple-aged stands are more desirable because they will disperse maintenance costs. A relatively predictable distribution of maintenance expenses each year helps make the annual cost of managing the forest attainable, and simplifies the budgeting process within the Parks and Recreation Department.

A tree's life expectancy is a function of age, tree care, size, and species. A common misconception is that a tree of a certain species with a 30-inch diameter is approximately the same age as any other 30-inch diameter tree. But a 30-inch diameter oak may be three times as old as a similarly sized silver maple. For example, large diameter willows, box elders and silver maples are usually no more than 40 to 60 years old. These trees reach maturity rapidly and will generally need to be removed at what might be a comparatively young age for other species.

Slower-growing, but longer-living trees are important in minimizing maintenance costs because the most costly and time-intensive tree work is removal. Planting trees that live three times as long means spending approximately one third as much in removal costs over the same number of years. In general, the same slower-growing trees also demand less pruning over their lifetime. Furthermore, slower-growing species are generally better quality trees and will have higher appraisal values.

- **Mitigate Tree-Sidewalk Conflicts:** The best way to resolve this issue in the future is to avoid such conflicts by selecting the right tree for the planting site. Incorporating urban forestry policies during the planning of City projects, urban development and renovation can help solve this problem.

Space for tree planting must be addressed during the plan review stage just like streets and sewers.

Creative design along with proper tree species selection can often resolve conflicts between street trees and development. Where existing trees are within the development area of a sidewalk the design of a serpentine sidewalk can provide adequate tree spacing that will not impact the health of the tree.

## “Appendix A”

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### 1.0 TREE INVENTORY METHODOLOGY AND FINDINGS

#### INTRODUCTION

An inventory of the City of Walla Walla's street trees was conducted in the spring of 1999. This tree inventory provides the foundation for the protection and improvement of the community's tree resources. The data will allow the City to effectively plan the planting, maintenance, and removal activities of the forestry program. In addition, the information will allow the City Forester to maximize financial resources, by budgeting according to the health status of the urban forest. Finally, the inventory provides the means to educate the public on the quantity and value of this community resource.

This section is separated into two distinct components: the inventory methodology and the current findings of the street tree data. The inventory methodology narrative describes the specific tree data collected, the standards used in data collection, and why specific data was collected. The inventory findings narrative is an analysis of the City of Walla Walla's street tree inventory data, and is divided into the following seven subsections:

1. **Species Composition**  
Examines the representation of tree species by number, variety, and relative abundance.
2. **Diameter Distribution**  
Groups the total street tree population and select species according to diameter-class size. Graphs illustrate the importance of diameter distribution to the overall health of the population.
3. **Condition**  
An analysis of the street tree population by condition. The condition component plays a key role in the development of a long-term vegetative management program.
4. **Site Description**  
Describes the land use, parkway and utility configurations encountered.
5. **Removals**  
Categorizes removals by diameter class and condition.
6. **Planting Sites**  
Describes the available planting sites in the City.
7. **Appraised Value**  
Examines the monetary value of Walla Walla's urban forest.

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#### SECTION 1: TREE INVENTORY METHODOLOGY AND FINDINGS

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## 1.1 INVENTORY METHODOLOGY

Knowledge of the inventory methodology provides an understanding of the field assessment at each tree and site.

The inventory data was collected on a handheld computer called a polycorder, which allows the technicians to log a comprehensive list of data for each tree. The following sections describe the specific data in the sequence of collection.

### Zones and Sections

The inventoried area of Walla Walla was designated as management zone **A**. (More zones can be added if the town expands considerably.) This zone is divided into 11 numeric sections (**1-11**). These divisions allow the City Forester to efficiently manage subareas of the City. The City can budget for the annual pruning by looking at the tree data in **Canopy** for the sections to be pruned. By analyzing the size, distribution and density of the trees in those areas, pruning costs and financial resources can be predicted and evenly distributed.

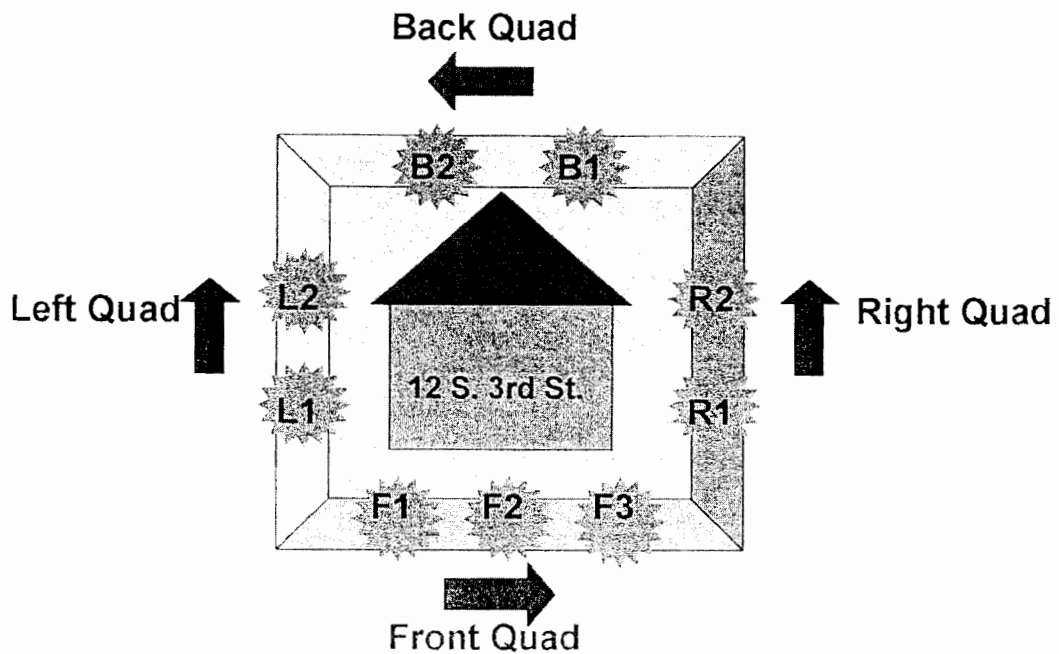
### Addresses

Each tree is assigned to the address of the lot on which it is located. Data is recorded for each address in the City, regardless of presence of a tree or planting space. Assigning a standard street address to a tree or planting space makes it easy for crews to locate trees or link resident service-requests. If no address is available or discernable, the technicians assign a fictitious address (identified with an "F"), that fits the general sequence of the block.

### Quad and Sequence

The position of a tree relative to the address is the *quad*. Directly in front of an address is the *Front quad* (F), and corner lots have a *Left quad* (L) or *Right quad* (R). Occasionally an address will take up an entire block, for a large building such as hospital, or a parking lot. These lots may have a *Back quad* (B), in addition to Front, Right and/or Left quad trees. (See **diagram 1.**) The associated cross street is logged for all quads other than Front.

If there is more than one tree per quad, a standard numeric sequence is assigned: street trees are always inventoried from left to right, for front and back quads, and from front to back for Left and Right quads. This allows crews to easily locate a specific tree when several are logged to one address. For example, the second tree back from the front street on the left corner is "L2".



**Diagram 1 – Quad Layout**

**Site Description**

There are three site descriptions assigned to each tree or planting space: land use, parkway configuration and utility configuration. Land use describes the dominant use of the property adjacent to the right-of-way:

**Land Use Descriptions**

- |           |            |
|-----------|------------|
| Apartment | Municipal  |
| Boulevard | Park       |
| Business  | Residence  |
| Church    | School     |
| Hospital  | Vacant Lot |
| Island    |            |

The parkway refers to the area between the curb and the edge of the right-of-way. This information assists the City Forester in choosing appropriate species for limited growth areas:

**Parkway Configurations**

1. Parkway is 1' to 4' wide
2. Parkway is 5' to 9' wide
3. Parkway is > 9' wide
4. Attached sidewalk
5. No sidewalk
6. Parkway is paved
7. Plant is behind an unattached sidewalk

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The utility configurations, listed below, describe the presence or absence of overhead utility lines. This detail also helps the City Forester in selecting appropriate species for planting or replacements. Additionally, it identifies trees that are the responsibility of the local utility company.

### **Utility Configurations**

1. Primary line only
2. Secondary line only
3. Telephone and or cable line only
4. Primary and secondary line only
5. Primary, secondary, telephone and cable
6. No overhead utilities
7. Street lights only

### **Species**

Field technicians identify the species of each tree, assigning a code corresponding to an entry from a list of 600 species.

