

Comprehensive Urban Forestry Management Plan

2010 - 2014

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Village of Howard, Wisconsin



**Comprehensive Urban Forestry Management Plan
2010 – 2014
Village of Howard
Urban Forestry Division**

**A Division of the Public Works Department
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Urban Forestry Management Plan Executive Summary

The Urban Forestry Management Plan (UFMP) is a five year plan that directs the management and operations of the community’s urban forest utilizing the street and park tree inventory. The last edition of the UFMP was created and implemented in 2001 and the village’s urban forest has changed dramatically since.

In nine years, since the last plan was implemented, the overall tree inventory of public managed trees has increased from 5200 in 2001 to a current population of 8141 trees today. This increase can be attributed to the increase in residential construction in which street trees were installed through the Subdivision Tree Planting program. The village has also begun development of several parks in the past several years which included landscaping and tree plantings.

Findings

| Tree Location | Quantity | Estimated Replacement Value ¹ | Annual Benefits ² | Net Benefits (Benefit / Cost Ratio) ³ |
|-------------------------------------|-------------|--|------------------------------|--|
| Street & Off Right of Way | 6414 | \$ 3,618,600 | \$ 371,243 | |
| Parks | 1170 | \$ 749,280 | \$ 75,754 | |
| Village Green Golf Course | 501 | \$ 515,640 | \$ 59,339 | |
| Other Village Properties | 56 | \$ 26,490 | \$ 2730 | |
| Total Public Tree Population | 8141 | \$ 4,910,000 | \$ 509,066 | \$ 333,815 (2.90) |

1. Estimated Replacement Value is determined utilizing the *i-Tree Streets* urban forestry analysis program.
 2. Annual Benefits include energy savings, CO₂, air quality, storm water, and aesthetic benefits.
 3. Net Benefits are determined by subtracting the urban forestry program costs (budget) from the annual benefits. This figure is available only for the total tree population as program costs and budget are not broken down into the various locations.

- 25% of the trees are of the maple genus, 15% ash, 8% linden, 7% honeylocust, and 5% are in the lilac genus.
- Green ash makes up the largest percentage of species at 9.26% with honeylocust and norway maples following closely behind at slightly over 7% each.
- 70% of the trees are in good to excellent condition. 25% are in fair condition.
- 87% of the trees in the inventory are 8” or less in diameter at breast height.
- Silver maples and green ash provide the greatest benefit due to the size and quantity of these species.
- \$10.86 is spent per capita on the urban forestry program.
- \$31.60 per capita in benefits are provided by the urban forestry program.
- Current equipment is adequate to perform operations of the urban forestry program at this time.
- Program structure, ordinances, and policies are sufficient to manage the community’s urban forest.

Recommendations

- Maintain the urban forestry program budget at the current level of \$175,250. Designate this budget specific to Forestry Division operations and management and do not allow reallocation of budget to other departments or funds.
- Supplement manpower shortages with private contracting to accomplish tree maintenance schedules and goals.
- Strive to maintain maintenance pruning cycles of three years for training pruning and six years for routine tree pruning.
- Continue staff training especially on rope and saddle usage for tree maintenance operations.
- Update the Arboricultural Specifications Manual and Master Street Tree Planting Plan.
- Create an emerald ash borer management plan.
- Create park landscape / tree planting plans for various parks and the golf course.
- Continue tree planting programs and operations with an emphasis on species diversity.
- Limit planting of maples, honeylocusts, and lindens because of their high percentages in the tree inventory.
- Place a moratorium on planting ash species because of emerald ash borer.
- Utilize supplemental tree watering devices, such as *TreeGators*, to save on labor and water usage.
- Continue with tree removal management and operations for public safety.
- Create and institute a “Natural Area Management” policy.

Management strategies, maintenance schedules, and budget recommendations are included to assist the village in both short and long term tree maintenance planning. Implementing this UFMP will maximize the economic, environmental, and aesthetic benefits of the Village of Howard’s urban forest.

Introduction

The Village of Howard has shown its commitment to the proper management of its urban forest in the last two decades by the creation of an urban forestry program, inclusion of tree care ordinances in the municipal code, having an active tree board, employing a qualified urban forester on staff, and budgeting dollars to manage the program. This commitment is also shown by the acknowledgment of being named Tree City USA every year since 1992 by the National Arbor Day Foundation.

The components of an urban or community forest include street and park trees, green spaces, forested areas, as well as vegetation on residential, commercial, and other public and private properties within the community. Trees are managed to provide a continuing level of economic, environmental, and social benefits at the present as well as into the future.

Trees in the urban forest provide many benefits for the residents of the community including reduced utility cost from shading, reduction of noise, interception of rainfall reducing storm water runoff, production of oxygen, sequestration of carbon and other airborne toxins, increase property values, and many other social and economic benefits. According to the U.S. Forest Service, 100 large maturing shade trees will provide a net benefit of \$232,000 over a 40 year span. Those same 100 trees can sequester 53 tons of carbon dioxide, 430 pounds of other airborne pollutants, and intercept 139,000 gallons of rainwater annually.

The Urban Forest Management Plan (UFMP) is specific to the field operations of the community's urban forestry program. The UFMP is based on the street and park tree inventory, or the collection of data of what you have, what condition is it in, and where it is. The plan prioritizes tree plantings, maintenance, and removal activities for a multi-year time frame and provides management recommendations for the urban forestry program.

The *i-Tree Streets* urban forestry analysis and benefit computer software program was utilized throughout the preparation of this management plan to provide baseline data to demonstrate value and set priorities for effective decision making. *i-Tree* is a state-of-the-art, peer-reviewed software program developed by the USDA Forest Service and numerous cooperators including Davey Tree Expert Co., National Arbor Day Foundation, Society of Municipal Arborists, and the International Society of Arboriculture. More than 4900 communities and organizations throughout the country utilize this program to assess the effects and values of their urban forests including Milwaukee, Wisconsin; Minneapolis, Minnesota; Pittsburgh, Pennsylvania; and the Wisconsin Department of Natural Resources. For further support and information on this program visit the website at www.itreetools.org.

Purpose:

The purpose of the Village of Howard Urban Forestry Management Plan is to provide guidance to the urban forestry program in the management of the planting, maintenance and removal of publicly owned trees to cost-effectively improve the public tree resource.

Scope:

This plan will make recommendations for the management of the village's tree resource based on the tree inventory for the next five year time period (2010-2014). Budget estimates and staffing recommendations will be included to maintain and progress the urban forestry program.

Definition of Terms

Arboricultural Specifications Manual: A document that enables the village to maintain and manage public trees and specifies the proper care and treatment of these trees.

Condition Class: A rating given to a tree that evaluates the overall health and structure of a tree. The Village uses six different classes: Excellent, Good, Fair, Poor, Critical, and Dead.

Conservancy/Natural Area: A village owned property that is left in a natural state and receives little or no maintenance.

Diameter Breast Height (dbh): The diameter of a tree's trunk measured at 4 ½' above ground. This is the standard measurement in the forest industry.

Hazard Tree: A tree with a structural defect that may cause said tree, or tree part, to fail and strike a target. A target is typically a person or something of value. Trees are not considered hazardous if no target is present.

i-Tree Streets: An urban forestry analysis and benefit computer software program developed by the USDA Forest Service. This program focuses on the ecosystem services and structure of a municipality's tree population. It makes use of a tree inventory to quantify and put dollar value to trees' annual environmental and aesthetic benefits, including energy conservation, air quality, carbon dioxide reduction, stormwater control, and property value increases.

Live Crown Ratio (LCR): The relative proportion of the green crown of a tree to its overall height. Generally, healthy trees will have a LCR of 50% or greater.

Maintenance Pruning: Any pruning performed on a tree to increase its health, vigor, strength, structure, clearance and aesthetics. This is typically accomplished through the removal of dead, dying, dangerous, poorly structured, and interfering branches and limbs on a tree.

Types of maintenance pruning:

- Clearance pruning – removal of branches for various situations.
 - Streets/roadways – 14 feet.
 - Sidewalks – 10 feet.
 - Buildings & structures – 6 feet.
 - Street signs & lights – remove sufficient branches to allow adequate sight lines and lighting patterns.
- Training pruning – to be performed on trees younger than 15 years of age. This type of pruning emphasizes tree and branch structure while removing temporary branching.
- Routine pruning – to be performed on trees 15 years and older. This type of pruning emphasizes tree health, structure, and clearance requirements.

Management Unit: The village is divided into seventeen management units to provide for management, maintenance, and efficiency of urban forestry operations.

Neighborhood Tree Planting Program: A tree planting program available to the resident to have a street tree planted in the terrace along their property. This is a cost share program where the resident pays for the cost of the tree and the village pays for the labor and installation costs.

Other Village Property Tree: A tree located on other village property with the exclusion of a park, street, or Village Green Golf Course.

Park Tree: A tree located within a village's park boundary. Typically only trees within manicured areas of a park are included in the tree inventory and do not include trees in natural and wooded areas of a park.

Planting Site: An area designated by size and location where a tree may be planted.

Pruning Cycle: The length of time required to prune an entire designated tree population as needed. Optimal pruning cycles would be every two years for training pruning and every five years for routine pruning.

Street Tree: A public tree that located within the street or road right-of-way. Typically street trees are located in the street terrace or boulevard. Some street trees have been planted on private property through written agreement where insufficient room was available in the right-of-way or outside of the right-of-way on village property.

Subdivision Tree Planting Program: A tree planting program for the installation of street trees in subdivisions platted since 1999. This program has monies collected from the developer of the subdivision specifically for street tree planting and care.

Terrace: The lawn area in the road right-of-way between the street curb and the sidewalk, or where the sidewalk would be if none exists.

Tree Inventory: A collection of various data about the trees located on public properties. This data includes tree species, location, size, age, and condition.

Tree Maintenance Permit: A permit issued by the Forestry Division to any non-village employee or contractor hired by the village to perform any work on public trees.

Tree Value: The value of a tree at present time as calculated utilizing the *i-Tree Streets* software program which utilizes the Council of Tree and Landscape Appraisers (CTLA) plant appraisal formulas.

Un-improved Street: A street that does not have curb and gutter.

Village Green Golf Course: The village owned nine-hole golf course.

Tree Inventory Summary and Analysis

The Village of Howard tree inventory is a collection of data about individual trees within the overall tree population located on public properties. This data is stored utilizing Tree Tracker, a custom Access database program that interfaces with an ArcGIS computerized mapping program. The tree inventory is rotationally updated on an annual basis during planting and maintenance cycles.



Shade Tree Lane lined with street trees.

The tree inventory data was entered into the *i-Tree Streets* computer software program for analysis to generate the urban forest value, benefits, and costs to operate the program. The program was also able to generate various other reports used during the compilation of the management plan.

Tree Distribution by Location:

The Village of Howard’s current inventoried public tree population consists of 8141 trees. The largest segment of this population, 79 %, is located in the road right of way or just off of the right of way and is designated as street trees. This segment will continue to increase as new subdivisions are constructed and street trees are planted through the Subdivision Tree Planting program.

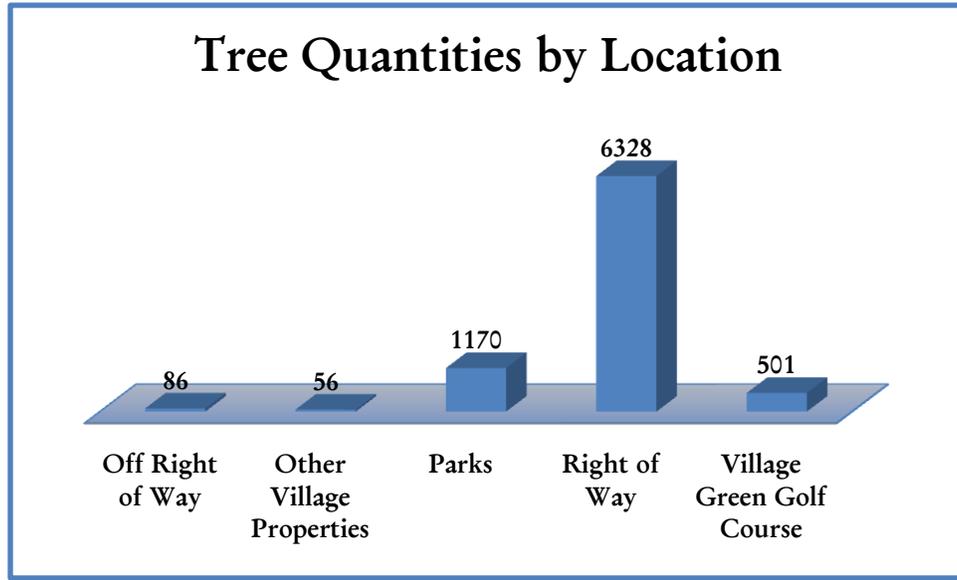


Figure 1.1

The Village of Howard parks system is comprised of nineteen parks and parkways and a community golf course. In these park lands the village maintains 1170 trees, 14% of the tree inventory, as well as various woodlands and trail systems. The Village Green Golf Course has just over 500 trees which comprises 6% of the tree population.

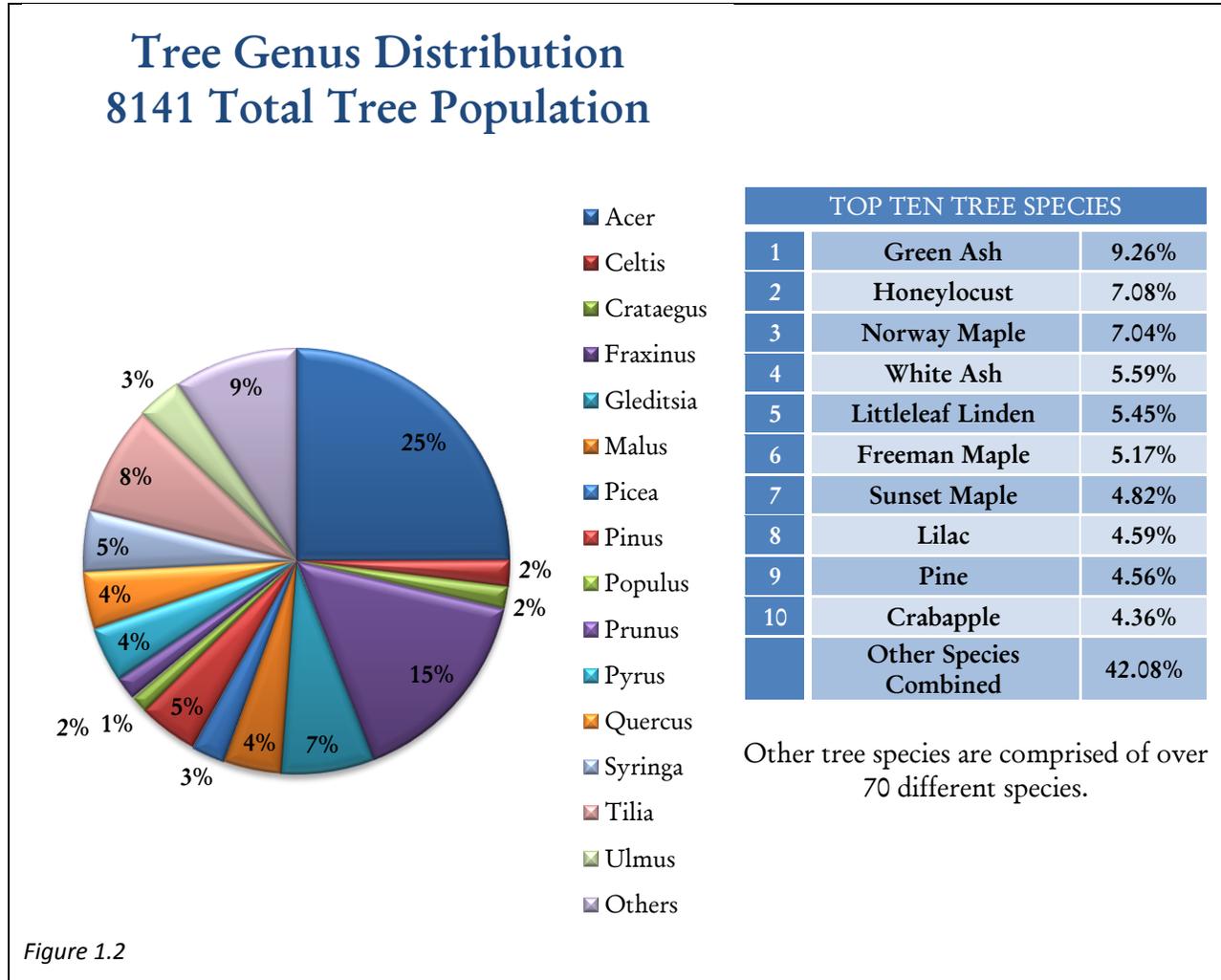


Brown County champion white oak at Village Green Golf Course.

Lastly, 56 trees are located on other village properties such as the village hall, public works facility, water tower/well sites, and a fire station.

Tree Species Summary and Analysis:

The Village of Howard public tree inventory consists of a total of 8141 trees. Of these trees, there are 43 different genera represented and a total of 80 different species.



Genus distribution (Fig. 1.2) indicates a high percentage of maple (*Acer*), and ash (*Fraxinus*) genera as well as a close to optimal level of honeylocust (*Gleditsia*) and linden (*Tilia*) genera within the tree inventory. The optimal distribution percentages are 5% of any species, 10% of any genus, and 20% of any family.

It is recommended to limit planting of maples, especially Norway and Freeman maples, honeylocust, and lindens. It is also recommended to put a moratorium on the planting of any ash species due to the eventual infestation of the emerald ash borer.

More emphasis should be placed on selecting and planting trees in the genera *Aesculus*, *Celtis*, *Corylus*, *Platanus*, *Quercus*, and *Ulmus*. By doing this, species distributions percentages will begin to trend toward optimal numbers, which in turn will provide a more diverse and healthy urban forest.

In all, the village's tree population distribution is above average compared to that of other local communities, where some genera may exceed 50%. This is attributed to the village's commitment to the urban forestry program and the proper management planning of this program as well as the relatively young age of the village's public urban forest.

Tree Condition Summary and Analysis:

Figure 1.3 shows the breakdown of the tree population into the six condition classes used to evaluate the overall health and structure of an individual tree.

The overall condition of the village's urban forest is fairly good. Seventy percent of the trees in the inventory are classified as good to excellent. Once again this can be attributed to the young age of the tree population and proper management of the resource.

The rather small percentage of dead trees is due to the relatively small percentage of unhealthy and over mature trees as well as the Forestry Division's ability to remove these trees within a short time frame.

The village should strive for the healthiest and safest urban forest that it can maintain. This will not only protect the citizenry but also create an asset to the community that will increase in value as the tree population matures. To achieve this goal it is recommended to continue with training and maintenance pruning of the trees especially on trees younger than fifteen years of age (diameters under eight inches). It is also recommended to begin a program of systematically removal and replacement of trees in the poor to critical condition as time and budgets allow.

It should be noted that these percentages could swing dramatically towards the critical to dead categories as invasive species such as the emerald ash borer becomes established into the community in the future.

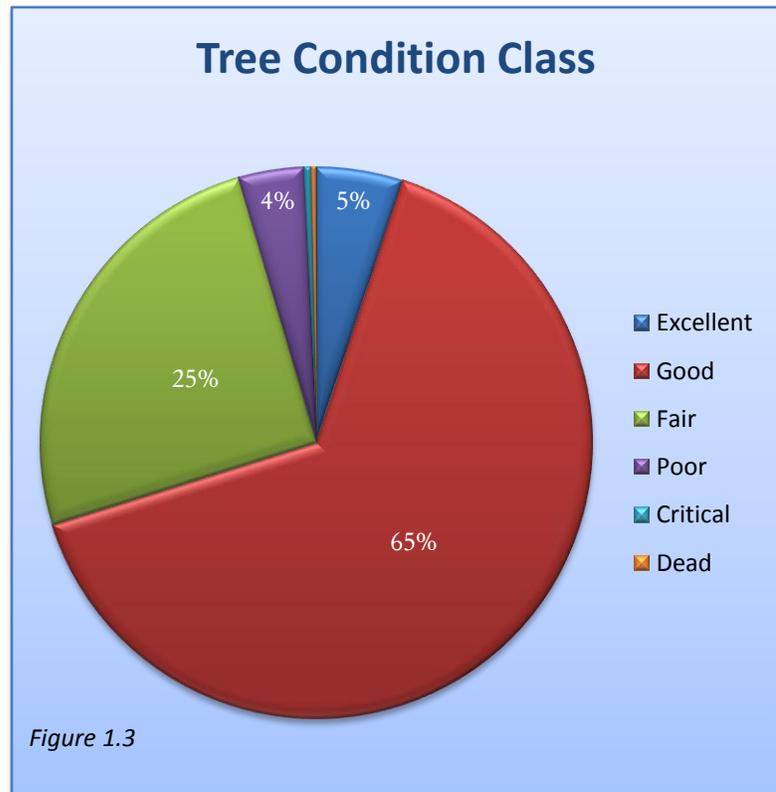


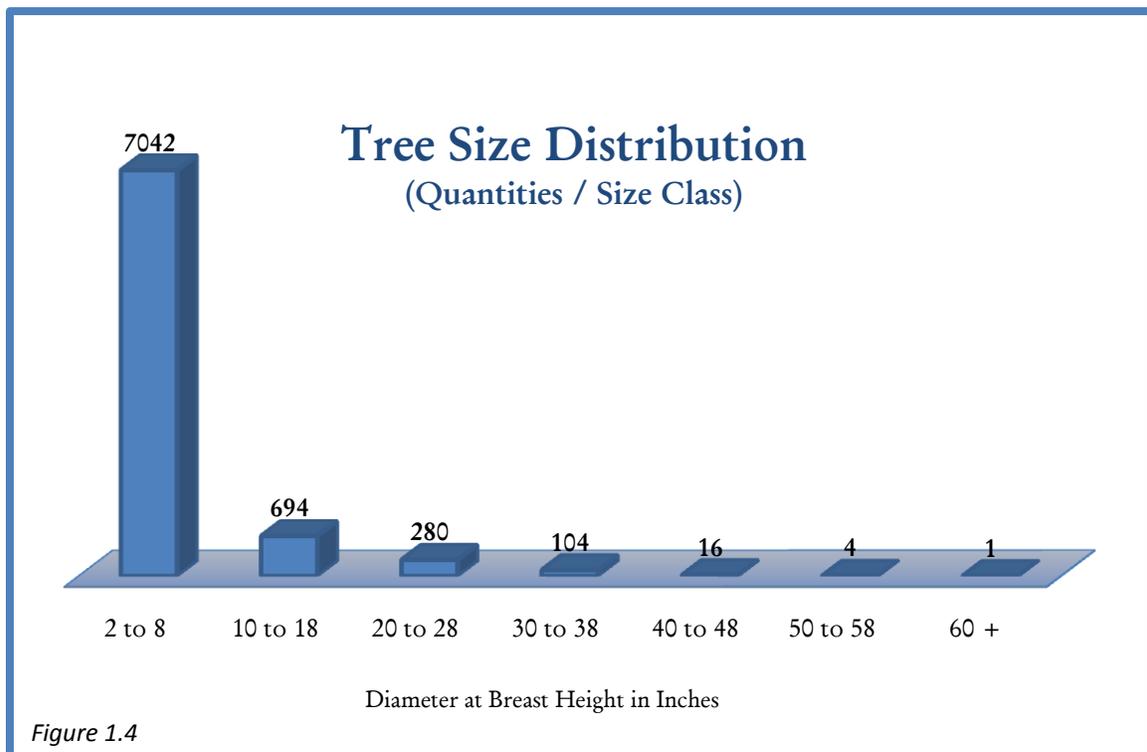
Figure 1.3

Tree Size & Age Summary and Analysis:

The village's tree population is relatively young, as shown in figure 1.4, with 86 % of the trees less than ten inches in diameter. This is due to the length of time that the urban forestry program has been instituting the various street tree planting programs. Tree planting programs have been a viable component of the urban forestry program since its inception in 1992. In 1999 the village adopted the Subdivision Tree Planting program which dramatically increased the street tree population to its current level.

The tree age and size will begin to gradually shift toward the next larger class as time progresses however the vast majority of the tree population will continue to be within the lowest class especially as new plantings are added to the inventory. This trend will continue as newer residential subdivisions are constructed in future years.

This lower size class (2"-8" dbh) is the size when the trees should receive the most attention, through maintenance training pruning, to build a healthy and solid tree structure. Costs to maintain the trees in this size class could be projected to be lower as equipment and labor used per tree are minimal. The vast majority of the training pruning can be performed by a staff person from the ground utilizing pole and hand saws or rope and saddle equipment.



Tree Valuation Summary and Analysis:

The Village of Howard public tree population of 8141 trees is valued at approximately \$4,910,000 utilizing the *i-Tree Streets* inventory program. The replacement values are estimates of the full cost of replacing trees in their current condition and location. These values are broken down per location in figure 1.5, with street trees comprising the greatest value at slightly over \$3.618 million followed by village parks, Village Green Golf Course, and other village properties.

Obviously the street tree segment has the greatest value due to the highest percentage of the tree population located there. These trees do not only have the greatest replacement value but also provide the greatest benefit to the community, again because of the higher numbers.



In addition to the overall replacement values, the trees are also valued by the benefits that they provide to the community. These benefits, which were again calculated using the *i-Tree Streets* program, include energy conservation, storm water mitigation, air quality, carbon dioxide reductions and sequestration, and aesthetic and other benefits.

The total annual benefits provided by the public tree population exceeded \$509,000 in 2009. Figure 1.6 shows a breakdown of these benefits by location, with figure 1.7 showing a breakdown of the individual benefits that each location provides per year. The total costs of administering the urban forestry program were budgeted in 2009 at \$175,250 giving a net benefit of the village's public tree population of almost \$334,000 annually or a benefit-cost ratio of 2.90.

Total Annual Benefits of All Public Trees

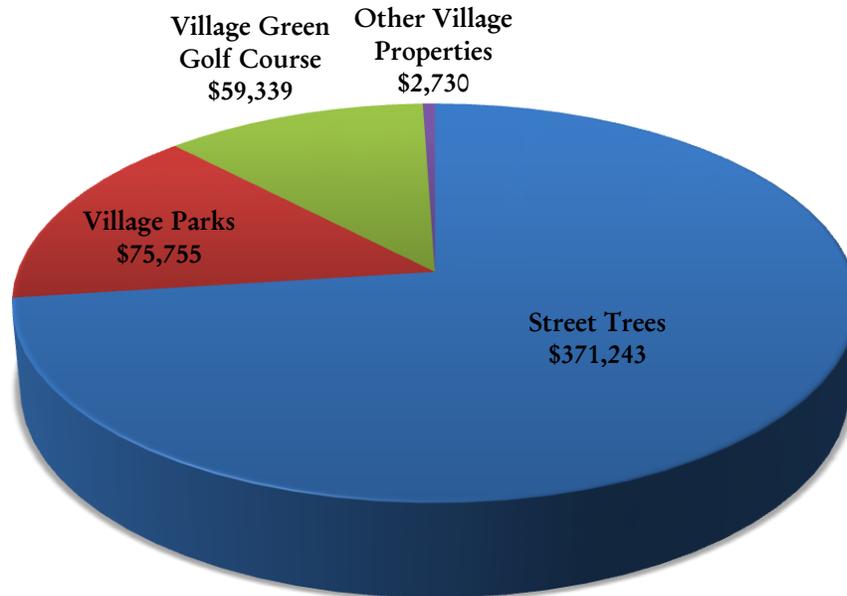


Figure 1.6

Silver maple and green ash species return the greatest benefits at \$68,015 (13.4%) and \$55,163 (10.8%) respectively of the total value. This can be attributed to the quantities of each in the inventory as well as the larger size / older age of these trees. Silver maples make up the largest population of trees greater than 18" dbh at 184 and green ash has the greatest total number of trees at 754.

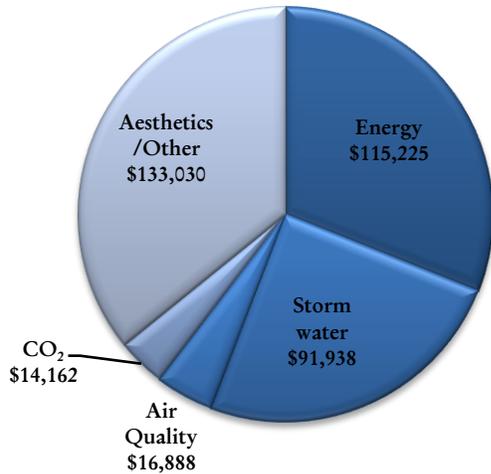
A breakdown of the annual benefits of the public trees by location is shown in figure 1.7. The five subgroups that comprise the total annual benefits are:

1. **Energy:** represents the contribution of the urban forest toward conserving energy in terms of reduced natural gas in winter and reduced electricity use for air conditioning in the summer.
2. **Stormwater:** represents the reductions in annual stormwater runoff due to rainfall interception by trees.
3. **Air Quality:** quantifies the air pollutants (O_3 , NO_2 , SO_2 , PM_{10}) deposited on tree surfaces and reduced emissions from power plants due to reduced electricity use.
4. **Carbon Dioxide (CO_2):** represents reductions in atmospheric CO_2 due to sequestration by trees and reduced emissions from power plants due to reduced energy use. The model accounts for CO_2 released as trees die and decompose as well as during care and maintenance practices.
5. **Aesthetics / Other:** represents the tangible and intangible benefits that trees reflect in increased property values.

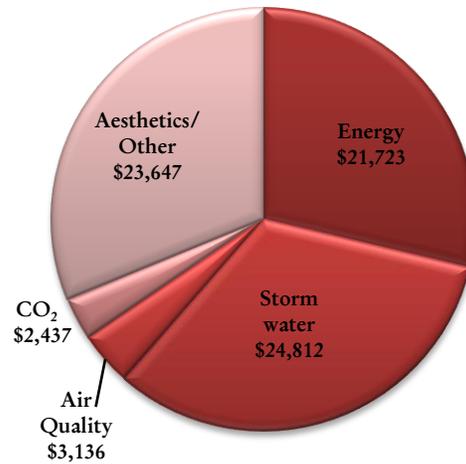
Figure 1.7

Annual Benefits of Trees by Location

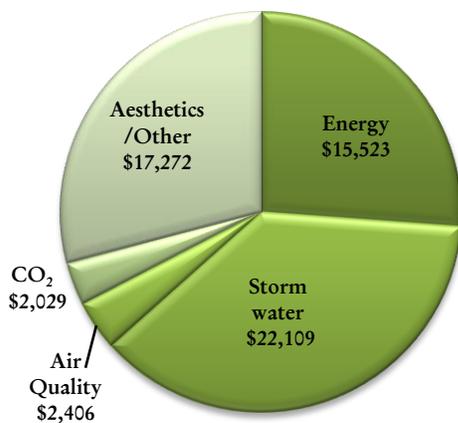
Street Trees



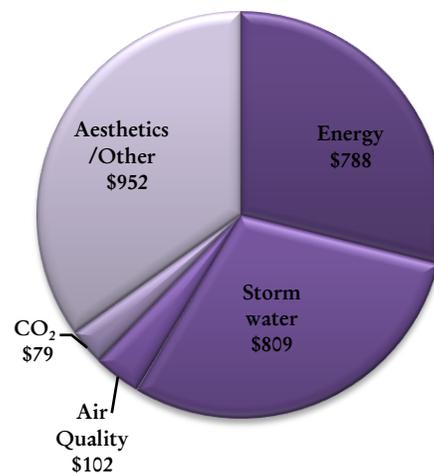
Village Park Trees



Village Green Golf Course Trees



Other Village Properties Trees



Overall the benefits that the urban forest provides will continue to grow in value as individual tree sizes increase and additional trees are planted in the future. It should be noted that individual trees will only be an asset as long as their condition, health, and structure do not become a liability. In short, maintaining the tree's health and structure increases the value and benefit of a tree.

MANAGEMENT STRATEGY & OPERATIONS

Administration & Management Assessment

Administration

The Village of Howard's urban forestry program is operated under the Forestry Division and directed by the Village Forester under the supervision of Deputy Village Administrator. The Village of Howard Tree Board is an appointed committee of five village residents that advise and consult the Village Forester and urban forestry program on matters pertaining to the operation and management of the urban forestry program.

The management of the village's urban forest is governed by village municipal code chapter 38, *Vegetation*, and the program's operations are directed by the policies and procedures set forth in the *Arboricultural Specifications Manual*.

Staffing

Current staffing of the Forestry Division is through the utilization of Street Department employees as well as seasonal part time staff in the summer. The use of the Street Department pool of employees for forestry operations is on an as needed basis per request. These employees are allowed to select various job assignments by seniority on a daily basis. At current, no employees are exclusively dedicated to urban forestry operations, nor do all have the same level of arboricultural training.

Seasonal employees are typically utilized for maintenance of newly planted trees as well as the maintenance of landscapes on village properties during the summer. Current budgets account for staffing of three seasonal employees, which are typically assigned to landscaping and horticultural duties. The employment time frame for seasonal employees is limited per the represented employee's union contract from May 15th to September 15th of each year.

In times that staff knowledge is inadequate to perform projects, contracted services are utilized. This is

typically only done on extensive, intricate, climbing operations where certified arborists are contracted to perform said work. The Forestry Division also contracts a stump grinding contractor to grind stumps and dig holes for tree planting operations.



Training

Staff associated with tree maintenance operations have been trained in proper techniques and safety using various programs including outside sources, conferences,

workshops, and in-house training. Continued education and training of staff is encouraged to provide for safer, sounder, and more efficient operations.

Equipment

The village has adequate equipment at this time to maintain the current tree population. The village's equipment inventory includes a 40' aerial bucket/chipper truck, flatbed/chipper truck, three brush chippers, various tractors/loaders, chainsaws, hand tools, and rope and saddle climbing equipment. In times that maintenance needs exceed the equipment that the village has available, proper equipment can be rented from various vendors or services can be contracted.

Administrative equipment for maintaining the tree inventory is very good and should continue to be utilized on a minimum of an annual basis for field inventory updates. The Forestry Division currently utilizes Tree Tracker, a custom Access database program that interfaces with an ArcGIS computerized mapping program. Continue to work with Spatial System Designs, the Tree Tracker program developer, to improve and update this custom program.

Conclusion

The Village of Howard has shown a commitment to the urban forestry program in the past and should continue this commitment at its current level. Many of the maintenance requirements are within the realm of the current staffing and budget funding should remain allocated accordingly. The use of additional staff, re-configuring current staff allocations, or outside contracting may be needed in future years especially as the tree population numbers and ages increase requiring additional maintenance needs.

Continued education and training of administration and field staff should always be an ongoing goal as new ideas and methodology for managing and maintaining the urban forest become available. It is recommended that some staff members be trained on rope and saddle tree maintenance operations. Utilizing this tool for certain operation will increase efficiencies especially in small tree training pruning.

Tree management and maintenance equipment utilized by the Forestry Division is satisfactory to maintain the current level of its responsibility. Because of the age structure of the street trees currently, the aerial bucket truck and ground pruning operations along with the use of rental equipment when needed will allow the Forestry Division to properly maintain the urban forest. As the age structure and tree sizes increase it may be more cost effective to upgrade equipment (i.e. 60' aerial bucket truck) in the future as compared with continued rental or leasing. It is not recommended to budget for this example during this management plan cycle.

Urban Forestry Operations

Tree Maintenance

The Forestry Division utilizes a pruning schedule to maintain publicly owned trees along streets, in parks, on the Village Green Golf Course, and other village properties throughout the seventeen forest management units (see figure 2.1). Trees are maintained per age class and pruning activity to provide tree structure, health, and optimal values (see table 2.1). Trees are also maintained on a resident request basis as deemed necessary by the Village Forester.

| Tree Pruning Operation | Training Pruning | Routine Pruning |
|------------------------|--|--|
| Age Class / Size | ≤ 15 years old / ≤ 8" dbh | > 15 years old / > 8" dbh |
| Pruning Cycle | Every three years | Every five to six years |
| Minimum Standards | <ul style="list-style-type: none"> • Remove damaged, dead, and diseased branches. • Develop central leader. • Raise crown; remove low growing branches. • Remove temporary branches. • Develop tree and branch structure. | <ul style="list-style-type: none"> • Remove damaged, dead, and diseased branches. • Maintain clearance standards over streets, sidewalks, and buildings. • Clear street signs and lights. • Remove crossing and rubbing branches. • Maintain tree and branch structure. |

Table 2.1

The scheduled pruning cycle for the next five year time period is listed below (table 2.2). Forest management units 1, 2, 6, 7, and 12 have little to no improved streets with street tree plantings, therefore these units are on a request pruning or as needed basis. Cycle pruning, or section pruning, is typically performed during the winter months of December through March with requests for pruning services performed throughout the year as needed.