### **Stem and Diameter**

The number of trunk stems is recorded. The diameter or dimensions of vegetation is based on the most current addition of the American Standard for Nursery Stock (ANSI Z60.1), as approved by the American National Standards Institute, Inc. Vegetation is measured in the following manner:

All trees are measured to the nearest inch. The caliper (diameter) of the trunk is measured six inches above the ground up to and including the four-inch caliper size; and at four-and-a-half feet (diameter breast height) when the caliper is above four-inches. No diameter is recorded for shrubs.

### **Spread and Height**

Field technicians measure the spread of trees and shrubs to the nearest five feet. They measure the height of shrubs ten feet and under to the nearest foot, and taller shrubs to the nearest five feet. The height of trees is measured upon client request.

### **Condition**

Each inventory item is rated according to five condition factors developed by the International Society of Arboriculture (ISA). The factors are trunk, scaffold branches, smaller branches and twigs, foliage, and roots. Each factor is rated from zero to five as follows:

- 5 - No problem
- 4 - No apparent problem
- 3 - Minor problem
- 2 - Major problem
- 1 - Extreme problem
- 0 - Dead



---

Based on the sum of the condition ratings, each tree receives an overall condition classification:

| Total Points | Condition |
|--------------|-----------|
| 23-25        | Excellent |
| 19-22        | Good      |
| 15-18        | Fair      |
| 11-14        | Poor      |
| 5-10         | Very Poor |
| 1- 4         | Dead      |

### **Defects**

Field technicians can assign up to three defects for each tree from a comprehensive list of physical, insect-related, and disease-related defects compiled by Natural Path Forestry Consultants. These defects can be edited prior to the inventory at the discretion of the client.

### **Maintenance Action**

Inventory technicians can log up to three maintenance needs for each tree or shrub. The maintenance actions are *prune*, *remove*, or *monitor*. *Monitor* refers to a tree that the technician recommends for further inspection. Each action is assigned as *priority* maintenance or *schedule* for maintenance.

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## 1.2 INVENTORY FINDINGS

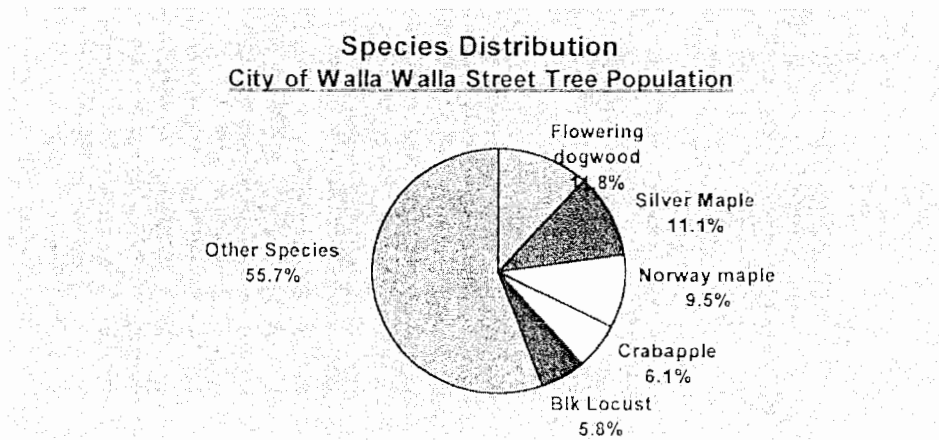
The following is a review of the City of Walla Walla's street tree population. These findings will provide an understanding of the makeup of the community's street trees, allowing staff the means to make informed decisions on maintenance and policy.

### Species Composition

There are 115 species represented in Walla Walla's street tree inventory. When this data is looked at in greater detail, it is clear that there is limited species diversity in the City.

Of all the species identified in the City, five species; flowering dogwood (11.8%), silver maple (11.1%), Norway maple (9.5%), crabapple (6.1%), and black locust (5.8%) comprise about 44.3 percent of the total tree population as shown in **Graph 1** below. The remaining 110 species represent 55.7 percent of the total population.

**Graph 1 – Species Distribution**



The main concern for the City is that with limited species diversity, catastrophic disease problems could dramatically reduce the tree population. In addition, a number of the heavily populated species are considered high-maintenance as they mature.

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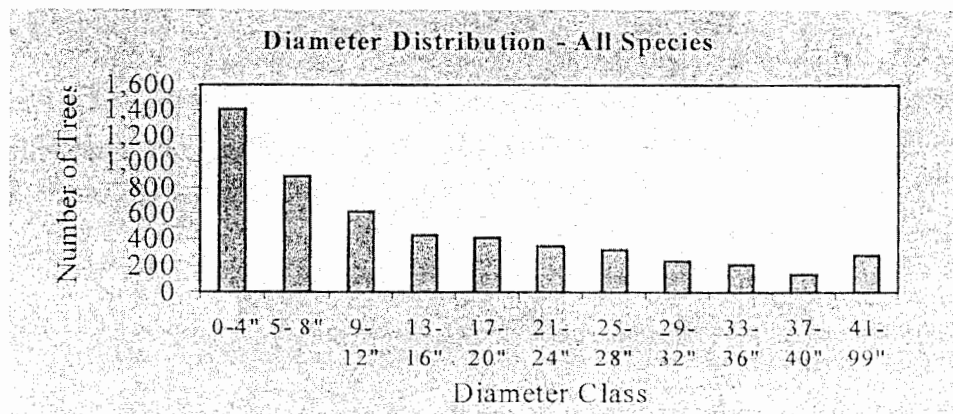
### Diameter Distribution

**Table 1** presents the diameters for all of Walla Walla's street trees, in four-inch intervals. The 0 to 4-inch diameter distribution is the most abundant, comprising 26.4% of the tree population. Approximately 22.5% of the population are over 24- inches in diameter.

| <b>Table 1 – Street Tree Diameter Distribution</b> |              |                |
|--|--------------|----------------|
| <b>Diameter</b>                                    | <b>Count</b> | <b>Percent</b> |
| 0-4"   | 1406         | 26.5           |
| 5-8"   | 889          | 16.7           |
| 9-12"  | 615          | 11.6           |
| 13-16"   | 433          | 8.2            |
| 17-20"   | 418          | 7.9            |
| 21-24"   | 351          | 6.6            |
| 23-28"   | 323          | 6.1            |
| 29-32"   | 244          | 4.6            |
| 33-36"   | 211          | 4.0            |
| 37-40"   | 134          | 2.5            |
| 41-99"   | 284          | 5.4            |
| <b>Total</b>                                       | <b>5308</b>  | <b>100.0</b>   |

**Table 1 - Diameter Distribution of the Tree Population**

**Graph 2** below, depicts the diameter distribution in graph form, showing the peak concentration of trees in the 0-4-inch diameter class.

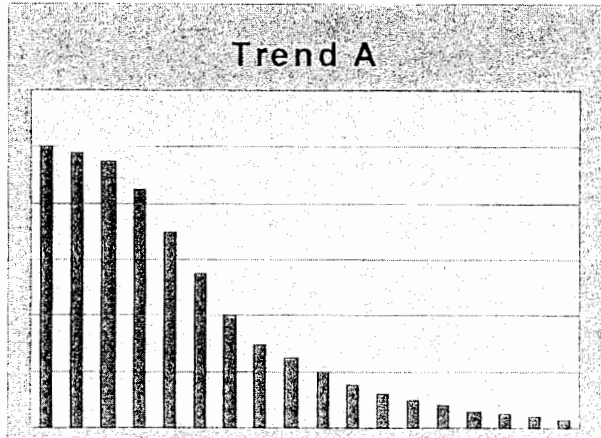


**Graph 2 - Diameter Distribution of the Tree Population**

The peak in the 0-4-inch diameter class denotes a dominance of younger plantings. This can be viewed as a positive feature of Walla Walla's urban forest, because the short term cost of maintenance will be low. Additionally, training trees while small minimizes future structural defects and long-term maintenance costs upon tree maturation.

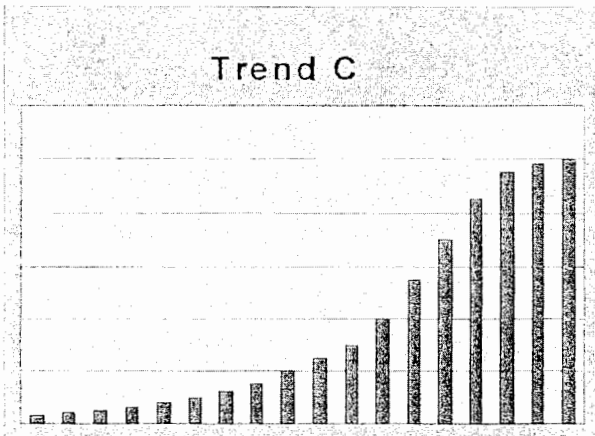
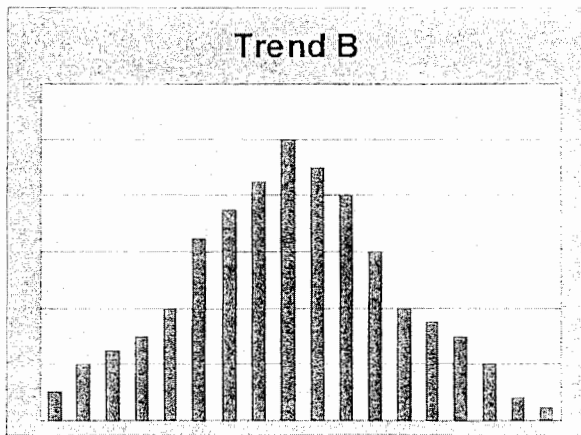
An analysis of the diameter distribution for the entire tree population does not describe the overall health of the City's trees. The following discussion is an examination of the diameter distribution at the species level, illustrating typical trends in diameter distributions (**Graph 3**). These graphs depict diameter distribution models for three distinct trends that most individual species exhibit. Note there are no scales on the axes of these graphs since the curves demonstrate general trends from the long-term effects of past planting programs. The graphs maintain the same basic shapes regardless of the number of trees represented. In other words, whether the sample size is 2,400 Norway maples or 200 red oaks, the graphs will follow roughly the same patterns. The graphs are relatively smooth because planting programs rarely go through dramatic changes in species choice over time. After the diameter distribution trends graphs are discussed, there follows a narrative and graphic comparison of four species in the City of Walla Walla to the three trends described (**Graphs 4 through 6**).

## Diameter Distribution Trends



**Trend A** mimics the ideal population: one that peaks in the smallest diameter class and gradually decreases as diameters increase. The ideal population will perpetuate itself for some time in the future, due to an abundance of trees in the lower diameter classes to replace trees lost to old-age and attrition.

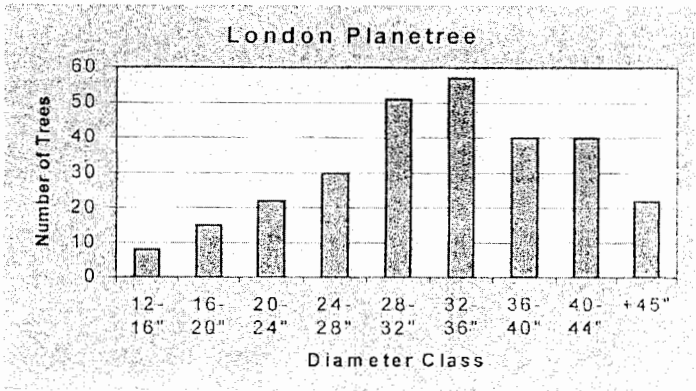
**Trend B** simulates a situation in which plantings of a species have tapered off in the recent past (10-30 years). The population peak is typically centered on the 12- to 16-inch diameter class. This peak will continue to move up the scale over time, as the few smaller-diameter trees move into larger diameter classes. As these species age, the diameter curve will resemble that of Trend C.



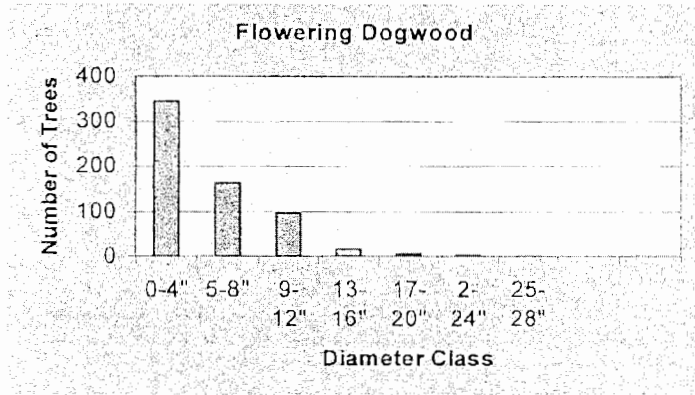
**Trend C** has a population peak centered on the largest diameter classes (usually greater than twenty inches). The planting of these species drastically decreased between twenty-five and sixty years ago. This trend is a progression from Trend B. Species exhibiting Trend C will eventually fade from the population unless an aggressive replanting program is pursued.

Graph 3 - Diameter Distribution Trends

This species shows a **Trend B** distribution. The species was heavily planted in the City, but plantings are beginning to taper. This species is heavily over-represented in the City, and plantings should be kept to a minimum.

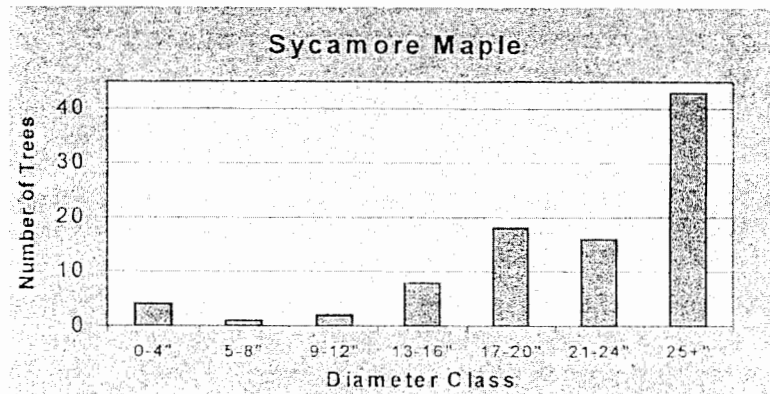


Graph 4 - Diameter Distribution of London Planetree



The flowering dogwood population has a **Trend A** distribution. The emphasis of this species could be reduced slightly. A more moderate curve could be maintained through planting a threshold number.

Graph 5 - Diameter Distribution of Flowering Dogwood



A **Trend C** distribution is displayed by the Sycamore Maple population.

**Graph 9 - Diameter Distribution of Sycamore Maple.**

These tables demonstrate the significant role that diameter distributions play in maintaining the health of the urban forest, especially when they are examined on a species-by-species basis.

Species that the City wishes to preserve in perpetuity should mimic the diameter distribution exhibited by Trend A, while trees that the City wants to phase out should fall into Trends B and C.

The difficulty in maintaining Trend A is that some species have been overplanted. In order to maintain the shape of the curve, hundreds of the same species would have to be planted. To realistically maintain healthy distribution curves, threshold numbers should be calculated for each species to determine plausible, annual planting numbers. This will allow the City to perpetuate positive species.

An example of this concept would be to create a planting program that includes red oak, the peak being set at one hundred trees. Planting approximately 20 red oak per year throughout the City would maintain a Trend A distribution curve for this species. As the annual quota for each species is met, the City would not plant that species until the next year.

A major problem is apparent when high-quality species, such as bur or white oak, exhibit Trend C curves. The only representations of the species are large-diameter trees. Over time, these trees will disappear from the population unless replanting programs are instigated.

**Condition**

Identifying the condition of each tree in an urban forest is extremely important for prioritizing maintenance work. Trees in the poorest condition classes need the most immediate attention. **Table 2** shows the distribution of Walla Walla's street trees in each condition class, and the percent this class represents in the total population.

| Table 2 - Condition Distribution |       |         |
|----------------------------------|-------|---------|
| Condition                        | Count | Percent |
| Excellent                        | 720   | 13.6    |
| Good                             | 1452  | 27.4    |
| Fair                             | 2039  | 38.4    |
| Poor                             | 748   | 14.1    |
| Very Poor                        | 265   | 5.0     |
| Dead                             | 84    | 1.6     |
| Total                            | 5308  | 100.0   |

**Table 2 - Condition Distribution for Tree Population**

The average condition of trees in Walla Walla is "fair". With the maintenance of regular pruning cycles, hazard tree reduction, and general improvements in species selection, the condition of the City's street trees should improve.