It is recommended to perform training pruning on an average of 2350 trees per year in the 2-8" size class. This will achieve a three year pruning cycle for training pruning of young trees. To achieve the six year pruning cycle for routine pruning of trees larger than 8" diameter, it is recommended to maintain on average 180 trees per year.



Village street tree after training pruning.

According to the Wisconsin Department of Natural Resources – Bureau of Forestry, new tree maintenance involves training pruning – the systematic corrective and directional pruning of newly planted trees, usually done twice in the first ten years (at 2-3 years and 5-7 years after planting). After this time the trees are incorporated into the routine pruning cycle. Routine pruning indicates trees that are pruned on a regular cycle where one-sixth of the mature tree population is pruned annually for the optimal six year cycle.

Table 2.2

| Year | Training Prune 3 year cycle - Management Unit | Routine Prune 5-6 year cycle - Management Unit | Parks & Other Village Properties 5-6 year cycle |
|-------------|---|--|---|
| 2010 | 3 | 14 | Village Green Golf Course (VGGC) Sec. 3 |
| | 4 | | Meadowbrook Park |
| | 5 | | Wayne Williams Cons. Area |
| | 11 | 11 | Fire Station 2 |
| 2011 | 8 | | VGGC Sec. 5 |
| | 9 | 9 | Akzo Nobel Sports Complex |
| | 10 | 10 | Pinewood Park |
| | 13 | | |
| 2012 | 14 | | VGGC Sec. 1 |
| | 15 | 15 | Deer Run Park |
| | 16 | 16 | Lehner Park |
| | 17 | 17 | |
| 2013 | 3 | 3 | VGGC Sec. 2 |
| | 4 | | Spring Green Park |
| | 5 | 5 | Gordon Nauman Cons. Area |
| | 11 | | |
| 2014 | 8 | 8 | VGGC Sec. 4 |
| | 9 | | Juza-Oliver Family Park |
| | 10 | | Public Works Facility |
| | 13 | 13 | |

Consistent tree maintenance activities during the winter time period are limited at times due to street snow removal operations, which take priority. During other times of the year, other municipal service operations are prioritized over forestry pruning activities with the exception of resident request pruning.

Other tree maintenance activities (i.e. cabling, fertilizing, tree spading, insect and disease control, etc.) are scheduled and performed as needed and staff is available.

It is recommended to supplement staff tree maintenance pruning with contracting of pruning operations to achieve the desired pruning cycles.

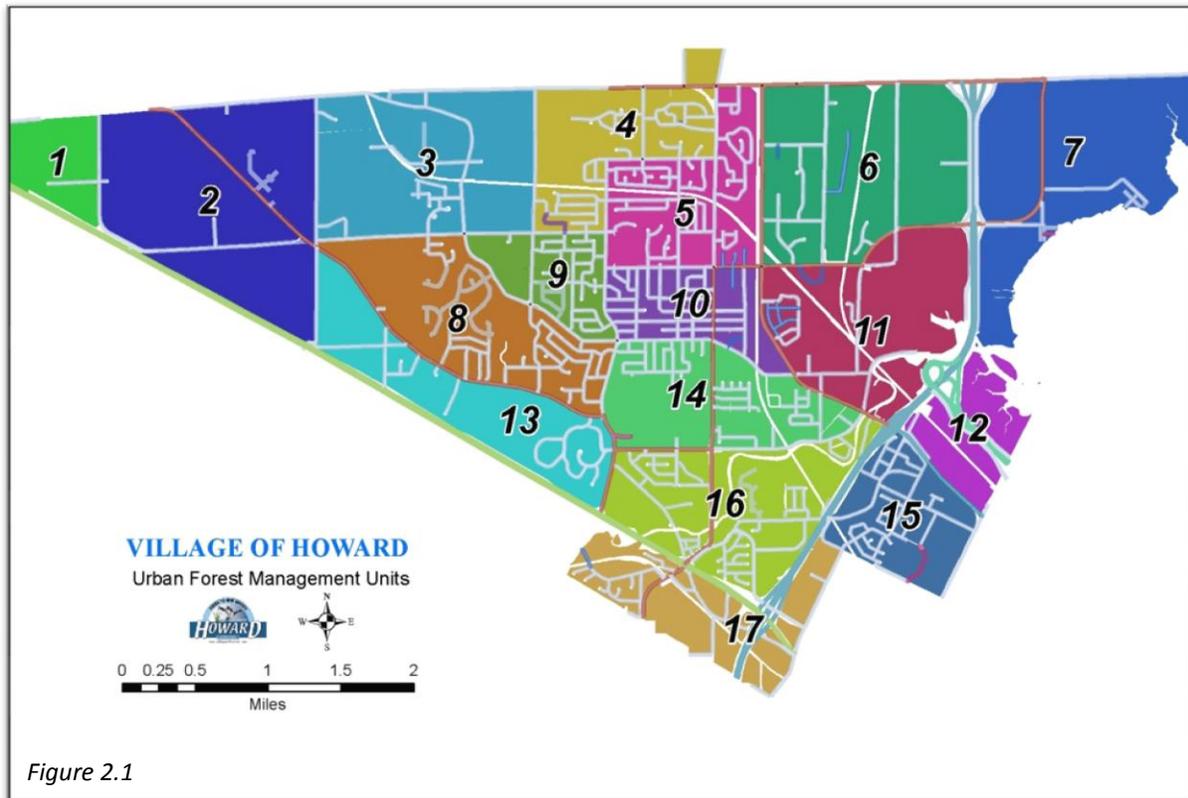


Figure 2.1

Tree Removal and Stump Grinding

Tree removal operations are on an as needed basis as dictated per the tree removal policies in the Arboricultural Specification Manual. Trees located on village owned properties and street right-of-ways are removed only when they are deemed dead, dying, dangerous, or condemned because of disease by the Village Forester. Trees may also be removed during street reconstruction projects if the project operations will be detrimental to the trees as determined by the Village Forester.

Upon the removal of a tree, with the exception of trees in wooded and natural areas, the stump will be ground out by a contractor and clean up of debris with soil and turf repairs completed by village staff. Typically these operations will be performed during tree planting time periods or during summer months as needed. When a tree is removed and the site is adequate for planting a replacement tree, the village will install a suitable species during the following planting period.

Currently there are 14 street trees scheduled for removal during 2010 for road reconstruction or tree structural issues. There are an additional 16 trees scheduled for removal in parks and the golf course. Future tree removals should continue to be scheduled and removed as needed and budgets allow.

Insect and Disease Management

The Forestry Division manages for tree insects and diseases on an as needed basis and is guided by budget or funding availability. Typically the division does not expend resources for managing tree pests

unless said pest is detrimental to the life of the tree and treatment options are cost effective. The village does allow residents and adjacent property owners to treat street trees per issuance of a Tree Maintenance Permit from the Forestry Division.

Over the past eight years the village has allocated funds to manage for the gypsy moth caterpillar when populations require aerial spraying to combat this pest. For the last three years the gypsy moth populations have been kept to manageable levels by natural and climatic factors requiring no additional management programs on our part. Regionally this pest has required less action for maintenance and I do not see a drastic change in this trend over the next five years.

A future pest threat for the urban forestry program is the eventual infestation of the emerald ash borer (EAB). The EAB is an invasive insect from China that kills all species of ash tree and has recently been discovered in a neighboring community. At this time EAB has not been detected in the Village of Howard. When EAB is detected within the village, funding and resources will need to be re-directed to account for possible treatments or tree removal and replacement operations. The Forestry Division is working with communities throughout Brown County to establish management standards and recommendation to utilize in creating an EAB management plan. It is recommended that an EAB management plan be created to assist the Forestry Division in allocation of funds and staffing to manage this pest.

Tree Planting

The urban forestry program administers two residential street tree planting programs as well as tree planting for replacements, street reconstruction, the Village Green Golf Course, and parks and other village properties. The Master Street Tree Planting Plan in the Arboricultural Specification Manual is followed when planning tree planting species, locations, and operations.

The focus of tree planting in the next five years will occur in newer residential subdivisions. This program is funded by development dollars per the Subdivision Tree Planting program and is utilized for tree purchases, labor, and post planting care. Current funding levels in the Subdivision Tree Planting program are adequate to accomplish full stocking within all new subdivision.

Current tree planting operations utilize a stump grinding contractor to dig planting holes and village staff to perform the tree planting. The program uses both balled-and-burlap and bare root trees for street and park tree plantings. Selection is dependent on policy, survivability experience, cost, and availability. The vast majority of trees planted



Village street tree being planted.

in the past five years have been balled-and-burlap stock due to reasonable costs and availability from local growers.

A factor in tree establishment and survivability continues to be proper moisture availability. Use of tree watering devices (i.e. *TreeGator*) will not only increase survivability of newly planted trees but will also eliminate unproductive labor hours during tree watering operations. Currently the Forestry Division uses these devices on trees planted in parks and street tree plantings that do not have a homeowner available to water. It is recommended to continue this practice and possibly make these devices available for purchase by homeowners if funding is available.

Most village parks and other village properties have adequate tree stocking with the exception of a few of the newer parklands. It is recommended that the village create master tree planting / landscape plans for the Disc Golf Course, Hoff-Reinhard Wildlife Preserve, Juza-Oliver Family Park, Pioneer Parkway and the Village Green Golf Course to guide the Forestry Division on species and planting site selections at these specific locations. It is also recommended to update the Master Street Tree Planting plan to tentatively establish tree species and planting quantities for individual streets to be planted in the next five years as well as update of the Street Tree Planting List.

Table 2.3

| Recommended Changes to the Street Tree Planting List | | |
|--|--------------------|---|
| Acceptable Tree Species | | |
| <i>Platanus x acerifolia</i> | London Planetree | Exclamation |
| <i>Acer freemanii</i> | | Sienna Glen, |
| <i>Acer miyabei</i> | State Street maple | State Street |
| Limit Planting | | |
| <i>Acer platanoides</i> | Norway maple | Susceptible to girdling root; overplanting |
| Undesirable Tree Species | | |
| <i>Fraxinus</i> | All ash species | Susceptible to EAB |
| <i>Prunus virginiana</i> | Canada Chokecherry | Susceptible to black knot |
| <i>Pyrus calleryana 'Bradford'</i> | Bradford Pear | Susceptible to storm damage |

Projected tree planting projects beyond the Subdivision Tree Planting program are listed below. These planting projects are funded under each of the project budgets.

- Glendale Avenue reconstruction (2010-2011)
- Velp Avenue reconstruction (2011)
- Evergreen Avenue reconstruction (2013)
- TIF #3 (Village Center)

Assessment of Other Circumstances

Consider the following circumstances when determining management strategies:

- Subdivision Tree Planting Program – all available planting sites within newer subdivisions will be planted when 75% of a street or subdivision has building completed per Village Code. Funding for this program is from development fees. The current balance in this fund is \$176, 500.
- Clearance pruning of trees encroaching on the right-of-way on rural roads and un-improved streets should be included in annual pruning schedules. This is not included in tree inventory summary and analysis.
- Management of conservancy / natural areas is minimalistic with the exception of hazard tree removal.
- Infestation of the emerald ash borer may require additional or re-allocation of existing resources. This may delay established maintenance schedules for hazard removals and reforestation.

Conclusion

The Village of Howard demonstrates great commitment to the urban forestry operations through its tree planting programs and tree maintenance.

The village should strive to maintain the tree population by utilizing a pruning schedule of a minimalistic three and six year cycle for training and routine pruning respectively. It is recommended that maintenance operations follow the aforementioned section pruning schedule. This can be accomplished by prioritizing urban forestry operations with current staffing or through outside contracting. By using these guidelines, tree structure, health, and overall valuations are improved over the life of the trees. A properly maintained urban forest is a safe urban forest that is an asset to the community.

To maintain a safe urban forest, tree removal operations should continue to be of high emphasis especially when a tree becomes a hazard to the residents of the community. With the foreseeable impact of the emerald ash borer on the urban forest, these operations will become even more important.

The street tree planting programs should continue as established with an emphasis on even greater tree species diversity. Funding for the Subdivision Tree Planting program will easily allow for maximum stocking of planting sites within new residential subdivisions. As time and funds become available, older portions of the community can be targeted with the Neighborhood Tree Planting program.

Summary of Recommendations

1. Maintain the urban forestry program budget at the current level of \$175,250. Designate this budget specific to Forestry Division operations and management and do not allow reallocation of budget to other departments or funds.
2. Supplement manpower shortages with private contracting to accomplish tree maintenance schedules and goals.
3. Continue staff training especially on rope and saddle usage for tree maintenance operations.
4. Update the Arboricultural Specifications Manual and Master Street Tree Planting Plan.
5. Create an emerald ash borer management plan.
6. Create park landscape / tree planting plans for various parks and the golf course.
7. Strive to maintain maintenance pruning cycles of three years for training pruning and six years for routine tree pruning.
8. Continue tree planting programs and operations with an emphasis on species diversity.
9. Limit planting of maples, honeylocusts, and lindens because of their high percentages in the tree inventory.
10. Place a moratorium on planting ash species because of emerald ash borer.
11. Utilize supplemental tree watering devices such as TreeGators.
12. Continue with tree removal management and operations for public safety.
13. Continue with annual tree inventory updating.
14. Create and institute a "Natural Area Management" policy.

Goals

The following is a list of goals for the urban forestry program and the Forestry Division to strive for the next five years.

1. Maintain all public trees on the recommended pruning cycles.
2. Increase species diversity and work towards optimal genus and species distributions.
3. Continue tree planting and development of the Village Arboretum.
4. Continue public education programs through electronic and print media.
5. Increase volunteerism with the urban forestry program and the Tree Board.
6. Plant all new subdivisions to their fullest stocking potential.
7. Design, landscape, and plant main entry ways into the village.
8. Continue Arbor Day programs with local schools and TCUSA recognitions for the village.

Implementation Schedule, Budgets, and Evaluations

Implementation Schedule

The following implementation schedule lists and prioritizes recommendations summarized in the Urban Forestry Management Plan.

Table 3.1

| Recommendation | Cost | Performed By | Status / Completion Date |
|--|------------------------|-----------------------------------|--------------------------|
| Annual Urban Forestry Program Budget | \$175,250 ¹ | Village Forester / Tree Board | Annually |
| Maintain Village Tree Population per Pruning Schedule | \$49,250 | Village Forester | Annually |
| Supplement Street Tree Maintenance Pruning Through Subcontracting | \$8500 ² | Village Forester | Annually |
| Continue Subdivision & Neighborhood Tree Planting Programs | Varies | Village Forester | Annually |
| Continue to Perform Tree and Stump Removals as Needed | Varies | Village Forester | Annually |
| Purchase Supplemental Tree Watering Devices | \$1000 / 60 | Village Forester | Annually |
| Tree Inventory Updates | Time (budgeted) | Village Forester / Intern | Annually |
| Personnel Training | \$500 | Consultant / Workshops / Training | Annually |
| Create Emerald Ash Borer Management Plan | Time (budgeted) | Village Forester / Tree Board | October 2010 |
| Update Arboricultural Specification Manual | Time (budgeted) | Village Forester / Tree Board | December 2010 |
| Update Master Street Tree Planting Plan | Time (budgeted) | Village Forester / Tree Board | December 2010 |
| Create Natural Area Management Policy | Time (budgeted) | Village Forester / Tree Board | December 2011 |
| Create Master Landscape & Planting Plans for Village Green Golf Course | Time (budgeted) | Village Forester / Tree Board | December 2012 |
| Create Master Landscape & Planting Plans for Parks | Time (budgeted) | Village Forester / Tree Board | December 2013 |

1. Increase the urban forestry program budget annually for inflation and staff wage/benefit increases.
2. An estimated 115 labor hours can be contracted for this cost in 2010.

Budget Recommendations

Table 3.2

| Forestry Division Line Item Summary | 2010 Budget | 2011 Budget | 2012 Budget | 2013 Budget | 2014 Budget |
|--|--------------------|---|---|---|---|
| Contracted Services | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Telephone | 1000 | 1000 | 1000 | 1000 | 1000 |
| Workshops & Conferences | 1000 | 1000 | 1000 | 1000 | 1000 |
| Professional Dues | 350 | 350 | 350 | 350 | 350 |
| Supplies & Expenses | 12,000 | 12,000 | 12,000 | 12,000 | 12,000 |
| Benefits | 41,600 | 42,850 | 44,150 | 45,450 | 46,825 |
| Salaries | 109,300 | 112,500 | 116,000 | 119,500 | 123,000 |
| Totals | 175,250 | 179,700 | 184,500 | 189,300 | 194,175 |
| | Base Budget | 3% increase in salaries & benefits |

2010 Line Item Base Budget

| Contracted Services | |
|---------------------------------|-------------|
| Contracted Tree Pruning/Removal | \$8500.00 |
| Stump Grinding / Planting Holes | \$1,500.00 |
| | |
| | \$10,000.00 |

| Telephone | |
|-----------------------|-----------|
| Local & Long Distance | \$400.00 |
| Cellular | \$600.00 |
| | |
| | \$1000.00 |

| Workshops, Training, & Conferences | |
|------------------------------------|-----------|
| WAA Conference & Workshops | \$250.00 |
| DNR Workshops | \$50.00 |
| Training - Management | \$200.00 |
| Training - Staff | \$500.00 |
| | |
| | \$1000.00 |

| Professional Dues | |
|--------------------------------|----------|
| Wisc. Arborist Association | \$40.00 |
| ISA | \$125.00 |
| Society of Municipal Arborists | \$70.00 |
| Arbor Day Foundation | \$15.00 |
| Arborist Certification | \$100.00 |
| | |
| | \$350.00 |

| Supplies & Expenses | |
|------------------------------------|-------------|
| Managerial & Office Supplies | \$500.00 |
| Tree Purchases & Planting Supplies | \$5,000.00 |
| Horticultural Materials & Supplies | \$3,500.00 |
| Tools & Misc. Equipment | \$3,000.00 |
| | |
| | \$12,000.00 |

| Employee Benefits | |
|--|--------------|
| Forester | \$23,600.00 |
| Union Laborer – Public Works (0.9 FTE / 1,872 labor hours) | \$19,800.00 |
| Less Reallocation to Developer Fund | (\$1,800.00) |
| | |
| | \$41,600.00 |

| Employee Salaries | |
|--|--------------|
| Forester | \$52,500.00 |
| Union Laborer – Public Works (0.9 FTE / 1,872 labor hours) | \$44,000.00 |
| Laborer - Seasonal (3) | \$15,000.00 |
| Less Reallocation to Developer Fund | (\$2,200.00) |
| | |
| | \$109,300.00 |

Evaluation Mechanism

Monitor and evaluate the progress of this Urban Forestry Management Plan and the recommendations set forth in the previous section annually. Make corrective actions or reset goals as needed to achieve the desired results within the timeframes set in the implementation schedule.