Table 3 shows the ten most abundant defects found during the inventory.

| Table 3 - Ten Most Abundant Defects |       |         |
|-------------------------------------|-------|---------|
| Defect                              | Count | Percent |
| Appressed Fork                      | 1310  | 24.7    |
| Topped                              | 1100  | 20.7    |
| Exposed Roots                       | 532   | 10.0    |
| Trunk Scar                          | 513   | 9.7     |
| Dieback-Major                       | 477   | 9.0     |
| Trunk Decay                         | 365   | 6.9     |
| Dieback-Minor                       | 350   | 6.6     |
| Crown Decay                         | 343   | 6.5     |
| Lifted Sidewalk                     | 313   | 5.9     |
| Lean                                | 279   | 5.3     |
| Total                               | 5582  | 100.0   |

**Table 3 - Ten Most Abundant Defects**

**Site Description**

The majority of the tree population was planted on adequately sized sites. Less than 7% of the trees have limited growth area (code 1 & 6, Table 4) due to parkway restrictions. Approximately 54% of the population are growing under utility lines, indicating limited overhead clearance (codes 1-5 and 7, Table 5).



| Table 4 - Parkway Site Description |       |          |
|------------------------------------|-------|----------|
| Parkway                            | Trees | Planting |
| 1. 0' to 4' wide                   | 99    | 2        |
| 2. 5' to 11' wide                  | 1739  | 400      |
| 3. > 12' wide                      | 2760  | 571      |
| 4. Attached sidewalk               | 18    | 1        |
| 5. No sidewalk                     | 404   | 36       |
| 6. Paved                           | 264   | 3        |
| 7. Behind unattached sidewalk      | 24    | 8        |
| Total                              | 5308  | 1021     |

Table 4 - Parkway Site Description

| Table 5 - Utility Site Description     |       |          |
|--|-------|----------|
| Utility                                | Trees | Planting |
| 1. Primary line only                   | 19    | 2        |
| 2. Secondary line only                 | 267   | 80       |
| 3. Telephone, and cable line only      | 1205  | 223      |
| 4. Primary and secondary line only     | 38    | 3        |
| 5. Primary, secondary, phone and cable | 1317  | 271      |
| 6. No overhead utilities               | 2428  | 439      |
| 7. Street lights only                  | 34    | 3        |
| Total                                  | 5308  | 1021     |

Table 5 - Utility Site Description

### Removals

Trees marked for removal were either dead, near dead, or considered a hazard. Trees of questionable structural integrity were marked for removal due to a high associated liability, or marked for monitoring and left to stand. Trees that appeared to have been poorly planted or those in construction areas were also marked for monitoring.

Table 6 compares the number of trees marked for removal or monitoring by diameter class.

| Table 6 - Comparison of Diameter and Maintenance Action |             |            |            |            |            |
|---|-------------|------------|------------|------------|------------|
| Diameter  | All Trees   | Removals   | %          | Monitors   | %          |
| 0-4"  | 1406        | 51         | 3.6        | 15         | 1.0        |
| 5-8"  | 889         | 31         | 3.5        | 28         | 3.1        |
| 9-12"   | 615         | 21         | 3.4        | 36         | 5.9        |
| 13-16"  | 433         | 39         | 9.0        | 41         | 9.5        |
| 17-20"  | 418         | 73         | 17.5       | 50         | 12.1       |
| 21-24"  | 351         | 53         | 15.1       | 55         | 15.6       |
| 25-28"  | 323         | 70         | 21.2       | 52         | 16.1       |
| 29-32"  | 244         | 44         | 18.0       | 49         | 20.0       |
| 33-36"  | 211         | 28         | 13.3       | 46         | 21.8       |
| 37-40"  | 134         | 23         | 17.2       | 32         | 23.1       |
| 41+"  | 284         | 47         | 16.5       | 62         | 21.8       |
| <b>Total</b>  | <b>5308</b> | <b>480</b> | <b>9.0</b> | <b>466</b> | <b>8.8</b> |

**Table 6 - Diameters of Trees Marked for Removal and Monitor**

Table 7 analyzes the removals and monitors by condition class. It is important to note that all trees categorized as dead have been marked for removal. Stumps are also marked as dead, and are marked for stump grinding. An ongoing hazard reduction program should emphasize the slow removal of the remaining "very poor" and "poor" condition trees that cannot be upgraded through pruning.

The trees marked for monitoring will require regular inspections. These trees are less structurally sound than the rest of the street tree population. There are 466 trees indicating a maintenance action of monitor

| Table 7 - Comparison of Condition and Maintenance Action |             |            |            |            |            |
|--|-------------|------------|------------|------------|------------|
| Comparison   | Total       | Removal    | Percent    | Monitor    | Percent    |
| Excellent  | 720         | 0          | 0.0        | 1          | 0.1        |
| Good   | 1452        | 0          | 0.0        | 9          | 0.6        |
| Fair   | 2039        | 16         | 0.1        | 205        | 10.0       |
| Poor   | 748         | 179        | 24.0       | 238        | 32.1       |
| Very Poor  | 265         | 201        | 75.8       | 13         | 4.9        |
| Dead   | 84          | 84         | 100.0      | 0          | 0.0        |
| <b>Total</b>   | <b>5308</b> | <b>480</b> | <b>9.0</b> | <b>466</b> | <b>8.8</b> |

**Table 7 - Condition of Trees Marked for Removal and Monitor**

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## Plantings

By identifying the number of available planting sites, a community can calculate their tree population potential. The number of potential trees is the sum of the existing trees plus the available planting sites. This relation is known as percent stocking. Percent stocking is used to compare the affect of long-term planting programs on the overall forest density within a community.

**Table 8** displays the percent stocking by section. A total of 1,021 (16.1%) planting sites were identified in the inventory, with an existing population of 5,308 trees. Therefore, the City of Walla Walla's percent stocking is  $5,308/6323 \times 100 = 84.1\%$ .

| <b>Table 8 - Percent Stocking by Section</b> |              |                        |                        |                         |
|--|--------------|------------------------|------------------------|-------------------------|
| <b>Section</b>                               | <b>Trees</b> | <b>Planting Spaces</b> | <b>Potential Sites</b> | <b>Percent Stocking</b> |
| 1  | 507          | 67                     | 574                    | 88.3                    |
| 3  | 1292         | 265                    | 1557                   | 83.1                    |
| 4  | 254          | 30                     | 284                    | 89.4                    |
| 5  | 1041         | 97                     | 1132                   | 92.1                    |
| 6  | 140          | 55                     | 195                    | 72.1                    |
| 7  | 1540         | 423                    | 1963                   | 78.5                    |
| 8  | 290          | 43                     | 333                    | 87.1                    |
| 10   | 244          | 41                     | 285                    | 85.6                    |
| <b>Total</b>                                 | <b>5308</b>  | <b>1021</b>            | <b>6323</b>            | <b>84.1</b>             |

**Table 8 – Percent Stocking by Section**

## Appraised Values

The monetary value of a tree is based on standards adopted from "The Council of Tree and Landscape Appraisers Guide for Establishing Values of Trees and Other Plants." There are two methods for determining the appraised value of a tree; the replacement cost method, and the trunk formula method. The decision of which formula to use is a function of tree size. The Replacement Cost Method is used to calculate the appraised dollar value for trees under 8-inches in diameter. For trees greater than 8-inches in diameter, the Trunk Formula Method is used. A brief explanation of each method is given below.

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**Replacement Cost Method:**

This method is based on the cost of replacing the plant in question (tree, shrub or vine) with the same or comparable **Species** and **Size** from an area nursery minus any condition and location defects of the plant being replaced. The installed cost of the new plant includes the costs of: removing the old plant, supplying the new plant; transporting it to the site; planting it in the same location; monitoring it during the maintenance period; guaranteeing the plant; and the profit margin for the nursery. The installed cost is then adjusted by the **Condition** and **Location** ratings of the old plant.

**Trunk Formula Method:**

This method is used for trees commonly considered too large to replace from a local nursery. The **Appraised Value** of a large tree is the calculated **Basic Value** adjusted by the **Condition** and **Location** ratings of the tree.

$$\text{Appraised Value} = \text{Basic Value} \times \text{Condition Rating} \times \text{Location Rating}$$

The **Basic Value** of a tree is the sum of 1) the cost of transplanting the largest normally-available tree of the same or comparable species in the region, and 2) the increase in value due to the original tree being larger than the replacement tree. The increase in value is obtained by multiplying the difference in trunk areas of the appraised tree ( $TA_A$ ) and the largest normally-available tree ( $TA_R$ ), by the cost per unit area of the replacement tree (Basic Price):

$$\text{Basic Value} = \text{Replacement Cost} + (\text{Basic Price} \times [TA_A - TA_R] \times \text{Species Rating})$$

Natural Path calculated the appraised value of Walla Walla's street trees by using constants established by the Pacific Northwest Chapter of the ISA. At the time of this report, the following constants as set by the Chapter were:

- Largest Commonly Available Transplantable Deciduous Tree:  
3.5 inches in diameter at a point six-inches above the ground.
- Largest Commonly Available Transplantable Coniferous Tree  
3.5 inches in diameter at a point six-inches above the ground.
- Replacement Cost for the Largest Commonly Available Transplantable Tree:  
\$545.00
- Base Price per Square Inch of Trunk Area  
\$36.00/ square inch

The condition rating is determined by evaluating five factors: trunk, scaffold branches, twigs, foliage and roots. Each factor is given a score of zero to five, zero representing "dead" and five representing "no problem." The total points are then equated to the following condition rating:

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**SECTION 1: TREE INVENTORY METHODOLOGY AND FINDINGS**

2007

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| Condition | Total Points | Rating   |
|-----------|--------------|----------|
| Excellent | 23 - 25      | 90 - 100 |
| Good      | 19 - 22      | 70 - 89  |
| Fair      | 15 - 18      | 50 - 69  |
| Poor      | 11 - 14      | 25 - 49  |
| Very Poor | 5 - 10       | 05 - 24  |
| Dead      | 0 - 4        | 0 - 04   |

The location rating is determined by evaluating the site, tree placement, and the tree's functional and aesthetic contribution to the landscape.

**Appraisal Example:**

The following example is an appraisal of a 27" diameter red oak in the Spokane area. Because of the tree's size, the trunk formula method was used to determine the appraised value. The following constants and variables were calculated:

**Replacement Cost of largest normally available transplantable tree**      \$545.00  
 (Set by the PNW)

**Basic Price**      \$ 36.00  
 (Set by the PNW)

**Trunk Area of subject tree (TA<sub>A</sub>)**  
 (Twenty seven-inch diameter converted to square inches)

**Trunk Area of largest normally available transplantable tree (TA<sub>R</sub>)**      12  
 (Three and a half-inch diameter converted to square inches)

**Species Rating for bur oak**  
 (Set by the Illinois Chapter of the PNW)

The following two variables, Condition and Location ratings, are based on field observations by the appraiser.

**Condition Rating**

|                   |          |        |
|-------------------|----------|--------|
| Trunk             | 4        |        |
| Scaffold Branches | 4        |        |
| Twigs             | 4        |        |
| Foliage           | 4        |        |
| Roots             | <u>4</u> |        |
|                   | 20       | = Good |

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**SECTION 1: TREE INVENTORY METHODOLOGY AND FINDINGS**

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**Location Rating**

**70%**

The **Appraised Value** of a twenty-seven inch red oak tree with the above condition and location ratings is:

$$\begin{aligned} \text{Basic Value} &= \$ 545.00 + (\$ 36.00 \times [572 - 12] \times 90\%) \\ &= \$ 18,689.00 \end{aligned}$$

$$\begin{aligned} \text{Appraised Value} &= \$ 18,689.00 \times 82\% \times 70\% \\ &= \$ 10,727.49 \end{aligned}$$

The total value of Walla Walla's inventoried street trees using the International Society of Arboriculture's trunk formula method is approximately **\$ 13,256,726**. The average value per tree is **\$2,497**. **Table 9** delineates the appraised value by section for the City, and the corresponding average price per tree.

| <b>Table 9 - Appraised Value by Section</b> |                        |                      |                    |
|---|------------------------|----------------------|--------------------|
| <b>Section</b>                              | <b>Number of Trees</b> | <b>Average Value</b> | <b>Total Value</b> |
| 1   | 507                    | 1540                 | 780,949            |
| 3   | 1292                   | 3140                 | 4,057,158          |
| 4   | 254                    | 1202                 | 305,270            |
| 5   | 1041                   | 1770                 | 1,842,480          |
| 6   | 140                    | 797                  | 111,586            |
| 7   | 1540                   | 3337                 | 5,139,636          |
| 8   | 290                    | 1918                 | 556,241            |
| 10  | 244                    | 1899                 | 463,406            |
| Total                                       | 5308                   | 2497                 | 13,256,726         |

**Table 9 - Appraised Value by Section**

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**SECTION 1: TREE INVENTORY METHODOLOGY AND FINDINGS**

**“Appendix B”**

**CITY OF WALLA WALLA  
PARKS & RECREATION DEPARTMENT**

**ANALYZE ASSET VALUE BY SITE**

| <b>PARK SITE</b>                                 | <b>TREE COUNT</b>   | <b>AVERAGE VALUE</b> | <b>TOTAL VALUE</b> |
|--|---------------------|----------------------|--------------------|
| Crawford Park                                    | 14                  | \$132                | \$1,852            |
| Eastgate Lions                                   | 177                 | \$929                | \$164,499          |
| Fort Walla Walla                                 | 770                 | \$820                | \$631,508          |
| Heritage Square                                  | 19                  | \$282                | \$4,359            |
| Howard Tietan                                    | 174                 | \$1,516              | \$263,732          |
| Menlo  | 50                  | \$4,408              | \$220,378          |
| Pioneer  | 592                 | \$3,738              | \$2,212,609        |
| Vista Terrace                                    | 53                  | \$1,113              | \$59,003           |
| Wildwood   | 85                  | \$2,383              | \$202,534          |
| Xeriscape  | 4                   | \$1,003              | \$4,012            |
| Mountain View Cemetery<br>(Incomplete)           | 717<br>(incomplete) | \$3,132              | \$2,245,753        |
| Veterans Memorial<br>Golf Course<br>(Incomplete) | 586<br>(incomplete) | \$2,901              | \$1,699,805        |
| <b>SUBTOTAL</b>                                  | <b>3,241</b>        | <b>\$22,357</b>      | <b>\$7,710,044</b> |
| Missing Inventories:                             |                     |                      |                    |
| Jefferson Park                                   | not available       | not available        | not available      |
| Memorial Park                                    | not available       | not available        | not available      |
| Washington                                       | not available       | not available        | not available      |

1/25/02

## “Appendix C”



A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas

891

# TREE HAZARD EVALUATION FORM

Site/Address: \_\_\_\_\_  
 Location: \_\_\_\_\_  
 Owner: public \_\_\_\_\_ private \_\_\_\_\_ unknown \_\_\_\_\_ other \_\_\_\_\_  
 Date: \_\_\_\_\_ Inspector: \_\_\_\_\_  
 Date of last inspection: \_\_\_\_\_

| HAZARD RATING:                 |   |              |   |               |                 |
|--------------------------------|---|--------------|---|---------------|-----------------|
| Failure Potential              | + | Size of part | + | Target Rating | = Hazard Rating |
| _____ Immediate action needed  |   |              |   |               |                 |
| _____ Needs further inspection |   |              |   |               |                 |
| _____ Dead tree                |   |              |   |               |                 |

### TREE CHARACTERISTICS

Tree #: \_\_\_\_\_ Species: \_\_\_\_\_  
 DBH: \_\_\_\_\_ # of trunks: \_\_\_\_\_ Height: \_\_\_\_\_ Spread: \_\_\_\_\_  
 Form:  generally symmetric  minor asymmetry  major asymmetry  stump sprout  stag-headed  
 Crown class:  dominant  co-dominant  intermediate  suppressed  
 Live crown ratio: \_\_\_\_\_ % Age class:  young  mature  over-mature  
 Pruning history:  crown cleaned  excessively thinned  topped  crown raised  pollarded  crown reduced  none  
 Special Value:  specimen  heritage/historic  wildlife  unusual  street tree  screen  shade  indigenous  other

### TREE HEALTH

Foliage color:  normal  chlorotic  necrotic Epicormics? Y N  
 Foliage density:  normal  sparse Leaf size:  normal  small  
 shoot growth:  excellent  average  poor Twig Dieback? Y N  
 Callus development:  excellent  average  poor  none  
 Vigor class:  excellent  average  fair  poor  
 Major pests/diseases: \_\_\_\_\_

### SITE CONDITIONS

Site Character:  residence  commercial  industrial  park  open space  natural \_\_\_\_\_  
 Landscape type:  parkway  raised bed  container  open \_\_\_\_\_  
 Irrigation:  none  adequate  inadequate  excessive  trunk wetted  
 % dripline paved:                      0%    10-25%    25-50%    50-75%    75-100%    Lifted? Y N  
 % dripline w/ fill soil:                0%    10-25%    25-50%    50-75%    75-100%  
 % dripline grade lowered:            0%    10-25%    25-50%    50-75%    75-100%  
 Soil problems:  drainage  shallow  compacted  droughty  saline  alkaline  acidic  small volume  disease center  history of fail  
 Obstructions:  lights  signage  line-of-sight  view  overhead lines  underground utilities  traffic  adjacent veg. \_\_\_\_\_  
 Wind (tree position):  single tree  below canopy  above canopy  recently exposed  windward canopy edge  area prone to windthrow

### TARGET

Use Under Tree:  building  parking  traffic  pedestrian  recreation  landscape  hardscape  small features  
 to be moved? Y N  
 Occupancy:  occasional use  medium, intermittent use  frequent use

The International Society of Arboriculture assumes no responsibility for conclusions or recommendations derived from use of this form.