The Village of Howard Tree Board and Village Forester will evaluate the results of the urban forestry program operations annually in January. A report should be generated summarizing these results and how they reflect on the recommendations and goals set forth in this management plan. At such time, the Tree Board and Village Forester should recommend corrective actions, if needed, to get the program on track to achieve said recommendations and goals.

Annual recommendations should continue to be implemented throughout the life of this plan and dated items may be moved up ahead of schedule if previous recommendations are met. Recommendations should not be allowed to surpass completion dates without justification and discussion, which should then be added to this plan as amendments.



Canada Red Chokecherries along Glendale Avenue.

Appendices

1. Village of Howard Tree Inventory - *i-Tree Streets* Reports
 - a. Total Public Tree Inventory
 - i. Complete Tree Population Report
 - ii. Replacement Value Report
 - iii. Species Distribution Report
 - iv. Tree Condition Report
 - v. Net Annual Benefits Report
 - vi. Total Annual Benefits by Species Report
 - vii. Annual Benefits per category reports
 - b. Street Tree Inventory
 - i. Tree Population Report – Street Trees
 - ii. Replacement Value Report – Street Trees
 - iii. Species Distribution Report – Street Trees
 - iv. Total Annual Benefits by Species Report – Street Trees
 - c. Park Tree Inventory
 - i. Tree Population Report – Park Trees
 - ii. Replacement Value Report – Park Trees
 - iii. Species Distribution Report – Park Trees
 - iv. Total Annual Benefits by Species Report – Park Trees
 - d. Village Green Golf Course Tree Inventory
 - i. Tree Population Report – VGGC Trees
 - ii. Replacement Value Report – VGGC Trees
 - iii. Species Distribution Report – VGGC Trees
 - iv. Total Annual Benefits by Species Report – VGGC Trees
 - e. Other Village Property Tree Inventory
 - i. Tree Population Report – Other Village Property Trees
 - ii. Replacement Value Report – Other Village Property Trees
 - iii. Species Distribution Report – Other Village Property Trees
 - iv. Total Annual Benefits by Species Report – Other Village Property Trees
2. Village of Howard Arboricultural Specification Manual
3. Village of Howard Master Street Tree Planting Plan
4. Village of Howard Tree Maintenance Permit Application
5. Village of Howard Municipal Code: Chapter 38; Chapter 46 Sec 46-172(8), Sec. 46-174



i-Tree

Streets

User's Manual

v. 3.0



i-Tree is a cooperative initiative



Arbor Day Foundation



About i-Tree

i-Tree is a state-of-the-art, peer-reviewed software suite from the USDA Forest Service that provides urban and community forestry analysis and benefits assessment tools. The i-Tree tools help communities of all sizes to strengthen their urban forest management and advocacy efforts by quantifying the environmental services that trees provide and assessing the structure of the urban forest.

i-Tree has been used by communities, non-profit organizations, consultants, volunteers, and students to report on the urban forest at all scales from individual trees to parcels, neighborhoods, cities, and entire states. By understanding the local, tangible ecosystem services that trees provide, i-Tree users can link urban forest management activities with environmental quality and community livability. Whether your interest is a single tree or an entire forest, i-Tree provides baseline data that you can use to demonstrate value and set priorities for more effective decision-making.

Developed by USDA Forest Service and numerous cooperators, i-Tree is in the public domain and available by request through the i-Tree website (www.itreetools.org). The Forest Service, Davey Tree Expert Company, National Arbor Day Foundation, Society of Municipal Arborists, and the International Society of Arboriculture have entered into a cooperative partnership to further develop, disseminate, and provide technical support for the suite.

i-Tree Products

The i-Tree software suite v 3.0 includes two flagship urban forest analysis tools and three utility programs.

i-Tree Eco provides a broad picture of the entire urban forest. It is designed to use field data from randomly located plots throughout a community along with local hourly air pollution and meteorological data to quantify urban forest structure, environmental effects, and value to communities.

i-Tree Streets focuses on the ecosystem services and structure of a municipality's street tree population. It makes use of a sample or complete inventory to quantify and put a dollar value on the trees' annual environmental and aesthetic benefits, including energy conservation, air quality improvement, carbon dioxide reduction, stormwater control, and property value increases.

i-Tree Species Selector is a free-standing utility designed to help urban foresters select the most appropriate tree species based on environmental function and geographic area.

i-Tree Storm helps you to assess widespread community damage in a simple, credible, and efficient manner immediately after a severe storm. It is adaptable to various

community types and sizes and provides information on the time and funds needed to mitigate storm damage.

i-Tree Vue (Beta) allows you to make use of freely available national land cover data maps to assess your community's land cover, including tree canopy, and some of the ecosystem services provided by your current urban forest. The effects of planting scenarios on future benefits can also be modeled. This program is a beta version, i.e., it is still in development and feedback is appreciated.

Disclaimer

The use of trade, firm or corporation names in this publication is solely for the information and convenience of the reader. Such use does not constitute an official endorsement or approval by the U. S. Department of Agriculture or the Forest Service of any product or service to the exclusion of others that may be suitable. The software distributed under the label "i-Tree Software Suite v3.0" is provided without warranty of any kind. Its use is governed by the End User License Agreement (EULA) to which the user agrees before installation.

Feedback

The i-Tree Development Team actively seeks feedback on any component of the project: the software suite itself, the manuals, or the process of development, dissemination, support, and refinement. Please send comments through any of the means listed on the i-Tree support page: <http://www.itreetools.org/support/>. You can also use the Report a Bug feature available under the Help menu right in the software itself. User feedback will allow these tools to be updated and improved!

Acknowledgements

i-Tree

Components of the i-Tree software suite have been developed over the last few decades by the USDA Forest Service and numerous cooperators. Support for the development and release of i-Tree v 3.0 has come from USDA Forest Service Research, State and Private Forestry, and their cooperators through the i-Tree Cooperative Partnership of Davey Tree Expert Company, National Arbor Day Foundation, Society of Municipal Arborists, and the International Society of Arboriculture.

i-Tree Streets

Streets was developed by a team of researchers at the USDA Forest Service, PSW Research Station's Center for Urban Forest Research in Davis, CA. The Streets application was conceived and developed by Greg McPherson, Scott Maco, and Jim Simpson. James Ho programmed STRATUM. The numerical models used by Streets to calculate tree benefit data are based on years of research by Drs. McPherson, Simpson, and Qingfu Xiao (UC Davis). Reference city data on tree growth and geographic variables were developed under the direction of Paula Peper, Kelaine Vargas, and Shelley Gardner.

Integrated elements of the Mobile Community Tree Inventory application are credited to David Bloniarz (USFS, NRS), Robert Sacks (Bluejay Software), H. Dennis Ryan (University of Massachusetts, Amherst), and Michael O'Loughlin (City of Springfield, Massachusetts).

Revisions for i-Tree Streets versions were carried out by members of The Davey Institute, including Scott Maco, David Ellingsworth, Michael Kerr, Lianghu Tian and Al Zelaya based on newly available research from PSW and feedback from i-Tree users. The manual was edited and designed by Kelaine Vargas.

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Introduction

Streets (an adaptation of the Street Tree Resource Analysis Tool for Urban Forest Managers [STRATUM]) is an easy-to-use software tool with a focus on a municipality's street trees that enables any community to inventory and assess the benefits its urban forest is providing. The analysis provides baseline data to improve management of the urban forest and assist communities to garner support and funding for their programs. Streets assesses the following aspects of a street tree population:

Structure: Streets describes the species composition, age distribution, species importance values, and canopy cover of the urban forest, helping managers anticipate future planting needs and the potential impact of pest threats.

Function: The core of Streets is its capacity to analyze the ecosystem services, i.e., the function, the urban forest is providing. These services include energy conservation, air quality improvement, stormwater management, and carbon dioxide reduction. Increased property values due to aesthetic and other benefits are also calculated.

Value: Streets quantifies the environmental and other benefits that the urban forest is providing, both in unit terms (e.g., kilowatt hours of electricity conserved) and in dollar terms. Management costs can be included in the analysis to determine the return on investment the trees are providing.

Management needs: If you choose to collect inventory data related to tree condition, maintenance requirements, infrastructure conflicts, or pest threats, Streets produces reports that will help make use of this information for management and budget planning.

Using the reports and information provided by Streets will help you:

Improve the return on your investment dollar by determining which tree species maximize canopy cover and provide the benefits that are important to your community.

Determine the management needs of your urban forest to maintain and improve the health of the trees.

Encourage investment from partners for such things as carbon credits or energy conservation.

Gain public support by demonstrating the value of trees to the enhancing quality of life in your community.

Conduct economic evaluations of tree performance using annual budget and expenditure data.

Assess costs of management—rather than benefits alone—to provide a platform for strategic planning.

Designed to be flexible and adaptive, Streets is not GIS-based and requires only basic inventory data. The Streets inventory protocol and PDA application can be used for communities interested in conducting a sample or complete street tree inventory. In addition, Streets can make use of any existing street tree inventory as long as species and DBH data are present. The inventory must be formatted according to Streets protocols.

Reports can be produced for the entire city, for management zones, or by species. Streets uses regional tree growth models and regional default costs and benefits, which can be customized for local conditions. Streets will provide you with quantifiable justification for your tree program, whether you want to preserve existing trees or increase your budget. You will be able to answer the most important question related to your tree program: Do the accrued benefits of street trees outweigh their management costs?

State-of-the-art research provides the scientific foundation for Streets's benefits reports. Data on the benefits and costs of maintaining street trees come from extensive field research and laboratory modeling for 16 national climate regions. For more information on the methods used, see the published series of Tree Guides (available at www.itreetools.org under Resources), which correspond to the Streets climate regions.

NOTE: In v3.0 all regions are available except Central Florida. Research and development are ongoing and this final region should be available in the near future.

About This Manual

This manual provides all the information needed to conduct a Streets project. We begin with installing the software and continue with the four project phases:

Phase I: Getting Started. In this section, we talk about decisions that need to be made right at the outset, such as whether you will use an existing inventory or conduct a new one and whether a new inventory will be a random sample of street segments or a complete inventory of all trees. Phase I also includes gathering general data that you'll need to consider or have ready, such as city budget information, local benefit prices, and a list of street names for inventories. During this phase, you will also plan your inventory, either determining the fields you will collect and defining the categories within them or organizing your existing inventory to fit the Streets requirements. The final step in getting started is creating a sample inventory, if necessary.

Phase II: Getting Started with the Software. In this section, we use the Streets software to enter the data we collected during Phase I, configure our inventory, and set-up the PDA application for those who will be using this tool to collect data.

Phase III: Out in the Field. This phase is where all the hard work gets done, as you send your inventory crews out into the field to collect data. This section of the manual focuses on using the PDA.

Phase IV: Back at Your Desk: Running Streets. In this section, we describe how to run the software to get results. We start with transferring data from the paper forms or PDA to the desktop or uploading your existing inventory, and discuss how to make changes to your inventory and how to recheck data in the field. Lastly, this section covers all of the available reports and describes how to save, export, and print your results.

Appendix I: Random Sample Workbook. If you are conducting a sample inventory, Appendix I gives step-by-step instructions for one method of generating random plots using ArcGIS.

Appendix II: Troubleshooting. There are a few common mistakes we've noticed over the years that happen to Streets users. In this appendix, we describe what they look like and how to fix them.

Appendix III: Formatting Pest Protocol Data for Import. Tables presenting the data fields and categories associated with the IPED pest detection protocol are given here.

Appendix 1a.

Complete Population of Public Trees

1/5/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|--|----------------|------------|--------------|------------|------------|------------|-----------|-----------|-----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Broadleaf Deciduous Large (BDL) | | | | | | | | | | |
| Green ash | 19 | 37 | 597 | 44 | 10 | 8 | 3 | 0 | 0 | 718 |
| White ash | 18 | 14 | 421 | 2 | 0 | 0 | 0 | 0 | 0 | 455 |
| Freeman maple | 69 | 55 | 294 | 3 | 0 | 0 | 0 | 0 | 0 | 421 |
| Elm | 111 | 13 | 136 | 0 | 0 | 0 | 0 | 0 | 0 | 260 |
| Silver maple | 0 | 3 | 40 | 23 | 43 | 82 | 46 | 7 | 6 | 250 |
| Northern hackberry | 76 | 31 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 159 |
| American basswood | 7 | 22 | 93 | 19 | 10 | 0 | 3 | 0 | 0 | 154 |
| Sugar maple | 3 | 7 | 126 | 2 | 4 | 2 | 0 | 0 | 0 | 144 |
| Kentucky coffeetree | 11 | 4 | 119 | 0 | 0 | 0 | 0 | 0 | 0 | 134 |
| Northern red oak | 35 | 4 | 31 | 8 | 1 | 2 | 3 | 2 | 1 | 87 |
| Eastern cottonwood | 0 | 3 | 10 | 14 | 23 | 14 | 6 | 8 | 4 | 82 |
| Paper birch | 2 | 9 | 19 | 19 | 2 | 2 | 0 | 0 | 0 | 53 |
| Red maple | 5 | 6 | 26 | 2 | 5 | 4 | 2 | 0 | 0 | 50 |
| Blue ash | 2 | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 37 |
| White oak | 3 | 0 | 8 | 0 | 1 | 3 | 6 | 3 | 3 | 27 |
| State Street maple | 4 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| Northern catalpa | 1 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 17 |
| Lombardy poplar | 0 | 6 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 17 |
| Bur oak | 6 | 0 | 5 | 2 | 0 | 1 | 1 | 1 | 0 | 16 |
| American elm | 0 | 1 | 2 | 3 | 4 | 1 | 1 | 0 | 0 | 12 |
| Chinkapin oak | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Mancana ash | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Black walnut | 0 | 2 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 7 |
| Shagbark hickory | 1 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 6 |
| Tulip tree | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Scarlet oak | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| American beech | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Trembling aspen | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| English oak | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Butternut | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| American sycamore | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Cottonwood | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Bigtooth aspen | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Pin oak | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 375 | 223 | 2,095 | 145 | 104 | 119 | 71 | 21 | 14 | 3,167 (±NaN) |

Broadleaf Deciduous Medium (BDM)

| | | | | | | | | | | |
|------------------------|-----|----|-----|----|----|---|---|---|---|-----|
| Honeylocust | 201 | 69 | 298 | 7 | 1 | 0 | 0 | 0 | 0 | 576 |
| Norway maple | 24 | 22 | 457 | 33 | 27 | 9 | 1 | 0 | 0 | 573 |
| Littleleaf linden | 61 | 38 | 344 | 0 | 1 | 0 | 0 | 0 | 0 | 444 |
| Sunset maple | 225 | 18 | 149 | 0 | 0 | 0 | 0 | 0 | 0 | 392 |
| Callery pear | 148 | 38 | 121 | 0 | 0 | 0 | 0 | 0 | 0 | 307 |
| Swamp white oak | 47 | 41 | 77 | 0 | 1 | 0 | 0 | 1 | 0 | 167 |
| Ginkgo | 6 | 4 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 53 |
| Turkish filbert | 28 | 2 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 51 |
| Ohio buckeye | 0 | 2 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 46 |
| Crimean linden | 1 | 12 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 46 |
| Swamp x Bur oak | 11 | 1 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 43 |
| Boxelder | 3 | 7 | 6 | 12 | 10 | 2 | 1 | 1 | 0 | 42 |
| Sterling Silver linden | 28 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| River birch | 5 | 3 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| Other | 0 | 2 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| Willow | 0 | 0 | 0 | 4 | 2 | 3 | 3 | 0 | 0 | 12 |
| Siberian elm | 0 | 2 | 6 | 2 | 1 | 0 | 0 | 0 | 0 | 11 |
| Yellow buckeye | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Russian olive | 0 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 5 |
| Black ash | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Amur corktree | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Northern pin oak | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |

Complete Population of Public Trees

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| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|---|----------------|------------|--------------|-----------|-----------|-----------|----------|----------|----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Yellowwood | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Weeping willow | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 791 | 264 | 1,678 | 58 | 48 | 14 | 5 | 2 | 0 | 2,860 (±NaN) |
| Broadleaf Deciduous Small (BDS) | | | | | | | | | | |
| Crabapple | 23 | 197 | 135 | 0 | 0 | 0 | 0 | 0 | 0 | 355 |
| Japanese tree lilac | 55 | 83 | 188 | 0 | 0 | 0 | 0 | 0 | 0 | 326 |
| Thornless hawthorn | 13 | 47 | 64 | 0 | 0 | 0 | 0 | 0 | 0 | 124 |
| Tatarian maple | 42 | 35 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 120 |
| Canada Red chokecherry | 11 | 2 | 86 | 1 | 0 | 0 | 0 | 0 | 0 | 100 |
| Pekin lilac | 3 | 4 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 47 |
| Leprechaun ash | 2 | 26 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 36 |
| Autumn Brilliance servicebe | 7 | 24 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| Korean Sun pear | 24 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 |
| Korean mountainash | 1 | 3 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 29 |
| Summer Glow cherry | 1 | 3 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| Musclewood | 20 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 27 |
| Eastern hophornbeam | 11 | 0 | 7 | 0 | 0 | 1 | 0 | 0 | 0 | 19 |
| Amur maackia | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| Amur maple | 0 | 7 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Washington hawthorn | 1 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Persian parrotia | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| European mountainash | 3 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| Apple | 5 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 7 |
| Hawthorn | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 5 |
| Common black cherry | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 5 |
| European smoketree | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Prairie Gem pear | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Serviceberry | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Cherry plum | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Eastern redbud | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Double Flowering cherry | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Hedge maple | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| European alder | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Cumulus serviceberry | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Katsuratree | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Winter King hawthorn | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Plum | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Purpleleaf plum | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Amur chokecherry | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Staghorn sumac | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| American mountainash | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Lilac species | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 230 | 461 | 672 | 4 | 2 | 1 | 0 | 0 | 0 | 1,370 (±NaN) |
| Broadleaf Evergreen Large (BEL) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Medium (BEM) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Small (BES) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Conifer Evergreen Large (CEL) | | | | | | | | | | |
| Eastern white pine | 7 | 6 | 56 | 36 | 18 | 3 | 1 | 1 | 0 | 128 |
| Northern white cedar | 3 | 3 | 22 | 58 | 7 | 0 | 0 | 0 | 0 | 93 |
| White spruce | 10 | 7 | 30 | 3 | 0 | 0 | 0 | 0 | 0 | 50 |
| Norway spruce | 21 | 16 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 44 |
| Dawn redwood | 2 | 1 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| Scotch pine | 0 | 0 | 6 | 2 | 2 | 0 | 0 | 0 | 0 | 10 |