**TREE DEFECTS**

Rate defect severity: S severe defect, high potential for failure  
 M defect of moderate severity  
 L defect of low severity

LEAN: \_\_\_\_\_ deg. from vertical  natural  unnatural Soil heaving: Y N

Decay in plane of lean: Y N Roots exposed: Y N Soil cracking: Y N

Compounding factors: \_\_\_\_\_ Lean severity: S M L

**ROOT DEFECTS:**

Suspect root rot: Y N Mushroom/conk present: Y N ID: \_\_\_\_\_

Exposed roots: S M L Undermined: S M L

Root pruned: \_\_\_\_\_ ft from trunk Root area affected: \_\_\_\_\_ % Buttress wounded: Y N When: \_\_\_\_\_

Restricted root area: S M L Potential for root failure: S M L

**CROWN DEFECTS:**

| DEFECT                | ROOT CROWN | TRUNK | SCAFFOLDS | BRANCHES |
|-----------------------|------------|-------|-----------|----------|
| Poor taper            |            |       |           |          |
| Codominants/forks     |            |       |           |          |
| Multiple attachments  |            |       |           |          |
| Included bark         |            |       |           |          |
| Excessive end weight  |            |       |           |          |
| Cracks/Splits         |            |       |           |          |
| Hangers               |            |       |           |          |
| Girdling              |            |       |           |          |
| Wounds                |            |       |           |          |
| Decay                 |            |       |           |          |
| Cavity                |            |       |           |          |
| Conks/Mushrooms       |            |       |           |          |
| Bleeding              |            |       |           |          |
| Loose/cracked bark    |            |       |           |          |
| Nesting hole/bee hive |            |       |           |          |
| Deadwood/stubs        |            |       |           |          |
| Borers/termites/ants  |            |       |           |          |
| Cankers/galls         |            |       |           |          |
| Previous failure      |            |       |           |          |

**HAZARD RATING**

Part most likely to fail: \_\_\_\_\_

Failure Potential: 1 2 3 Size of Part: 1 2 3 Target: 1 2 3 Hazard Rating: 1 2 3 4 5 6 7 8 9

**HAZARD ABATEMENT**

Prune:  remove defective part  reduce end weight  crown clean  thin  raise canopy  crown reduce  restructure  shape

Cable/Brace: \_\_\_\_\_ Inspect further:  root crown  decay  aerial  monitor

Remove tree: Y N Replace? Y N Move target: Y N Other: \_\_\_\_\_

Effect on adjacent trees:  none  evaluate

**COMMENTS**

“Appendix D”

| CITY OF WALLA WALLA - CLASS I - SMALL STREET TREES<br>(Over 25' tall - planting strip 3' to 5')<br>Approved for use beneath power lines |                                |             |             |            |   |  |
|---|--------------------------------|-------------|-------------|------------|---|--|
| Botanical Name  | Common Name 'Cultivar'         | Growth Rate | Max. Height | Max. Width | Description   | Comments   |
| Acer griseum  | Paperbark Maple                |             | 25          | 20         | Upright spreading, rounded crown; trifoliolate, dark green foliage; red fall color.       |  |
| Acer palmatum   | Bloodgood Japanese Maple       |             | 18          | 18         | Upright, becoming broad; purple-red foliage; red fall color.                              |  |
| Amelanchier canadensis  | Pyramidal Serviceberry         |             | 30          | 12         | Very upright; dark green foliage; white cluster flowers; brilliant red-orange fall color. | Maroon-purple 1/4" fruit.  |
| Amelanchier x grandiflora   | Apple Serviceberry             | fast        | 25          | 25         | Fast growing & heavily branching; reaches mature size early.                              | 'Autumn Brilliance' -bright red fall color; clean summer foliage resistant to leaf spot. |
| Carpinus betulus  | 'Frans Fontaine' Hornbeam      |             | 30          | 15         | Columnar; small crinkled green leaves; yellow fall color.                                 |  |
| Cercis canadensis   | Eastern Redbud                 | med         | 30          | 35         | Usually a small tree with a spreading, flat-topped, rounded crown.                        | Adaptable to many soil types; use as an accent tree.                                     |
| Cornus Florida  | Dogwood (pink/white varieties) | slow        | 25          | 25         | Small tree with low horizontal-spreading branches; layered effect, flat top.              | Slow to establish root system and needs deep watering to establish.                      |
| Crataegus lavallei  | Lavalle Hawthorn               | med         | 30          | 20         | Vigorous, upright dense, oval-headed tree; white blooms late in May.                      | Tolerates urban conditions; prefers moist soil; berry persists.                          |

**CITY OF WALLA WALLA - CLASS I - SMALL STREET TREES**  
**(Over 25' tall - planting strip 3' to 5')**  
 Approved for use beneath power lines

| <b>Botanical Name</b>   | <b>Common Name 'Cultivar'</b>  | <b>Growth Rate</b> | <b>Max. Height</b> | <b>Max. Width</b> | <b>Description</b>   | <b>Comments</b>   |
|-------------------------|--------------------------------|--------------------|--------------------|-------------------|--|---|
| Crataegus x mordenensis | Toba Hawthorn                  |                    | 20                 | 20                | Upright round; dark green foliage; fragrant white clusters, double, fading to pink; yellow fall color.                 | Red 3/8" fruit.   |
| Crataegus x phaenopyrum | 'Princeton Sentry' Hawthorn    |                    | 20                 | 12                | Upright; rich green foliage; white flower; orange-scarlet fall color.  | Very few thorns; scarlet 3'8" fruit.                                      |
| Magnolia                | 'Galaxy' Magnolia              |                    | 30                 | 15                | Pyramidal to oval; green, deciduous foliage; reddish purple flower.  |   |
| Magnolia grandiflora    | 'Edith Bogue' Magnolia         |                    | 30                 | 15                | Pyramidal, tight; dark green, glossy foliage, large, creamy white flower.  |   |
| Malus                   | 'Adams' Flowering Crab         | med                | 20                 | 20                | Dense rounded form; carmine buds opening to pink.  | Persistent 5'8" red fruit; good disease resistance.                       |
| Malus                   | 'Indian Summer' Flowering Crab | med                | 15                 | 15                | Small rounded tree; rose-red blossoms.   | Persistent 5'8" red fruit; very good disease resistance.                  |
| Malus                   | 'Pink Spires' Flowering Crab   | med                | 18                 | 12                | Narrow, upright form; pink blooms; maroon foliage.   | Persistent 1/2" reddish purple fruit.                                     |
| Malus                   | 'Prairiefire' Flowering Crab   | med                | 20                 | 20                | Upright, rounded form; deep red buds fading to purplish pink.  | Persistent 1/2" red fruit; good disease resistance; purple-bronze leaves. |
| Malus                   | 'Sentinel; Crabapple           |                    | 20                 | 12                | Narrow, upright; dark green, glossy foliage; buds red, flowers single, white with pinkish tint; yellow-tan fall color. | Bright red 1'2" persistent fruit.   |
| Malus transitoria       | 'Golden Raindrops' Crabapple   |                    | 20                 | 15                | Upright, vase shape; green, deeply cur foliage; white flower; yellow-tan fall color.                                   | Golden yellow 1'4" fruit.   |

**CITY OF WALLA WALLA - CLASS 1 - SMALL STREET TREES**  
**(Over 25' tall - planting strip 3' to 5')**

Approved for use beneath power lines

| <b>Botanical Name</b> | <b>Common Name 'Cultivar'</b>        | <b>Growth Rate</b> | <b>Max. Height</b> | <b>Max. Width</b> | <b>Description</b>   | <b>Comments</b>   |
|-----------------------|--------------------------------------|--------------------|--------------------|-------------------|--|---|
| Malus transitoria     | 'Tschonoskii'<br>Crabapple           |                    | 30                 | 14                | Pyramidal; silvery green foliage in spring, changing to green in summer; white, single flower; orange purple-scarlet fall color. | Greenish, sparse, 1" fruit.   |
| Parrotia persica      | Persian Witchhazel                   | slow-med           | 15                 | 15                | Upright spreading; late fall multi-colors.   |   |
| Photinia fraseri      | Fraser Photinia                      |                    | 25                 | 25                | Maintained to any shape, shrub like; bright red turning to green foliage.  |   |
| Prunus                | Cascade Snow Cherry                  |                    | 25                 | 30                | Upright, spreading; dark green foliage; large single white flower; yellowish to bronze-orange fall color.                        |   |
| Prunus                | 'Hally Jolivet'<br>Flowering Cherry  | med-fast           | 15                 | 15                | Rounded form; pink bud/double white blossom.   | Bud hardy; excellent for small spaces.  |
| Prunus                | 'Shirofugen'<br>Flowering Cherry     | fast               | 25                 | 25                | Wide horizontal spreading; double pink fading to white; latest to bloom.   | As with most cherries longevity is not great; use as an accent tree.          |
| Prunus cerasifera     | 'Krauter Vesuvius'<br>Flowering Plum | med                | 20                 | 20                | Ova, upright form; light pink blooms & dense purple foliage.   | Sparse fruit, heat tolerant; darker foliage & more upright than Thundercloud. |
| Prunus cerasifera     | 'Newport'<br>Flowering Plum          | med                | 20                 | 20                | Upright spreading, broadly oval; light pink blooms/purple red foliage.   | Vigorous & cold hardy; sparse fruit.  |