Complete Population of Public Trees

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| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|---------------------------------------|----------------|--------------|--------------|------------|------------|------------|-----------|-----------|-----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Ponderosa pine | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Red pine | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| Bristlecone pine | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 45 | 34 | 136 | 101 | 27 | 3 | 1 | 1 | 0 | 348 (±NaN) |
| Conifer Evergreen Medium (CEM) | | | | | | | | | | |
| Austrian pine | 3 | 5 | 129 | 55 | 17 | 9 | 1 | 0 | 0 | 219 |
| Blue spruce | 3 | 21 | 45 | 10 | 0 | 2 | 0 | 0 | 0 | 81 |
| Techny arborivita | 0 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 46 |
| Serbian spruce | 1 | 11 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 29 |
| Swiss Stone pine | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Balsam fir | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Japanese larch | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Black spruce | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| European larch | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Tamarack | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Baldcypress | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 13 | 40 | 247 | 65 | 17 | 11 | 1 | 0 | 0 | 394 (±NaN) |
| Conifer Evergreen Small (CES) | | | | | | | | | | |
| Eastern red cedar | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 (±NaN) |
| Grand Total | 1,454 | 1,023 | 4,829 | 373 | 198 | 148 | 78 | 24 | 14 | 8,141 (±0) |

Replacement Value for Public Trees by Species

1/5/2010

| Species | DBH Class (in) | | | | | | | | | Total | Standard Error | % of Total |
|------------------------|----------------|--------|---------|--------|--------|---------|---------|--------|--------|--------------|----------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | | |
| Green ash | 5,219 | 11,293 | 294,051 | 35,248 | 13,444 | 15,359 | 10,469 | 0 | 0 | 385,083 (±0) | 7.84 | |
| Honeylocust | 59,612 | 23,833 | 148,301 | 5,427 | 1,758 | 0 | 0 | 0 | 0 | 238,931 (±0) | 4.87 | |
| Norway maple | 7,699 | 7,590 | 237,351 | 29,959 | 46,148 | 21,091 | 4,585 | 0 | 0 | 354,423 (±0) | 7.22 | |
| White ash | 5,032 | 5,491 | 239,688 | 1,688 | 0 | 0 | 0 | 0 | 0 | 251,899 (±0) | 5.13 | |
| Littleleaf linden | 19,273 | 14,949 | 210,388 | 0 | 1,642 | 0 | 0 | 0 | 0 | 246,252 (±0) | 5.02 | |
| Freeman maple | 21,979 | 21,036 | 188,265 | 4,010 | 0 | 0 | 0 | 0 | 0 | 235,290 (±0) | 4.79 | |
| Sunset maple | 74,590 | 7,060 | 93,026 | 0 | 0 | 0 | 0 | 0 | 0 | 174,677 (±0) | 3.56 | |
| Crabapple | 7,486 | 68,063 | 90,659 | 0 | 0 | 0 | 0 | 0 | 0 | 166,208 (±0) | 3.39 | |
| Japanese tree lilac | 19,643 | 33,149 | 132,893 | 0 | 0 | 0 | 0 | 0 | 0 | 185,685 (±0) | 3.78 | |
| Callery pear | 48,277 | 14,789 | 74,072 | 0 | 0 | 0 | 0 | 0 | 0 | 137,138 (±0) | 2.79 | |
| Elm | 32,881 | 4,588 | 74,608 | 0 | 0 | 0 | 0 | 0 | 0 | 112,077 (±0) | 2.28 | |
| Silver maple | 0 | 858 | 17,398 | 19,338 | 60,579 | 170,701 | 140,347 | 29,587 | 28,696 | 467,503 (±0) | 9.52 | |
| Austrian pine | 697 | 1,314 | 50,215 | 37,820 | 20,617 | 14,179 | 2,124 | 0 | 0 | 126,966 (±0) | 2.59 | |
| Swamp white oak | 16,096 | 18,521 | 63,052 | 0 | 3,105 | 0 | 0 | 6,501 | 0 | 107,275 (±0) | 2.18 | |
| Northern hackberry | 24,777 | 12,269 | 30,653 | 0 | 0 | 0 | 0 | 0 | 0 | 67,700 (±0) | 1.38 | |
| American basswood | 1,847 | 7,615 | 40,300 | 15,255 | 12,995 | 0 | 9,520 | 0 | 0 | 87,533 (±0) | 1.78 | |
| Sugar maple | 941 | 2,411 | 78,701 | 1,610 | 8,528 | 6,673 | 0 | 0 | 0 | 98,863 (±0) | 2.01 | |
| Kentucky coffeetree | 3,646 | 1,659 | 92,292 | 0 | 0 | 0 | 0 | 0 | 0 | 97,597 (±0) | 1.99 | |
| Eastern white pine | 1,473 | 1,451 | 22,490 | 24,971 | 20,036 | 7,207 | 2,402 | 3,131 | 0 | 83,161 (±0) | 1.69 | |
| Thornless hawthorn | 4,520 | 19,465 | 43,516 | 0 | 0 | 0 | 0 | 0 | 0 | 67,501 (±0) | 1.37 | |
| Tatarian maple | 15,810 | 15,259 | 29,831 | 0 | 0 | 0 | 0 | 0 | 0 | 60,900 (±0) | 1.24 | |
| Canada Red chokecherry | 3,825 | 615 | 52,971 | 1,017 | 0 | 0 | 0 | 0 | 0 | 58,428 (±0) | 1.19 | |
| Northern white cedar | 462 | 813 | 9,235 | 44,759 | 10,120 | 0 | 0 | 0 | 0 | 65,390 (±0) | 1.33 | |
| Northern red oak | 13,335 | 1,744 | 19,729 | 6,015 | 1,029 | 7,824 | 11,812 | 10,232 | 3,320 | 75,040 (±0) | 1.53 | |
| Eastern cottonwood | 0 | 753 | 5,236 | 11,436 | 38,040 | 32,124 | 16,386 | 28,643 | 15,048 | 147,667 (±0) | 3.01 | |
| Blue spruce | 628 | 5,702 | 18,302 | 6,471 | 0 | 4,266 | 0 | 0 | 0 | 35,370 (±0) | 0.72 | |
| Paper birch | 514 | 2,051 | 6,350 | 10,406 | 1,699 | 3,062 | 0 | 0 | 0 | 24,082 (±0) | 0.49 | |
| Ginkgo | 1,957 | 1,514 | 33,496 | 0 | 0 | 0 | 0 | 0 | 0 | 36,968 (±0) | 0.75 | |
| Turkish filbert | 9,005 | 784 | 12,500 | 0 | 0 | 0 | 0 | 0 | 0 | 22,289 (±0) | 0.45 | |
| Red maple | 1,119 | 1,598 | 13,234 | 2,280 | 9,576 | 7,073 | 7,470 | 0 | 0 | 42,351 (±0) | 0.86 | |
| White spruce | 2,230 | 1,985 | 13,133 | 2,687 | 0 | 0 | 0 | 0 | 0 | 20,034 (±0) | 0.41 | |
| Pekin lilac | 941 | 1,744 | 25,039 | 0 | 0 | 0 | 0 | 0 | 0 | 27,724 (±0) | 0.56 | |
| Ohio buckeye | 0 | 880 | 32,955 | 0 | 0 | 0 | 0 | 0 | 0 | 33,835 (±0) | 0.69 | |
| Techny arborvitae | 0 | 0 | 20,158 | 0 | 0 | 0 | 0 | 0 | 0 | 20,158 (±0) | 0.41 | |
| Crimean linden | 317 | 4,795 | 21,565 | 0 | 0 | 0 | 0 | 0 | 0 | 26,677 (±0) | 0.54 | |
| Norway spruce | 5,419 | 4,494 | 2,501 | 943 | 0 | 0 | 0 | 0 | 0 | 13,357 (±0) | 0.27 | |

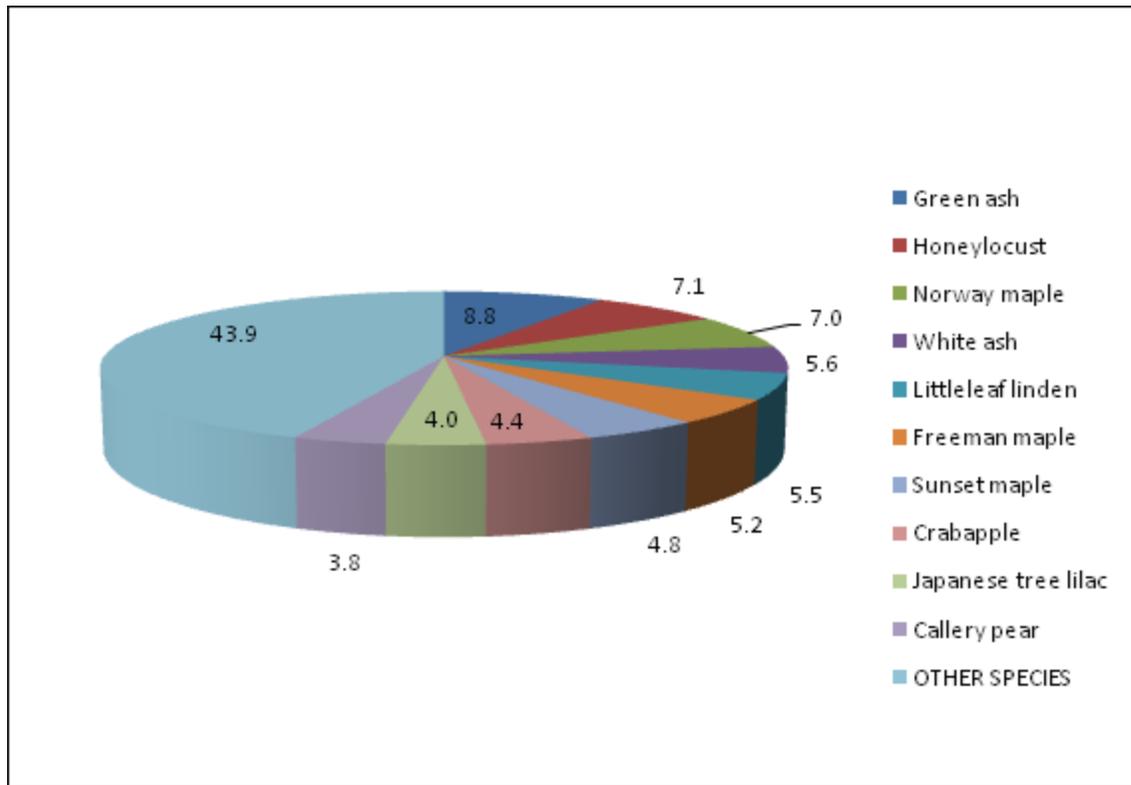
| Species | DBH Class (in) | | | | | | | | | Total Standard Error | % of Total |
|--------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|----------------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | |
| Swamp x Bur oak | 3,538 | 392 | 17,878 | 0 | 0 | 0 | 0 | 0 | 0 | 21,808 (±0) | 0.44 |
| Boxelder | 154 | 1,381 | 1,824 | 10,536 | 13,193 | 3,247 | 2,964 | 2,203 | 0 | 35,504 (±0) | 0.72 |
| Blue ash | 586 | 0 | 13,732 | 0 | 0 | 0 | 0 | 0 | 0 | 14,317 (±0) | 0.29 |
| Leprechaun ash | 695 | 9,412 | 5,655 | 0 | 0 | 0 | 0 | 0 | 0 | 15,763 (±0) | 0.32 |
| Autumn Brilliance servic | 2,229 | 10,079 | 734 | 0 | 0 | 0 | 0 | 0 | 0 | 13,042 (±0) | 0.27 |
| Sterling Silver linden | 8,881 | 0 | 2,711 | 0 | 0 | 0 | 0 | 0 | 0 | 11,592 (±0) | 0.24 |
| Korean Sun pear | 8,345 | 2,616 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10,961 (±0) | 0.22 |
| Serbian spruce | 232 | 2,990 | 7,450 | 0 | 0 | 0 | 0 | 0 | 0 | 10,672 (±0) | 0.22 |
| Korean mountainash | 348 | 1,308 | 17,484 | 0 | 0 | 0 | 0 | 0 | 0 | 19,140 (±0) | 0.39 |
| Summer Glow cherry | 348 | 1,308 | 15,887 | 0 | 0 | 0 | 0 | 0 | 0 | 17,543 (±0) | 0.36 |
| Musclewood | 6,954 | 436 | 4,403 | 0 | 0 | 0 | 0 | 0 | 0 | 11,793 (±0) | 0.24 |
| White oak | 1,029 | 0 | 5,121 | 0 | 2,802 | 10,651 | 19,744 | 19,845 | 24,788 | 83,980 (±0) | 1.71 |
| State Street maple | 1,269 | 0 | 14,231 | 0 | 0 | 0 | 0 | 0 | 0 | 15,499 (±0) | 0.32 |
| River birch | 1,558 | 1,067 | 7,060 | 0 | 0 | 0 | 0 | 0 | 0 | 9,686 (±0) | 0.20 |
| Eastern hophornbeam | 3,825 | 0 | 5,137 | 0 | 0 | 3,912 | 0 | 0 | 0 | 12,874 (±0) | 0.26 |
| Northern catalpa | 291 | 0 | 9,020 | 0 | 0 | 0 | 0 | 0 | 0 | 9,311 (±0) | 0.19 |
| Lombardy poplar | 0 | 374 | 981 | 183 | 0 | 0 | 0 | 0 | 0 | 1,537 (±0) | 0.03 |
| Bur oak | 2,144 | 0 | 3,572 | 3,334 | 0 | 4,669 | 6,662 | 8,719 | 0 | 29,099 (±0) | 0.59 |
| Dawn redwood | 324 | 284 | 4,761 | 0 | 0 | 0 | 0 | 0 | 0 | 5,369 (±0) | 0.11 |
| Amur maackia | 0 | 0 | 10,275 | 0 | 0 | 0 | 0 | 0 | 0 | 10,275 (±0) | 0.21 |
| Other | 0 | 554 | 6,825 | 0 | 0 | 0 | 0 | 0 | 0 | 7,379 (±0) | 0.15 |
| Willow | 0 | 0 | 0 | 3,727 | 2,283 | 7,652 | 8,222 | 0 | 0 | 21,885 (±0) | 0.45 |
| American elm | 0 | 356 | 980 | 2,955 | 5,827 | 2,905 | 2,964 | 0 | 0 | 15,987 (±0) | 0.33 |
| Amur maple | 0 | 2,562 | 2,511 | 0 | 0 | 0 | 0 | 0 | 0 | 5,073 (±0) | 0.10 |
| Siberian elm | 0 | 498 | 2,681 | 1,159 | 1,241 | 0 | 0 | 0 | 0 | 5,579 (±0) | 0.11 |
| Scotch pine | 0 | 0 | 2,629 | 1,150 | 2,354 | 0 | 0 | 0 | 0 | 6,134 (±0) | 0.12 |
| Chinkapin oak | 0 | 0 | 4,414 | 0 | 0 | 0 | 0 | 0 | 0 | 4,414 (±0) | 0.09 |
| Washington hawthorn | 348 | 2,282 | 518 | 0 | 0 | 0 | 0 | 0 | 0 | 3,148 (±0) | 0.06 |
| Mancana ash | 0 | 784 | 4,414 | 0 | 0 | 0 | 0 | 0 | 0 | 5,198 (±0) | 0.11 |
| Persian parrotia | 0 | 0 | 6,605 | 0 | 0 | 0 | 0 | 0 | 0 | 6,605 (±0) | 0.13 |
| European mountainash | 634 | 359 | 1,554 | 0 | 0 | 0 | 0 | 0 | 0 | 2,547 (±0) | 0.05 |
| Black walnut | 0 | 564 | 2,312 | 550 | 0 | 0 | 0 | 0 | 0 | 3,426 (±0) | 0.07 |
| Apple | 1,738 | 0 | 302 | 0 | 1,029 | 0 | 0 | 0 | 0 | 3,070 (±0) | 0.06 |
| Yellow buckeye | 322 | 0 | 2,411 | 0 | 0 | 0 | 0 | 0 | 0 | 2,733 (±0) | 0.06 |
| Shagbark hickory | 207 | 0 | 1,014 | 427 | 1,241 | 0 | 0 | 0 | 0 | 2,888 (±0) | 0.06 |
| Swiss Stone pine | 792 | 0 | 876 | 0 | 0 | 0 | 0 | 0 | 0 | 1,669 (±0) | 0.03 |
| Hawthorn | 0 | 795 | 518 | 1,017 | 0 | 0 | 0 | 0 | 0 | 2,330 (±0) | 0.05 |
| Russian olive | 0 | 251 | 405 | 0 | 3,958 | 0 | 0 | 0 | 0 | 4,614 (±0) | 0.09 |
| Black ash | 319 | 0 | 2,616 | 0 | 0 | 0 | 0 | 0 | 0 | 2,936 (±0) | 0.06 |
| Common black cherry | 0 | 180 | 604 | 1,610 | 0 | 0 | 0 | 0 | 0 | 2,393 (±0) | 0.05 |
| Balsam fir | 232 | 197 | 748 | 0 | 0 | 0 | 0 | 0 | 0 | 1,177 (±0) | 0.02 |