**CITY OF WALLA WALLA - CLASS I - SMALL STREET TREES**  
**(Over 25' tall - planting strip 3' to 5')**

Approved for use beneath power lines

| <b>Botanical Name</b> | <b>Common Name<br/>'Cultivar'</b>    | <b>Growth Rate</b> | <b>Max. Height</b> | <b>Max. Width</b> | <b>Description</b>  | <b>Comments</b>  |
|-----------------------|--------------------------------------|--------------------|--------------------|-------------------|---|--|
| Prunus serrulata      | 'Kwanzan'<br>Flowering<br>Cherry     | med-<br>fast       | 35                 | 30                | Branches stiffly upright forming an inverted cone; large pink blooms.                                 | One of the hardiest of the flowering types; useful life at 25 years. |
| Sorbus tianshanica    | Red Cascade<br>Mountain Ash          |                    | 20                 | 15                | Upright oval, compact; lustrous green foliage; small, white cluster flower; yellow-orange fall color. | Small red, clustered fruit.  |
| Styrax obassia        | Fragrant<br>Snowbell                 |                    | 25                 | 15                | Pyramidal to upright narrow oval; large, deep green foliage; yellowish fall color.                    | White in 6"-8" drooping cluster, flower.                             |
| Syringia reticulata   | Ivory Silk<br>Japanese Tree<br>Lilac | med                | 30                 | 20                | Upright spreading; dark green foliage; cream white panicles flower; yellowish to brown fall color.    |  |

**CITY OF WALLA WALLA - CLASS III - MEDIUM STREET TREES**  
(25' to 50' tall - planting strip 5' to 8')

| <b>Botanical Name</b>    | <b>Common Name<br/>'Cultivar'</b> | <b>Growth Rate</b> | <b>Max. Height</b> | <b>Max. Width</b> | <b>Description</b>   | <b>Comments</b>  |
|--------------------------|-----------------------------------|--------------------|--------------------|-------------------|--|--|
| Acer campestre           | Queen Elizabeth Hedge Maple       | med                | 40                 | 35                | Upright branching, broadly oval; dark green foliage; yellowing fall color.               | Adapts to soil conditions.   |
| Acer platanoides         | 'Crimson King' Norway Maple       | slow               | 50                 | 35                | Broadly oval; red burgundy foliage throughout summer; bronze fall color.                 |  |
| Acer nigrum              | 'Greencolumn' Black Maple         | slow               | 60                 | 30                | Upright, narrow when young; yellow to apricot orange fall color.                         | Susceptible to sunscald and bark cracks following heavy pruning.     |
| Acer rubrum              | 'Armstrong' Red Maple             | fast               | 60                 | 25                | Narrow, fastigiated; light green foliage; yellow to orange-red fall color.               | Bowhall red maple similar.   |
| Acer rubrum              | 'Autumn Blaze' Red Maple          |                    | 50                 | 25                | Upright oval form; brilliant orange-red fall color.                                      |  |
| Acer rubrum              | 'Karpick' Red Maple               | fast               | 50                 | 25                | Uniform dense, narrow form; yellow to red fall color.                                    |  |
| Acer rubrum              | 'Gerling' Red maple               |                    | 35                 | 20                | Pyramidal; green foliage; orange-red fall color.   |  |
| Acer saccharum           | 'Goldspire' Red Maple             |                    | 50                 | 15                | Dense, columnar; yellow fall color.  | Needs care, but good tree.   |
| Carpinus caroliniana     | American Hornbeam                 | slow               | 35                 | 35                | Ovate to broadly columnar, irregular.  | Relatively disease free; somewhat sensitive to drought & compaction. |
| Cercidiphyllum japonicum | Katsura Tree                      |                    | 40                 | 40                | Upright and pyramidal when young, rounded with age; yellow or apricot orange fall color. |  |

**CITY OF WALLA WALLA - CLASS III - MEDIUM STREET TREES  
(25' to 50' tall - planting strip 5' to 8')**

| <b>Botanical Name</b>   | <b>Common Name<br/>'Cultivar'</b> | <b>Growth Rate</b> | <b>Max. Height</b> | <b>Max. Width</b> | <b>Description</b>   | <b>Comments</b>   |
|-------------------------|-----------------------------------|--------------------|--------------------|-------------------|--|---|
| Cladrasiti lutea        | American Yellowwood               | med-fast           | 40                 | 30                | Broad rounded head; white fragrant flowers; yellow fall color.                       | Tolerates high pH soils as well as acid situations.                             |
| Fagus sylvatica         | Dawycok Purple Beech              |                    | 40                 | 12                | Columnar; purple foliage; brown fall color.  |   |
| Fagus sylvatica         | Tri Color Beech                   | slow               | 40                 | 25                | Graceful, slow growing; broadly oval at maturity.                                    | Irregular rose & pinkish-white margins on leaves (best color in partial shade). |
| Fagus sylvatica         | Upright Beech                     |                    | 45                 | 15                | Columnar; dark green foliage; golden brown fall color.                               |   |
| Ginkgo biloba           | 'Autumn Gold' Ginkgo              | slow               | 40                 | 40                | Broad spread form at maturity, symmetrical; golden fall color.                       | A male selection.   |
| Koelreuteria paniculata | Goldenrain Tree                   | med                | 40                 | 40                | Spreading & ascending branches form a rounded outline.                               | Very adaptable to extremes; relatively pest free.                               |
| Ostrya virginiana       | American Hornbeam                 | slow               | 40                 | 25                | Graceful tree pyramidal when young; rounded with age, yellow fall color.             | No serious insects/diseases; good for parks, golf courses & possibly streets.   |
| Pyrus calleryana        | 'Autumn Blaze' Flowering Pear     | med                | 45                 | 30                | Ovate; better branch structure & more cold hardy than 'Bradford'.                    |   |
| Pyrus calleryana        | Capital Pear                      |                    | 35                 | 12                | Columnar; medium green, glossy foliage; white flower; reddish-purple fall color.     |   |
| Pyrus calleryana        | Chanticleer Pear                  |                    | 40                 | 20                | Upright narrowly pyramidal; green, glossy foliage, white flower; reddish fall color. |   |
| Pyrus calleryana        | 'Redspire' Flowering Pear         | med                | 45                 | 30                | Dense pyramidal form; white flowers/glossy green leaves; yellow-red fall color.      | Very adaptable to city conditions.  |

**CITY OF WALLA WALLA - CLASS III - MEDIUM STREET TREES**

(25' to 50' tall - planting strip 5' to 8')

| <b>Botanical Name</b>         | <b>Common Name<br/>'Cultivar'</b> | <b>Growth Rate</b> | <b>Max. Height</b> | <b>Max. Width</b> | <b>Description</b>   | <b>Comments</b>   |
|-------------------------------|-----------------------------------|--------------------|--------------------|-------------------|--|---|
| Quercus<br>'Crimschmidt'      | Crimson Spire<br>Oak              |                    | 45                 | 15                | Columnar; tightly fastigiated; dark green to bluish-green foliage; red fall color. | Quercus robur 'Fastiagata'                                |
| Quercus robur<br>'Fastiagata' | Columnar<br>English Oak           |                    | 50                 | 15                | Broad, round open crown; dark green foliage; yellow-brown fall color.              |   |
| Tilia Americana<br>'Redmond'  | Redmond<br>American<br>Linden     | med-<br>fast       | 70                 | 45                | Pyramidal to columnar; yellow fall color.  | Tolerates a wide variety of soil and climatic conditions. |



**CITY OF WALLA WALLA CLASS III - LARGE STREET TREES  
(50' TO 70' tall - planting strip 8' to 12')**

| <b>Botanical Name</b> | <b>Common Name 'Cultivar'</b>   | <b>Growth Rate</b> | <b>Max. Height</b> | <b>Max. Width</b> | <b>Description</b>   | <b>Comments</b>   |
|-----------------------|---------------------------------|--------------------|--------------------|-------------------|--|---|
| Acer platanoides      | 'Emerald Queen'<br>Norway maple | fast               | 75                 | 60                | Ascending branches; upright-oval form.                                   | One of the better cultivars of Norway maples for urban planting.            |
| Acer platanoides      | 'Summershade'<br>Norway Maple   | very fast          | 75                 | 65                | Upright oval in habit; maintains single leader.                          | Ranked extremely high for leaf & heat tolerance & city conditions.          |
| Acer platanoides      | 'Royal Red'<br>Norway Maple     | med                | 50                 | 32                | Rounded symmetrical crown; reddish color in summer.                      | Appears to tolerate heat better than 'Crimson King'.                        |
| Acer rubrum           | 'Autumn Flame'<br>Red Maple     | med-fast           | 55                 | 45                | Shape dense rounded form; dependable early fall color.                   | One of the hardiest Red Maples; smaller leaves than other Red Maples.       |
| Acer Rubrum           | 'Morgan'<br>Red Maple           | med--fast          | 50                 | 50                | Broadly oval form; range-red fall color.                                 |   |
| Acer rubrum           | 'October Glory'<br>Red Maple    |                    | 60                 | 50                | Broad headed; range-red fall color.                                      |   |
| Acer rubrum           | 'Red Sunset'<br>Red Maple       | med-fast           | 60                 | 50                | Excellent fall color and cold hardiness.                                 |   |
| Acer saccharum        | 'Green Mountain'<br>Sugar Maple | med                | 75                 | 60                | Ascending branches; oval in habit with round top; yellow-red fall color. | Heat tolerant & performs better than species in day restricted areas.       |
| Acer saccharum        | 'Legacy'<br>Sugar Maple         | med                | 60                 | 35                | Moderately conical, dense; shades of orange, pink & red in fall.         | Similar to Green Mountain; both exhibit good leaf-fatter/scorch resistance. |
| Carpinus betulus      | European Hornbeam               | slow-med           | 60                 | 40                | Pyramidal in youth, oval-rounded to rounded at maturity.                 | Generally free of problems; 'Fastigiata' grows 30-40' tall by 20-30' wide.  |

**CITY OF WALLA WALLA CLASS III - LARGE STREET TREES**  
(50' TO 70' tall - planting strip 8' to 12')

| <b>Botanical Name</b>    | <b>Common Name</b><br>'Cultivar' | <b>Growth Rate</b> | <b>Max. Height</b> | <b>Max. Width</b> | <b>Description</b>   | <b>Comments</b>  |
|--------------------------|----------------------------------|--------------------|--------------------|-------------------|--|--|
| Cercidiphyllum japonicum | Katsura Tree                     | med-<br>fast       | 60                 | 30                | Apricot fall color.  | Supplemental watering during hot, dry periods is crucial for establishment; sun scald may occur. |
| Corylus colurna          | Turkish Filbert                  | med                | 60                 | 35                | Broadly pyramidal; ornamental catkins in early spring.               | A top street tree in Europe; thrives in adverse conditions; free of insects/disease.             |
| Fagus sylvatica          | European Beech                   | slow               | 90                 |                   | Green leaves.  | Doesn't do well in extreme heat conditions; leaves persist through winter.                       |
| Fraxinus pennsylvanica   | Cimmerson Ash                    | fast               | 50                 | 30                | Slightly narrow/upright habit; brick red fall color.                 |  |
| Fraxinus pennsylvanica   | 'Palmore' Green Ash              | med-<br>fast       | 60                 | 50                | Broadly ovate with a straight trunk; excellent branch structure.     | Tolerates adverse conditions; very cold-hardy & relatively pest free.                            |
| Fraxinus pennsylvanica   | 'Summit' Green Ash               | med-<br>fast       | 60                 | 40                | Upright, oval form; strong central leader; golden yellow fall color. | Excellent green ash cultivar.  |
| Fraxinus pennsylvanica   | 'Marshall Seedless' Ash          | Fast               | 55                 | 45                | Broadly conical, medium texture (some clones not entirely seedless). | Improved form, leaves, vigor and fewer insect/disease problems.                                  |
| Fraxinus pennsylvanica   | 'Palmore' Green Ash              | fast               | 60                 | 50                | Lustrous green foliage; yellow fall color.                           | Nice central leader.   |

**CITY OF WALLA WALLA CLASS III - LARGE STREET TREES**  
(50' TO 70' tall - planting strip 8' to 12')

| <b>Botanical Name</b>                | <b>Common Name<br/>'Cultivar'</b> | <b>Growth Rate</b> | <b>Max. Height</b> | <b>Max. Width</b> | <b>Description</b>   | <b>Comments</b>   |
|--------------------------------------|-----------------------------------|--------------------|--------------------|-------------------|--|---|
| Fraxinus pennsylvanica               | 'Summit'<br>Green Ash             |                    | 60                 | 55                | Upright tree forms a narrow, oval head; yellow fall color.   | Nice central leader.  |
| Fraxinus oxycarpa                    | 'Raywood' Ash                     | fast               | 50                 | 50                | Somewhat narrow in youth, opening up with age; round-headed.   | Relatively recent into from Australia; marginally cold-hardy.                       |
| Ginkgo biloba                        | 'Princeton<br>Sentry' Ginkgo      | slow               | 65                 | 30                | Narrow pyramidal growth; yellow fall color.  | Male selection; plant budded varieties.   |
| Gleditsia triacanthos inermis        | 'Shademaster'<br>Honeylocust      | fast               | 60                 | 45                | Ascending branches, vase-shaped as a young tree; infrequent seed pod.  | Susceptible to pod gall midge.  |
| Liquidambar styraciflua              | American Sweetgum                 | med-fast           | 75                 | 50                | Broadly pyramidal; 'Moraine' reputed to be most cold hardy.  | Iron chlorosis in alkaline soils; fruit may be a nuisance.                          |
| Liquidambar styraciflua 'Worpleston' | Worpleston American Sweetgum      | med-fast           | 60                 |                   | Upright, compact pyramidal; produces spiny round seed pods; orange to purple fall color.                         | Iron chlorosis in alkaline soils.   |
| Liriodendron tulipifera              | Tulip Tree                        | fast               | 60                 |                   | Symmetrical; pyramidal; dark green leaves; straight central leader; green yellow cup shaped flowers (not showy). |   |
| Prunus sargentii                     | Sargent Cherry                    | med                | 50                 | 50                | Excellent foliage & bark color; 'Columnaris' 40-40' x 12-18' wide.   | One of the best cherries for streets; longevity 30-50 years; use as an accent tree. |
| Quercus robra                        | 'Fastigiata'<br>English Oak       | slow               | 80                 | 70                | Short trunk; broad and open crown; dark green leaves; brown fall color.  | 1-2" acorns; mildew on leaves often a problem.                                      |
| Tilia cordata 'Greenspire'           | Greenspire Little Leaf Linden     |                    | 50                 |                   | Dense, narrow oval form; yellow fall color.  | Maintains a nice central leader; tolerates urban environments.                      |

**CITY OF WALLA WALLA - CLASS IV - VERY LARGE STREET TREES**  
(Over 70' tall - planting strip 12' or more)

| <b>Botanical Name</b>           | <b>Common Name 'Cultivar'</b>    | <b>Growth Rate</b> | <b>Max. Height</b> | <b>Max. Width</b> | <b>Description</b>  | <b>Comments</b>   |
|---------------------------------|----------------------------------|--------------------|--------------------|-------------------|---|---|
| Tilia cordata 'Greenspire'      | Little Leaf Linden               | med                | 80                 | 55                | Pyramidal in youth; upright-oval to pyramidal-rounded with age.               | More tolerant of adverse conditions than T. amer./'Greenspire'. Recommended.        |
| Fagus sylvatica                 | European Beech                   | slow-med           | 80                 | 45                | Pyramidal to oval; 'Asplenifolia' fine leaf; 'tricolor' 25-50' colorful leaf. | Beeches in general do not tolerate soil compaction.                                 |
| Liriodendron tulipifera         | Tulip Tree                       | fast               | 90                 | 50                | Pyramidal in youth maturing to oval-rounded; needs ample space.               | Aphids, yellowing leaves in summer, flowers can be a mess in summer.                |
| Quercus borealis                | Northern Red Oak                 | fast               | 90                 | 70                | Broad round head at maturity.   | Pollution resistant.  |
| Quercus robra                   | Northern Red Oak                 | fast               | 80                 | 65                | Broad round head at maturity; leaves turn red in fall.                        | Plant cannot tolerate alkaline soils.   |
| Quercus shumardii               | Shumard Oak                      | med-fast           | 80                 | 65                | Conical shape to ovate with age.  | Tolerates urban conditions including drought; compaction and slight alkaline soils. |
| Tilia Americana                 | American Linden                  | med                | 80                 | 50                | Pyramidal in youth becoming tall, stately and round-topped.                   | Aphids & other pests can be a problem; flowers attract bees.                        |
| Tilia tomentosa                 | Silver Linden                    | med                | 70                 | 55                | Broadly conical to ovate, dense and symmetrical.                              | Similar to T. cordata with regard to tolerance.                                     |
| Zelkova serrata 'Village Green' | 'Village Green' Japanese Zelkova | fast               | 80                 | 60                | Broad and vase-shaped with medium fine texture.                               | No serious pest problems.   |