| Species | DBH Class (in) | | | | | | | | | Total Standard Error | % of Total |
|-------------------------|----------------|-----|-------|-------|-------|-------|-------|-------|-----|----------------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | |
| European smoketree | 0 | 0 | 2,288 | 0 | 0 | 0 | 0 | 0 | 0 | 2,288 (±0) | 0.05 |
| Japanese larch | 0 | 0 | 1,753 | 0 | 0 | 0 | 0 | 0 | 0 | 1,753 (±0) | 0.04 |
| Amur corktree | 0 | 311 | 2,277 | 0 | 0 | 0 | 0 | 0 | 0 | 2,588 (±0) | 0.05 |
| Ponderosa pine | 162 | 0 | 1,122 | 0 | 0 | 0 | 0 | 0 | 0 | 1,284 (±0) | 0.03 |
| Prairie Gem pear | 0 | 0 | 2,936 | 0 | 0 | 0 | 0 | 0 | 0 | 2,936 (±0) | 0.06 |
| Serviceberry | 695 | 0 | 518 | 0 | 0 | 0 | 0 | 0 | 0 | 1,213 (±0) | 0.02 |
| Tulip tree | 0 | 0 | 1,667 | 0 | 0 | 0 | 0 | 0 | 0 | 1,667 (±0) | 0.03 |
| Red pine | 230 | 0 | 465 | 896 | 0 | 0 | 0 | 0 | 0 | 1,590 (±0) | 0.03 |
| Cherry plum | 295 | 700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 995 (±0) | 0.02 |
| Scarlet oak | 586 | 0 | 556 | 0 | 0 | 0 | 0 | 0 | 0 | 1,141 (±0) | 0.02 |
| Northern pin oak | 0 | 436 | 734 | 0 | 1,764 | 0 | 0 | 0 | 0 | 2,934 (±0) | 0.06 |
| Eastern redbud | 0 | 588 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 588 (±0) | 0.01 |
| Yellowwood | 322 | 0 | 631 | 0 | 0 | 0 | 0 | 0 | 0 | 952 (±0) | 0.02 |
| American beech | 0 | 0 | 1,036 | 0 | 0 | 0 | 0 | 0 | 0 | 1,036 (±0) | 0.02 |
| Eastern red cedar | 0 | 269 | 438 | 0 | 0 | 0 | 0 | 0 | 0 | 707 (±0) | 0.01 |
| Black spruce | 0 | 0 | 793 | 0 | 0 | 0 | 0 | 0 | 0 | 793 (±0) | 0.02 |
| Trembling aspen | 0 | 249 | 0 | 1,037 | 0 | 0 | 0 | 0 | 0 | 1,286 (±0) | 0.03 |
| Double Flowering cherry | 348 | 436 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 784 (±0) | 0.02 |
| English oak | 0 | 0 | 1,112 | 0 | 0 | 0 | 0 | 0 | 0 | 1,112 (±0) | 0.02 |
| Hedge maple | 348 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 348 (±0) | 0.01 |
| European alder | 0 | 0 | 734 | 0 | 0 | 0 | 0 | 0 | 0 | 734 (±0) | 0.01 |
| Cumulus serviceberry | 348 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 348 (±0) | 0.01 |
| Katsuratree | 0 | 308 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 308 (±0) | 0.01 |
| Winter King hawthorn | 348 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 348 (±0) | 0.01 |
| Butternut | 0 | 145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 145 (±0) | 0.00 |
| European larch | 0 | 197 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 197 (±0) | 0.00 |
| Tamarack | 0 | 279 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 279 (±0) | 0.01 |
| Bristlecone pine | 0 | 284 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 284 (±0) | 0.01 |
| American sycamore | 0 | 145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 145 (±0) | 0.00 |
| Cottonwood | 0 | 247 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 247 (±0) | 0.01 |
| Bigtooth aspen | 0 | 0 | 392 | 0 | 0 | 0 | 0 | 0 | 0 | 392 (±0) | 0.01 |
| Plum | 0 | 245 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 245 (±0) | 0.00 |
| Purpleleaf plum | 0 | 436 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 436 (±0) | 0.01 |
| Amur chokecherry | 245 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 245 (±0) | 0.00 |
| Pin oak | 0 | 0 | 500 | 0 | 0 | 0 | 0 | 0 | 0 | 500 (±0) | 0.01 |
| Staghorn sumac | 0 | 436 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 436 (±0) | 0.01 |
| Weeping willow | 0 | 0 | 0 | 0 | 1,442 | 0 | 0 | 0 | 0 | 1,442 (±0) | 0.03 |
| American mountainash | 0 | 0 | 0 | 0 | 1,764 | 0 | 0 | 0 | 0 | 1,764 (±0) | 0.04 |
| Lilac species | 0 | 308 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 308 (±0) | 0.01 |
| Baldcypress | 232 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 232 (±0) | 0.00 |

| Species | DBH Class (in) | | | | | | | | | Total Standard Error | % of Total |
|----------------|----------------|---------|-----------|---------|---------|---------|---------|---------|--------|----------------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | |
| Citywide total | 462,749 | 369,185 | 2,750,964 | 289,920 | 288,214 | 322,594 | 245,673 | 108,860 | 71,853 | 4,910,012 (±0) | 100.00 |

Species Distribution of Public Trees (%)

1/5/2010



| Species | Percent |
|---------------------|---------|
| Green ash | 8.8 |
| Honeylocust | 7.1 |
| Norway maple | 7.0 |
| White ash | 5.6 |
| Littleleaf linden | 5.5 |
| Freeman maple | 5.2 |
| Sunset maple | 4.8 |
| Crabapple | 4.4 |
| Japanese tree lilac | 4.0 |
| Callery pear | 3.8 |
| OTHER SPECIES | 43.9 |
| Total | 100.0 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-----------------------------|---------------|------------|----------------|--------------|-------------------|
| American basswood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 1 | (N/A) | 0.65 | 0.01 |
| | Poor | 53 | (N/A) | 34.42 | 0.65 |
| | Fair | 64 | (N/A) | 41.56 | 0.79 |
| | Good | 36 | (N/A) | 23.38 | 0.44 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 154 | (N/A) | 100.00 |
| American beech | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 2 | (N/A) | 100.00 | 0.02 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| American elm | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 6 | (N/A) | 50.00 | 0.07 |
| | Good | 6 | (N/A) | 50.00 | 0.07 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 12 | (N/A) | 100.00 |
| American mountainash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.01 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| American sycamore | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.01 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Amur chokecherry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.01 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Amur corktree | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 25.00 | 0.01 |
| | Good | 3 | (N/A) | 75.00 | 0.04 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 4 | (N/A) | 100.00 |
| Amur maackia | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 14 | (N/A) | 100.00 | 0.17 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 14 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|---------------------------------------|---------------|------------|----------------|--------------|-------------------|
| Amur maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 3 | (N/A) | 27.27 | 0.04 |
| | Good | 8 | (N/A) | 72.73 | 0.10 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 11 | (N/A) | 100.00 |
| Apple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 28.57 | 0.02 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 5 | (N/A) | 71.43 | 0.06 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 7 | (N/A) | 100.00 |
| Austrian pine | Dead or Dying | 1 | (N/A) | 0.46 | 0.01 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 15 | (N/A) | 6.85 | 0.18 |
| | Fair | 62 | (N/A) | 28.31 | 0.76 |
| | Good | 141 | (N/A) | 64.38 | 1.73 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 219 | (N/A) | 100.00 |
| Autumn Brilliance serviceberry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 3.13 | 0.01 |
| | Fair | 3 | (N/A) | 9.38 | 0.04 |
| | Good | 28 | (N/A) | 87.50 | 0.34 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 32 | (N/A) | 100.00 |
| Baldcypress | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.01 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Balsam fir | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 2 | (N/A) | 50.00 | 0.02 |
| | Good | 2 | (N/A) | 50.00 | 0.02 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 4 | (N/A) | 100.00 |
| Bigtooth aspen | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.01 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Black ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 5 | (N/A) | 100.00 | 0.06 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 5 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-------------------------|---------------|------------|----------------|--------------|-------------------|
| Black spruce | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 50.00 | 0.01 |
| | Good | 1 | (N/A) | 50.00 | 0.01 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| Black walnut | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 14.29 | 0.01 |
| | Fair | 4 | (N/A) | 57.14 | 0.05 |
| | Good | 2 | (N/A) | 28.57 | 0.02 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 7 | (N/A) | 100.00 |
| Blue ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 5 | (N/A) | 13.51 | 0.06 |
| | Poor | 6 | (N/A) | 16.22 | 0.07 |
| | Fair | 9 | (N/A) | 24.32 | 0.11 |
| | Good | 17 | (N/A) | 45.95 | 0.21 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 37 | (N/A) | 100.00 |
| Blue spruce | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 21 | (N/A) | 25.93 | 0.26 |
| | Good | 60 | (N/A) | 74.07 | 0.74 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 81 | (N/A) | 100.00 |
| Boxelder | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 7 | (N/A) | 16.67 | 0.09 |
| | Poor | 5 | (N/A) | 11.90 | 0.06 |
| | Fair | 23 | (N/A) | 54.76 | 0.28 |
| | Good | 7 | (N/A) | 16.67 | 0.09 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 42 | (N/A) | 100.00 |
| Bristlecone pine | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.01 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Bur oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 3 | (N/A) | 18.75 | 0.04 |
| | Good | 8 | (N/A) | 50.00 | 0.10 |
| | Excellent | 5 | (N/A) | 31.25 | 0.06 |
| | Total | | 16 | (N/A) | 100.00 |
| Butternut | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.01 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-------------------------------|---------------|------------|----------------|--------------|-------------------|
| Callery pear | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 0.33 | 0.01 |
| | Fair | 11 | (N/A) | 3.58 | 0.14 |
| | Good | 277 | (N/A) | 90.23 | 3.40 |
| | Excellent | 18 | (N/A) | 5.86 | 0.22 |
| | Total | | 307 | (N/A) | 100.00 |
| Canada Red chokecherry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 4 | (N/A) | 4.00 | 0.05 |
| | Fair | 42 | (N/A) | 42.00 | 0.52 |
| | Good | 54 | (N/A) | 54.00 | 0.66 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 100 | (N/A) | 100.00 |
| Cherry plum | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 3 | (N/A) | 100.00 | 0.04 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 3 | (N/A) | 100.00 |
| Chinkapin oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 7 | (N/A) | 70.00 | 0.09 |
| | Good | 3 | (N/A) | 30.00 | 0.04 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 10 | (N/A) | 100.00 |
| Common black cherry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 4 | (N/A) | 80.00 | 0.05 |
| | Fair | 1 | (N/A) | 20.00 | 0.01 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 5 | (N/A) | 100.00 |
| Cottonwood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.01 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Crabapple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 17 | (N/A) | 4.79 | 0.21 |
| | Fair | 149 | (N/A) | 41.97 | 1.83 |
| | Good | 189 | (N/A) | 53.24 | 2.32 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 355 | (N/A) | 100.00 |
| Crimean linden | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 4 | (N/A) | 8.70 | 0.05 |
| | Good | 42 | (N/A) | 91.30 | 0.52 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 46 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|--------------------------------|---------------|------------|----------------|--------------|-------------------|
| Cumulus serviceberry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.01 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Dawn redwood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 6.67 | 0.01 |
| | Fair | 6 | (N/A) | 40.00 | 0.07 |
| | Good | 8 | (N/A) | 53.33 | 0.10 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 15 | (N/A) | 100.00 |
| Double Flowering cherry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.02 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| Eastern cottonwood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 6.10 | 0.06 |
| | Fair | 48 | (N/A) | 58.54 | 0.59 |
| | Good | 29 | (N/A) | 35.37 | 0.36 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 82 | (N/A) | 100.00 |
| Eastern hophornbeam | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 19 | (N/A) | 100.00 | 0.23 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 19 | (N/A) | 100.00 |
| Eastern red cedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.02 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| Eastern redbud | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 2 | (N/A) | 100.00 | 0.02 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| Eastern white pine | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 2 | (N/A) | 1.56 | 0.02 |
| | Poor | 16 | (N/A) | 12.50 | 0.20 |
| | Fair | 40 | (N/A) | 31.25 | 0.49 |
| | Good | 70 | (N/A) | 54.69 | 0.86 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 128 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-----------------------------|---------------|------------|----------------|--------------|-------------------|
| Elm | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 6 | (N/A) | 2.31 | 0.07 |
| | Good | 243 | (N/A) | 93.46 | 2.98 |
| | Excellent | 11 | (N/A) | 4.23 | 0.14 |
| | Total | | 260 | (N/A) | 100.00 |
| English oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.02 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| European alder | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.01 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| European larch | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.01 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| European mountainash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 37.50 | 0.04 |
| | Fair | 5 | (N/A) | 62.50 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 8 | (N/A) | 100.00 |
| European smoketree | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 3 | (N/A) | 75.00 | 0.04 |
| | Good | 1 | (N/A) | 25.00 | 0.01 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 4 | (N/A) | 100.00 |
| Freeman maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 1.19 | 0.06 |
| | Fair | 58 | (N/A) | 13.78 | 0.71 |
| | Good | 343 | (N/A) | 81.47 | 4.21 |
| | Excellent | 15 | (N/A) | 3.56 | 0.18 |
| | Total | | 421 | (N/A) | 100.00 |
| Ginkgo | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 4 | (N/A) | 7.55 | 0.05 |
| | Good | 49 | (N/A) | 92.45 | 0.60 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 53 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|----------------------------|---------------|------------|----------------|--------------|-------------------|
| Green ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 27 | (N/A) | 3.76 | 0.33 |
| | Fair | 249 | (N/A) | 34.68 | 3.06 |
| | Good | 442 | (N/A) | 61.56 | 5.43 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 718 | (N/A) | 100.00 |
| Hawthorn | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 20.00 | 0.01 |
| | Fair | 4 | (N/A) | 80.00 | 0.05 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 5 | (N/A) | 100.00 |
| Hedge maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.01 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Honeylocust | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 6 | (N/A) | 1.04 | 0.07 |
| | Fair | 105 | (N/A) | 18.23 | 1.29 |
| | Good | 443 | (N/A) | 76.91 | 5.44 |
| | Excellent | 22 | (N/A) | 3.82 | 0.27 |
| | Total | | 576 | (N/A) | 100.00 |
| Japanese larch | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 4 | (N/A) | 100.00 | 0.05 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 4 | (N/A) | 100.00 |
| Japanese tree lilac | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 1.53 | 0.06 |
| | Fair | 60 | (N/A) | 18.40 | 0.74 |
| | Good | 245 | (N/A) | 75.15 | 3.01 |
| | Excellent | 16 | (N/A) | 4.91 | 0.20 |
| | Total | | 326 | (N/A) | 100.00 |
| Katsuratree | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.01 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Kentucky coffeetree | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 19 | (N/A) | 14.18 | 0.23 |
| | Good | 115 | (N/A) | 85.82 | 1.41 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 134 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|---------------------------|---------------|------------|----------------|--------------|-------------------|
| Korean mountainash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 3.45 | 0.01 |
| | Fair | 2 | (N/A) | 6.90 | 0.02 |
| | Good | 26 | (N/A) | 89.66 | 0.32 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 29 | (N/A) | 100.00 |
| Korean Sun pear | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 30 | (N/A) | 100.00 | 0.37 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 30 | (N/A) | 100.00 |
| Leprechaun ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 8.33 | 0.04 |
| | Fair | 10 | (N/A) | 27.78 | 0.12 |
| | Good | 23 | (N/A) | 63.89 | 0.28 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 36 | (N/A) | 100.00 |
| Lilac species | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.01 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Littleleaf linden | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 11 | (N/A) | 2.48 | 0.14 |
| | Fair | 97 | (N/A) | 21.85 | 1.19 |
| | Good | 333 | (N/A) | 75.00 | 4.09 |
| | Excellent | 3 | (N/A) | 0.68 | 0.04 |
| | Total | | 444 | (N/A) | 100.00 |
| Lombardy poplar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 17 | (N/A) | 100.00 | 0.21 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 17 | (N/A) | 100.00 |
| Mancana ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 9 | (N/A) | 100.00 | 0.11 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 9 | (N/A) | 100.00 |
| Musclewood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 27 | (N/A) | 100.00 | 0.33 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 27 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-----------------------------|---------------|------------|----------------|--------------|-------------------|
| Northern catalpa | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 5.88 | 0.01 |
| | Good | 16 | (N/A) | 94.12 | 0.20 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 17 | (N/A) | 100.00 |
| Northern hackberry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 24 | (N/A) | 15.09 | 0.29 |
| | Good | 117 | (N/A) | 73.58 | 1.44 |
| | Excellent | 18 | (N/A) | 11.32 | 0.22 |
| | Total | | 159 | (N/A) | 100.00 |
| Northern pin oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 33.33 | 0.01 |
| | Good | 2 | (N/A) | 66.67 | 0.02 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 3 | (N/A) | 100.00 |
| Northern red oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 11 | (N/A) | 12.64 | 0.14 |
| | Fair | 15 | (N/A) | 17.24 | 0.18 |
| | Good | 30 | (N/A) | 34.48 | 0.37 |
| | Excellent | 31 | (N/A) | 35.63 | 0.38 |
| | Total | | 87 | (N/A) | 100.00 |
| Northern white cedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 1.08 | 0.01 |
| | Fair | 30 | (N/A) | 32.26 | 0.37 |
| | Good | 62 | (N/A) | 66.67 | 0.76 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 93 | (N/A) | 100.00 |
| Norway maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 30 | (N/A) | 5.24 | 0.37 |
| | Fair | 274 | (N/A) | 47.82 | 3.37 |
| | Good | 267 | (N/A) | 46.60 | 3.28 |
| | Excellent | 2 | (N/A) | 0.35 | 0.02 |
| | Total | | 573 | (N/A) | 100.00 |
| Norway spruce | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 2.27 | 0.01 |
| | Fair | 6 | (N/A) | 13.64 | 0.07 |
| | Good | 19 | (N/A) | 43.18 | 0.23 |
| | Excellent | 18 | (N/A) | 40.91 | 0.22 |
| | Total | | 44 | (N/A) | 100.00 |
| Ohio buckeye | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 2 | (N/A) | 4.35 | 0.02 |
| | Good | 44 | (N/A) | 95.65 | 0.54 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 46 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-------------------------|---------------|------------|----------------|--------------|-------------------|
| Other | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 6 | (N/A) | 42.86 | 0.07 |
| | Good | 8 | (N/A) | 57.14 | 0.10 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 14 | (N/A) | 100.00 |
| Paper birch | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 9 | (N/A) | 16.98 | 0.11 |
| | Fair | 32 | (N/A) | 60.38 | 0.39 |
| | Good | 12 | (N/A) | 22.64 | 0.15 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 53 | (N/A) | 100.00 |
| Pekin lilac | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 21 | (N/A) | 44.68 | 0.26 |
| | Good | 26 | (N/A) | 55.32 | 0.32 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 47 | (N/A) | 100.00 |
| Persian parrotia | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 9 | (N/A) | 100.00 | 0.11 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 9 | (N/A) | 100.00 |
| Pin oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.01 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Plum | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.01 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Ponderosa pine | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 3 | (N/A) | 75.00 | 0.04 |
| | Good | 1 | (N/A) | 25.00 | 0.01 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 4 | (N/A) | 100.00 |
| Prairie Gem pear | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 4 | (N/A) | 100.00 | 0.05 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 4 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|------------------------|---------------|------------|----------------|--------------|-------------------|
| Purpleleaf plum | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.01 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Red maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 1 | (N/A) | 2.00 | 0.01 |
| | Poor | 6 | (N/A) | 12.00 | 0.07 |
| | Fair | 32 | (N/A) | 64.00 | 0.39 |
| | Good | 11 | (N/A) | 22.00 | 0.14 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 50 | (N/A) | 100.00 |
| Red pine | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 3 | (N/A) | 100.00 | 0.04 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 3 | (N/A) | 100.00 |
| River birch | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 16 | (N/A) | 64.00 | 0.20 |
| | Good | 6 | (N/A) | 24.00 | 0.07 |
| | Excellent | 3 | (N/A) | 12.00 | 0.04 |
| | Total | | 25 | (N/A) | 100.00 |
| Russian olive | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 5 | (N/A) | 100.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 5 | (N/A) | 100.00 |
| Scarlet oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 3 | (N/A) | 100.00 | 0.04 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 3 | (N/A) | 100.00 |
| Scotch pine | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 3 | (N/A) | 30.00 | 0.04 |
| | Good | 7 | (N/A) | 70.00 | 0.09 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 10 | (N/A) | 100.00 |
| Serbian spruce | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 3.45 | 0.01 |
| | Good | 28 | (N/A) | 96.55 | 0.34 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 29 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-------------------------------|---------------|------------|----------------|--------------|-------------------|
| Serviceberry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 33.33 | 0.01 |
| | Good | 2 | (N/A) | 66.67 | 0.02 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 3 | (N/A) | 100.00 |
| Shagbark hickory | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 33.33 | 0.02 |
| | Fair | 4 | (N/A) | 66.67 | 0.05 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 6 | (N/A) | 100.00 |
| Siberian elm | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 9.09 | 0.01 |
| | Fair | 8 | (N/A) | 72.73 | 0.10 |
| | Good | 2 | (N/A) | 18.18 | 0.02 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 11 | (N/A) | 100.00 |
| Silver maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 19 | (N/A) | 7.60 | 0.23 |
| | Fair | 180 | (N/A) | 72.00 | 2.21 |
| | Good | 51 | (N/A) | 20.40 | 0.63 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 250 | (N/A) | 100.00 |
| Staghorn sumac | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.01 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| State Street maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 25 | (N/A) | 100.00 | 0.31 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 25 | (N/A) | 100.00 |
| Sterling Silver linden | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 32 | (N/A) | 100.00 | 0.39 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 32 | (N/A) | 100.00 |
| Sugar maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 1 | (N/A) | 0.69 | 0.01 |
| | Poor | 11 | (N/A) | 7.64 | 0.14 |
| | Fair | 51 | (N/A) | 35.42 | 0.63 |
| | Good | 81 | (N/A) | 56.25 | 0.99 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 144 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|---------------------------|---------------|------------|----------------|--------------|-------------------|
| Summer Glow cherry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 4 | (N/A) | 14.29 | 0.05 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 24 | (N/A) | 85.71 | 0.29 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 28 | (N/A) | 100.00 |
| Sunset maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 5 | (N/A) | 1.28 | 0.06 |
| | Good | 328 | (N/A) | 83.67 | 4.03 |
| | Excellent | 59 | (N/A) | 15.05 | 0.72 |
| | Total | | 392 | (N/A) | 100.00 |
| Swamp white oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 1.20 | 0.02 |
| | Fair | 2 | (N/A) | 1.20 | 0.02 |
| | Good | 158 | (N/A) | 94.61 | 1.94 |
| | Excellent | 5 | (N/A) | 2.99 | 0.06 |
| | Total | | 167 | (N/A) | 100.00 |
| Swamp x Bur oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 2.33 | 0.01 |
| | Fair | 7 | (N/A) | 16.28 | 0.09 |
| | Good | 35 | (N/A) | 81.40 | 0.43 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 43 | (N/A) | 100.00 |
| Swiss Stone pine | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 2 | (N/A) | 33.33 | 0.02 |
| | Good | 4 | (N/A) | 66.67 | 0.05 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 6 | (N/A) | 100.00 |
| Tamarack | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.01 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Tatarian maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 9 | (N/A) | 7.50 | 0.11 |
| | Good | 79 | (N/A) | 65.83 | 0.97 |
| | Excellent | 32 | (N/A) | 26.67 | 0.39 |
| | Total | | 120 | (N/A) | 100.00 |
| Techny arborivtae | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 46 | (N/A) | 100.00 | 0.57 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 46 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|----------------------------|---------------|------------|----------------|--------------|-------------------|
| Thornless hawthorn | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 24 | (N/A) | 19.35 | 0.29 |
| | Good | 100 | (N/A) | 80.65 | 1.23 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 124 | (N/A) | 100.00 |
| Trembling aspen | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 50.00 | 0.01 |
| | Good | 1 | (N/A) | 50.00 | 0.01 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| Tulip tree | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 3 | (N/A) | 100.00 | 0.04 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 3 | (N/A) | 100.00 |
| Turkish filbert | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 1.96 | 0.01 |
| | Fair | 2 | (N/A) | 3.92 | 0.02 |
| | Good | 48 | (N/A) | 94.12 | 0.59 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 51 | (N/A) | 100.00 |
| Washington hawthorn | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 7 | (N/A) | 77.78 | 0.09 |
| | Good | 2 | (N/A) | 22.22 | 0.02 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 9 | (N/A) | 100.00 |
| Weeping willow | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.01 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| White ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 9 | (N/A) | 1.98 | 0.11 |
| | Fair | 131 | (N/A) | 28.79 | 1.61 |
| | Good | 315 | (N/A) | 69.23 | 3.87 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 455 | (N/A) | 100.00 |
| White oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 1 | (N/A) | 3.70 | 0.01 |
| | Poor | 2 | (N/A) | 7.41 | 0.02 |
| | Fair | 13 | (N/A) | 48.15 | 0.16 |
| | Good | 11 | (N/A) | 40.74 | 0.14 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 27 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

1/5/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-----------------------------|---------------|------------|----------------|--------------|-------------------|
| White spruce | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 2.00 | 0.01 |
| | Fair | 5 | (N/A) | 10.00 | 0.06 |
| | Good | 44 | (N/A) | 88.00 | 0.54 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 50 | (N/A) | 100.00 |
| Willow | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 16.67 | 0.02 |
| | Fair | 8 | (N/A) | 66.67 | 0.10 |
| | Good | 2 | (N/A) | 16.67 | 0.02 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 12 | (N/A) | 100.00 |
| Winter King hawthorn | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.01 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Yellow buckeye | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 4 | (N/A) | 66.67 | 0.05 |
| | Good | 2 | (N/A) | 33.33 | 0.02 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 6 | (N/A) | 100.00 |
| Yellowwood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Critical | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.02 |
| | Excellent | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |

| |
|--|
| Total Annual Benefits, Net Benefits, and Costs for Public Trees |
|--|

1/5/2010

| Benefits | Total (\$) Standard Error | \$/tree Standard Error | \$/capita Standard Error |
|---------------------------|---------------------------|------------------------|--------------------------|
| Energy | 153,259 (N/A) | 18.83 (N/A) | 9.51 (N/A) |
| CO2 | 18,707 (N/A) | 2.30 (N/A) | 1.16 (N/A) |
| Air Quality | 22,531 (N/A) | 2.77 (N/A) | 1.40 (N/A) |
| Stormwater | 139,668 (N/A) | 17.16 (N/A) | 8.67 (N/A) |
| Aesthetic/Other | 174,900 (N/A) | 21.48 (N/A) | 10.86 (N/A) |
| Total Benefits | 509,065 (N/A) | 62.53 (N/A) | 31.60 (N/A) |
| Costs | | | |
| Planting | 42,500 | 5.22 | 2.64 |
| Contract Pruning | 49,250 | 6.05 | 3.06 |
| Pest Management | 2,500 | 0.31 | 0.16 |
| Irrigation | 1,000 | 0.12 | 0.06 |
| Removal | 5,000 | 0.61 | 0.31 |
| Administration | 65,000 | 7.98 | 4.03 |
| Inspection/Service | 10,000 | 1.23 | 0.62 |
| Infrastructure Repairs | 0 | 0.00 | 0.00 |
| Litter Clean-up | 0 | 0.00 | 0.00 |
| Liability/Claims | 0 | 0.00 | 0.00 |
| Other Costs | 0 | 0.00 | 0.00 |
| Total Costs | 175,250 | 21.53 | 10.88 |
| Net Benefits | 333,815 (N/A) | 41.00 (N/A) | 20.72 (N/A) |
| Benefit-cost ratio | 2.90 (N/A) | | |

| |
|--|
| Total Annual Benefits of Public Trees by Species (\$) |
|--|

1/5/2010

| Species | Energy | CO ₂ | Air Quality | Stormwater | Aesthetic/Other | Total (\$) | Standard Error | % of Total \$ |
|------------------------|---------|-----------------|-------------|------------|-----------------|------------|----------------|---------------|
| Green ash | 15,881 | 2,115 | 2,388 | 13,767 | 21,012 | 55,163 | (±0) | 10.8 |
| Honeylocust | 10,481 | 1,094 | 1,499 | 5,883 | 10,900 | 29,856 | (±0) | 5.9 |
| Norway maple | 15,245 | 1,801 | 2,286 | 11,456 | 15,070 | 45,858 | (±0) | 9.0 |
| White ash | 8,699 | 1,076 | 1,260 | 7,168 | 14,404 | 32,606 | (±0) | 6.4 |
| Littleleaf linden | 6,585 | 952 | 919 | 4,466 | 11,381 | 24,303 | (±0) | 4.8 |
| Freeman maple | 7,875 | 824 | 1,167 | 5,339 | 9,373 | 24,578 | (±0) | 4.8 |
| Sunset maple | 4,056 | 482 | 569 | 2,520 | 4,755 | 12,381 | (±0) | 2.4 |
| Crabapple | 3,540 | 347 | 486 | 1,339 | 1,271 | 6,982 | (±0) | 1.4 |
| Japanese tree lilac | 3,916 | 379 | 543 | 1,513 | 1,376 | 7,729 | (±0) | 1.5 |
| Callery pear | 3,466 | 416 | 486 | 2,138 | 4,067 | 10,572 | (±0) | 2.1 |
| Elm | 2,955 | 386 | 428 | 2,355 | 4,659 | 10,783 | (±0) | 2.1 |
| Silver maple | 14,857 | 2,792 | 2,641 | 25,405 | 22,319 | 68,015 | (±0) | 13.4 |
| Austrian pine | 4,156 | 340 | 455 | 6,838 | 4,639 | 16,429 | (±0) | 3.2 |
| Swamp white oak | 2,434 | 290 | 347 | 1,588 | 2,719 | 7,378 | (±0) | 1.4 |
| Northern hackberry | 1,833 | 135 | 252 | 1,059 | 1,881 | 5,160 | (±0) | 1.0 |
| American basswood | 3,603 | 403 | 509 | 2,830 | 2,627 | 9,972 | (±0) | 2.0 |
| Sugar maple | 3,299 | 359 | 470 | 2,440 | 3,204 | 9,772 | (±0) | 1.9 |
| Kentucky coffeetree | 2,486 | 327 | 361 | 1,984 | 3,515 | 8,673 | (±0) | 1.7 |
| Eastern white pine | 2,409 | 223 | 206 | 4,521 | 3,035 | 10,394 | (±0) | 2.0 |
| Thornless hawthorn | 1,430 | 139 | 198 | 549 | 507 | 2,822 | (±0) | 0.6 |
| Tatarian maple | 1,008 | 99 | 139 | 382 | 349 | 1,976 | (±0) | 0.4 |
| Canada Red chokecherry | 1,623 | 156 | 228 | 640 | 571 | 3,219 | (±0) | 0.6 |
| Northern white cedar | 1,931 | 188 | 208 | 3,358 | 2,581 | 8,267 | (±0) | 1.6 |
| Northern red oak | 1,536 | 145 | 215 | 1,451 | 854 | 4,201 | (±0) | 0.8 |
| Eastern cottonwood | 4,754 | 629 | 856 | 7,092 | 4,255 | 17,586 | (±0) | 3.5 |
| OTHER STREET TREE | 23,201 | 2,609 | 3,417 | 21,586 | 23,578 | 74,391 | (±0) | 14.6 |
| Citywide Total | 153,259 | 18,707 | 22,531 | 139,668 | 174,900 | 509,066 | (±0) | 100.0 |

Howard

Annual Energy Benefits of Public Trees By Species

1/6/2010

| Species | Total Electricity (MWh) | Electricity (\$) | Total Natural Gas (Therms) | Natural Gas (\$) | Total (\$) | Standard Error | % of Total Trees | % of Total \$ | Avg. \$/tree |
|------------------------|----------------------------|---------------------|-------------------------------|---------------------|---------------|-------------------|---------------------|------------------|-----------------|
| Green ash | 74.4 | 5,644 | 10,445.7 | 10,237 | 15,881 | (N/A) | 8.8 | 10.4 | 22.12 |
| Honeylocust | 46.7 | 3,546 | 7,076.1 | 6,935 | 10,481 | (N/A) | 7.1 | 6.8 | 18.20 |
| Norway maple | 66.9 | 5,080 | 10,372.4 | 10,165 | 15,245 | (N/A) | 7.0 | 10.0 | 26.60 |
| White ash | 40.2 | 3,052 | 5,762.2 | 5,647 | 8,699 | (N/A) | 5.6 | 5.7 | 19.12 |
| Littleleaf linden | 28.7 | 2,182 | 4,493.2 | 4,403 | 6,585 | (N/A) | 5.5 | 4.3 | 14.83 |
| Freeman maple | 35.6 | 2,699 | 5,282.2 | 5,177 | 7,875 | (N/A) | 5.2 | 5.1 | 18.71 |
| Sunset maple | 17.3 | 1,311 | 2,800.6 | 2,745 | 4,056 | (N/A) | 4.8 | 2.7 | 10.35 |
| Crabapple | 14.4 | 1,096 | 2,494.5 | 2,445 | 3,540 | (N/A) | 4.4 | 2.3 | 9.97 |
| Japanese tree lilac | 15.9 | 1,210 | 2,761.8 | 2,707 | 3,916 | (N/A) | 4.0 | 2.6 | 12.01 |
| Callery pear | 14.8 | 1,122 | 2,391.5 | 2,344 | 3,466 | (N/A) | 3.8 | 2.3 | 11.29 |
| Elm | 13.5 | 1,028 | 1,966.7 | 1,927 | 2,955 | (N/A) | 3.2 | 1.9 | 11.37 |
| Silver maple | 72.2 | 5,482 | 9,566.9 | 9,376 | 14,857 | (N/A) | 3.1 | 9.7 | 59.43 |
| Austrian pine | 19.3 | 1,468 | 2,742.9 | 2,688 | 4,156 | (N/A) | 2.7 | 2.7 | 18.98 |
| Swamp white oak | 10.4 | 792 | 1,675.6 | 1,642 | 2,434 | (N/A) | 2.1 | 1.6 | 14.58 |
| Northern hackberry | 7.8 | 593 | 1,265.4 | 1,240 | 1,833 | (N/A) | 2.0 | 1.2 | 11.53 |
| American basswood | 16.4 | 1,247 | 2,404.4 | 2,356 | 3,603 | (N/A) | 1.9 | 2.4 | 23.40 |
| Sugar maple | 15.2 | 1,152 | 2,190.1 | 2,146 | 3,299 | (N/A) | 1.8 | 2.2 | 22.91 |
| Kentucky coffeetree | 11.4 | 866 | 1,653.5 | 1,620 | 2,486 | (N/A) | 1.7 | 1.6 | 18.55 |
| Eastern white pine | 11.5 | 875 | 1,564.9 | 1,534 | 2,409 | (N/A) | 1.6 | 1.6 | 18.82 |
| Thornless hawthorn | 5.8 | 442 | 1,007.8 | 988 | 1,430 | (N/A) | 1.5 | 0.9 | 11.53 |
| Tatarian maple | 4.1 | 311 | 710.9 | 697 | 1,008 | (N/A) | 1.5 | 0.7 | 8.40 |
| Canada Red chokecherry | 6.6 | 503 | 1,142.7 | 1,120 | 1,623 | (N/A) | 1.2 | 1.1 | 16.23 |
| Northern white cedar | 9.8 | 746 | 1,209.5 | 1,185 | 1,931 | (N/A) | 1.1 | 1.3 | 20.77 |
| Northern red oak | 7.2 | 545 | 1,011.2 | 991 | 1,536 | (N/A) | 1.1 | 1.0 | 17.65 |
| Eastern cottonwood | 22.6 | 1,719 | 3,097.1 | 3,035 | 4,754 | (N/A) | 1.0 | 3.1 | 57.98 |
| OTHER STREET TREES | 104.3 | 7,913 | 15,600.5 | 15,289 | 23,201 | (N/A) | 16.6 | 15.1 | 17.15 |
| Citywide total | 693.3 | 52,622 | 102,690.5 | 100,637 | 153,259 | (N/A) | 100.0 | 100.0 | 18.83 |

Annual Air Quality Benefits of Public Trees by Species

1/6/2010

| Species | Deposition (lb) | | | | Total Depos. (\$) | Avoided (lb) | | | | Total Avoided (\$) | BVOC Emissions (lb) | BVOC Emissions (\$) | Total (lb) | Total (\$) Standard Error | % of Total Trees | Avg. \$/tree |
|------------------------|-----------------|-----------------|------------------|-----------------|-------------------------|-----------------|------------------|-------|-----------------|--------------------------|---------------------------|---------------------------|---------------|------------------------------------|---------------------|-----------------|
| | O ₃ | NO ₂ | PM ₁₀ | SO ₂ | | NO ₂ | PM ₁₀ | VOC | SO ₂ | | | | | | | |
| Green ash | 28.5 | 4.5 | 20.0 | 1.3 | 170 | 356.8 | 51.8 | 49.4 | 336.9 | 2,218 | 0.0 | 0 | 849.2 | 2,388 (N/A) | 8.8 | 3.33 |
| Honeylocust | 23.7 | 3.9 | 14.8 | 1.1 | 136 | 228.8 | 32.9 | 31.3 | 211.8 | 1,411 | -13.1 | -49 | 535.2 | 1,499 (N/A) | 7.1 | 2.60 |
| Norway maple | 54.9 | 9.5 | 32.0 | 2.4 | 311 | 330.9 | 47.4 | 45.0 | 303.8 | 2,034 | -15.9 | -59 | 810.1 | 2,286 (N/A) | 7.0 | 3.99 |
| White ash | 8.5 | 1.3 | 8.3 | 0.4 | 57 | 193.8 | 28.1 | 26.7 | 182.1 | 1,202 | 0.0 | 0 | 449.2 | 1,260 (N/A) | 5.6 | 2.77 |
| Littleleaf linden | 12.8 | 2.2 | 9.2 | 0.6 | 77 | 142.4 | 20.4 | 19.3 | 130.5 | 875 | -8.9 | -33 | 328.5 | 919 (N/A) | 5.5 | 2.07 |
| Freeman maple | 24.3 | 4.1 | 14.5 | 1.1 | 139 | 173.0 | 24.9 | 23.7 | 161.0 | 1,069 | -10.9 | -41 | 415.9 | 1,167 (N/A) | 5.2 | 2.77 |
| Sunset maple | 8.5 | 1.5 | 5.9 | 0.4 | 51 | 86.6 | 12.3 | 11.7 | 78.4 | 529 | -3.0 | -11 | 202.3 | 569 (N/A) | 4.8 | 1.45 |
| Crabapple | 6.9 | 1.1 | 4.4 | 0.3 | 40 | 73.4 | 10.4 | 9.8 | 65.4 | 446 | 0.0 | 0 | 171.7 | 486 (N/A) | 4.4 | 1.37 |
| Japanese tree lilac | 8.9 | 1.5 | 5.3 | 0.4 | 51 | 81.2 | 11.4 | 10.8 | 72.2 | 493 | -0.1 | 0 | 191.7 | 543 (N/A) | 4.0 | 1.67 |
| Callery pear | 7.0 | 1.2 | 5.0 | 0.3 | 42 | 74.0 | 10.5 | 10.0 | 67.1 | 453 | -2.5 | -9 | 172.7 | 486 (N/A) | 3.8 | 1.58 |
| Elm | 3.4 | 0.5 | 3.0 | 0.1 | 22 | 65.5 | 9.5 | 9.0 | 61.3 | 406 | 0.0 | 0 | 152.4 | 428 (N/A) | 3.2 | 1.64 |
| Silver maple | 148.0 | 25.1 | 74.3 | 6.6 | 802 | 341.0 | 49.9 | 47.6 | 326.8 | 2,132 | -78.3 | -294 | 940.9 | 2,641 (N/A) | 3.1 | 10.56 |
| Austrian pine | 30.8 | 6.1 | 26.9 | 3.8 | 208 | 92.9 | 13.5 | 12.8 | 87.5 | 577 | -87.7 | -329 | 186.6 | 455 (N/A) | 2.7 | 2.08 |
| Swamp white oak | 5.9 | 1.0 | 3.9 | 0.3 | 35 | 52.1 | 7.4 | 7.0 | 47.4 | 319 | -2.0 | -7 | 123.2 | 347 (N/A) | 2.1 | 2.08 |
| Northern hackberry | 1.8 | 0.3 | 1.7 | 0.1 | 12 | 39.1 | 5.6 | 5.3 | 35.5 | 239 | 0.0 | 0 | 89.4 | 252 (N/A) | 2.0 | 1.58 |
| American basswood | 8.3 | 1.4 | 5.4 | 0.4 | 49 | 80.0 | 11.5 | 11.0 | 74.6 | 495 | -9.1 | -34 | 183.4 | 509 (N/A) | 1.9 | 3.31 |
| Sugar maple | 6.4 | 1.1 | 4.6 | 0.3 | 39 | 73.3 | 10.6 | 10.1 | 68.8 | 455 | -6.3 | -24 | 168.9 | 470 (N/A) | 1.8 | 3.26 |
| Kentucky coffeetree | 2.9 | 0.5 | 2.5 | 0.1 | 19 | 55.2 | 8.0 | 7.6 | 51.7 | 342 | 0.0 | 0 | 128.5 | 361 (N/A) | 1.6 | 2.69 |
| Eastern white pine | 18.0 | 3.6 | 15.7 | 2.2 | 121 | 54.8 | 8.0 | 7.6 | 52.2 | 342 | -68.5 | -257 | 93.6 | 206 (N/A) | 1.6 | 1.61 |
| Thornless hawthorn | 3.1 | 0.5 | 1.9 | 0.1 | 18 | 29.6 | 4.2 | 4.0 | 26.4 | 180 | 0.0 | 0 | 69.8 | 198 (N/A) | 1.5 | 1.59 |
| Tatarian maple | 2.1 | 0.3 | 1.3 | 0.1 | 12 | 20.9 | 2.9 | 2.8 | 18.6 | 127 | 0.0 | 0 | 49.0 | 139 (N/A) | 1.5 | 1.16 |
| Canada Red chokecherry | 4.1 | 0.7 | 2.4 | 0.2 | 23 | 33.7 | 4.8 | 4.5 | 30.0 | 205 | 0.0 | 0 | 80.4 | 228 (N/A) | 1.2 | 2.28 |
| Northern white cedar | 13.4 | 2.6 | 11.7 | 1.6 | 90 | 45.6 | 6.7 | 6.4 | 44.5 | 287 | -45.2 | -169 | 87.5 | 208 (N/A) | 1.1 | 2.24 |
| Northern red oak | 9.6 | 1.7 | 5.0 | 0.4 | 53 | 34.5 | 5.0 | 4.8 | 32.5 | 214 | -13.7 | -52 | 79.7 | 215 (N/A) | 1.1 | 2.48 |
| Eastern cottonwood | 34.4 | 5.5 | 16.2 | 1.5 | 182 | 108.1 | 15.7 | 15.0 | 102.6 | 674 | 0.0 | 0 | 299.1 | 856 (N/A) | 1.0 | 10.44 |
| OTHER STREET TREES | 92.9 | 15.9 | 58.0 | 5.5 | 540 | 509.2 | 73.3 | 69.7 | 472.5 | 3,144 | -71.1 | -267 | 1,225.9 | 3,417 (N/A) | 16.6 | 2.53 |
| Citywide total | 569.3 | 97.8 | 353.9 | 31.6 | 3,298 | 3,376.5 | 486.8 | 463.0 | 3,142.2 | 20,869 | -436.3 | -1,636 | 8,084.7 | 22,531 (N/A) | 100.0 | 2.77 |

Howard

Annual CO Benefits of Public Trees by Species

1/6/2010

| Species | Sequestered (lb) | Sequestered (\$) | Decomposition Release (lb) | Maintenance Release (lb) | Total Released (\$) | Avoided (lb) | Avoided (\$) | Net Total (lb) | Total Standard (\$ Error) | % of Total Trees | % of Total \$ | Avg. \$/tree |
|------------------------|------------------|------------------|----------------------------|--------------------------|---------------------|--------------|--------------|----------------|---------------------------|------------------|---------------|--------------|
| Green ash | 163,370 | 1,225 | -5,160 | -878 | -45 | 124,725 | 935 | 282,058 | 2,115 (N/A) | 8.8 | 11.3 | 2.95 |
| Honeylocust | 69,504 | 521 | -1,553 | -445 | -15 | 78,370 | 588 | 145,876 | 1,094 (N/A) | 7.1 | 5.9 | 1.90 |
| Norway maple | 133,332 | 1,000 | -4,745 | -726 | -41 | 112,260 | 842 | 240,121 | 1,801 (N/A) | 7.0 | 9.6 | 3.14 |
| White ash | 78,673 | 590 | -2,148 | -508 | -20 | 67,452 | 506 | 143,468 | 1,076 (N/A) | 5.6 | 5.8 | 2.36 |
| Littleleaf linden | 80,967 | 607 | -1,794 | -439 | -17 | 48,220 | 362 | 126,954 | 952 (N/A) | 5.5 | 5.1 | 2.14 |
| Freeman maple | 52,362 | 393 | -1,672 | -395 | -16 | 59,638 | 447 | 109,932 | 824 (N/A) | 5.2 | 4.4 | 1.96 |
| Sunset maple | 36,309 | 272 | -849 | -229 | -8 | 28,982 | 217 | 64,213 | 482 (N/A) | 4.8 | 2.6 | 1.23 |
| Crabapple | 23,047 | 173 | -759 | -278 | -8 | 24,216 | 182 | 46,226 | 347 (N/A) | 4.4 | 1.9 | 0.98 |
| Japanese tree lilac | 25,035 | 188 | -896 | -279 | -9 | 26,736 | 201 | 50,596 | 379 (N/A) | 4.0 | 2.0 | 1.16 |
| Callery pear | 31,533 | 236 | -726 | -193 | -7 | 24,795 | 186 | 55,409 | 416 (N/A) | 3.8 | 2.2 | 1.35 |
| Elm | 29,648 | 222 | -698 | -188 | -7 | 22,710 | 170 | 51,473 | 386 (N/A) | 3.2 | 2.1 | 1.48 |
| Silver maple | 267,041 | 2,003 | -15,213 | -764 | -120 | 121,143 | 909 | 372,208 | 2,792 (N/A) | 3.1 | 14.9 | 11.17 |
| Austrian pine | 14,232 | 107 | -924 | -343 | -10 | 32,432 | 243 | 45,397 | 340 (N/A) | 2.7 | 1.8 | 1.55 |
| Swamp white oak | 21,889 | 164 | -591 | -130 | -5 | 17,503 | 131 | 38,670 | 290 (N/A) | 2.1 | 1.6 | 1.74 |
| Northern hackberry | 5,108 | 38 | -126 | -94 | -2 | 13,106 | 98 | 17,994 | 135 (N/A) | 2.0 | 0.7 | 0.85 |
| American basswood | 27,999 | 210 | -1,559 | -200 | -13 | 27,551 | 207 | 53,791 | 403 (N/A) | 1.9 | 2.2 | 2.62 |
| Sugar maple | 23,543 | 177 | -1,003 | -174 | -9 | 25,469 | 191 | 47,835 | 359 (N/A) | 1.8 | 1.9 | 2.49 |
| Kentucky coffeetree | 25,172 | 189 | -596 | -144 | -6 | 19,134 | 144 | 43,567 | 327 (N/A) | 1.7 | 1.8 | 2.44 |
| Eastern white pine | 11,380 | 85 | -741 | -210 | -7 | 19,340 | 145 | 29,769 | 223 (N/A) | 1.6 | 1.2 | 1.74 |
| Thornless hawthorn | 9,184 | 69 | -320 | -105 | -3 | 9,767 | 73 | 18,525 | 139 (N/A) | 1.5 | 0.7 | 1.12 |
| Tatarian maple | 6,589 | 49 | -222 | -79 | -2 | 6,876 | 52 | 13,164 | 99 (N/A) | 1.5 | 0.5 | 0.82 |
| Canada Red chokecherry | 10,232 | 77 | -392 | -106 | -4 | 11,122 | 83 | 20,856 | 156 (N/A) | 1.2 | 0.8 | 1.56 |
| Northern white cedar | 9,236 | 69 | -466 | -160 | -5 | 16,490 | 124 | 25,099 | 188 (N/A) | 1.1 | 1.0 | 2.02 |
| Northern red oak | 8,332 | 62 | -922 | -92 | -8 | 12,038 | 90 | 19,356 | 145 (N/A) | 1.1 | 0.8 | 1.67 |
| Eastern cottonwood | 51,522 | 386 | -5,467 | -241 | -43 | 37,992 | 285 | 83,806 | 629 (N/A) | 1.0 | 3.4 | 7.67 |
| OTHER STREET TREES | 183,798 | 1,378 | -9,358 | -1,437 | -81 | 174,869 | 1,312 | 347,873 | 2,609 (N/A) | 16.6 | 14.0 | 1.93 |
| Citywide total | 1,399,036 | 10,493 | -58,902 | -8,837 | -508 | 1,162,938 | 8,722 | 2,494,235 | 18,707 (N/A) | 100.0 | 100.0 | 2.30 |

Annual Stormwater Benefits of Public Trees by Species

1/6/2010

| Species | Total rainfall interception (Gal) | Total (\$) | Standard Error | % of Total Trees | % of Total \$ | Avg. \$/tree |
|------------------------|-----------------------------------|------------|----------------|------------------|---------------|--------------|
| Green ash | 507,954 | 13,767 | (N/A) | 8.8 | 9.9 | 19.17 |
| Honeylocust | 217,073 | 5,883 | (N/A) | 7.1 | 4.2 | 10.21 |
| Norway maple | 422,711 | 11,456 | (N/A) | 7.0 | 8.2 | 19.99 |
| White ash | 264,479 | 7,168 | (N/A) | 5.6 | 5.1 | 15.75 |
| Littleleaf linden | 164,781 | 4,466 | (N/A) | 5.5 | 3.2 | 10.06 |
| Freeman maple | 196,990 | 5,339 | (N/A) | 5.2 | 3.8 | 12.68 |
| Sunset maple | 92,976 | 2,520 | (N/A) | 4.8 | 1.8 | 6.43 |
| Crabapple | 49,400 | 1,339 | (N/A) | 4.4 | 1.0 | 3.77 |
| Japanese tree lilac | 55,828 | 1,513 | (N/A) | 4.0 | 1.1 | 4.64 |
| Callery pear | 78,885 | 2,138 | (N/A) | 3.8 | 1.5 | 6.96 |
| Elm | 86,879 | 2,355 | (N/A) | 3.2 | 1.7 | 9.06 |
| Silver maple | 937,402 | 25,405 | (N/A) | 3.1 | 18.2 | 101.62 |
| Austrian pine | 252,323 | 6,838 | (N/A) | 2.7 | 4.9 | 31.23 |
| Swamp white oak | 58,603 | 1,588 | (N/A) | 2.1 | 1.1 | 9.51 |
| Northern hackberry | 39,089 | 1,059 | (N/A) | 2.0 | 0.8 | 6.66 |
| American basswood | 104,418 | 2,830 | (N/A) | 1.9 | 2.0 | 18.38 |
| Sugar maple | 90,045 | 2,440 | (N/A) | 1.8 | 1.8 | 16.95 |
| Kentucky coffeetree | 73,214 | 1,984 | (N/A) | 1.7 | 1.4 | 14.81 |
| Eastern white pine | 166,814 | 4,521 | (N/A) | 1.6 | 3.2 | 35.32 |
| Thornless hawthorn | 20,250 | 549 | (N/A) | 1.5 | 0.4 | 4.43 |
| Tatarian maple | 14,088 | 382 | (N/A) | 1.5 | 0.3 | 3.18 |
| Canada Red chokecherry | 23,630 | 640 | (N/A) | 1.2 | 0.5 | 6.40 |
| Northern white cedar | 123,902 | 3,358 | (N/A) | 1.1 | 2.4 | 36.11 |
| Northern red oak | 53,547 | 1,451 | (N/A) | 1.1 | 1.0 | 16.68 |
| Eastern cottonwood | 261,690 | 7,092 | (N/A) | 1.0 | 5.1 | 86.49 |
| OTHER STREET TREES | 796,486 | 21,586 | (N/A) | 16.6 | 15.5 | 15.95 |
| Citywide total | 5,153,458 | 139,668 | (N/A) | 100.0 | 100.0 | 17.16 |

| |
|---|
| Annual Aesthetic/Other Benefits of Public Trees by Species |
|---|

1/6/2010

| Species | Total (\$) | Standard Error | % of Total Trees | % of Total \$ | Avg. \$/tree |
|------------------------|------------|----------------|------------------|---------------|--------------|
| Green ash | 21,012 | (N/A) | 8.8 | 12.0 | 29.27 |
| Honeylocust | 10,900 | (N/A) | 7.1 | 6.2 | 18.92 |
| Norway maple | 15,070 | (N/A) | 7.0 | 8.6 | 26.30 |
| White ash | 14,404 | (N/A) | 5.6 | 8.2 | 31.66 |
| Littleleaf linden | 11,381 | (N/A) | 5.5 | 6.5 | 25.63 |
| Freeman maple | 9,373 | (N/A) | 5.2 | 5.4 | 22.26 |
| Sunset maple | 4,755 | (N/A) | 4.8 | 2.7 | 12.13 |
| Crabapple | 1,271 | (N/A) | 4.4 | 0.7 | 3.58 |
| Japanese tree lilac | 1,376 | (N/A) | 4.0 | 0.8 | 4.22 |
| Callery pear | 4,067 | (N/A) | 3.8 | 2.3 | 13.25 |
| Elm | 4,659 | (N/A) | 3.2 | 2.7 | 17.92 |
| Silver maple | 22,319 | (N/A) | 3.1 | 12.8 | 89.28 |
| Austrian pine | 4,639 | (N/A) | 2.7 | 2.7 | 21.18 |
| Swamp white oak | 2,719 | (N/A) | 2.1 | 1.6 | 16.28 |
| Northern hackberry | 1,881 | (N/A) | 2.0 | 1.1 | 11.83 |
| American basswood | 2,627 | (N/A) | 1.9 | 1.5 | 17.06 |
| Sugar maple | 3,204 | (N/A) | 1.8 | 1.8 | 22.25 |
| Kentucky coffeetree | 3,515 | (N/A) | 1.7 | 2.0 | 26.23 |
| Eastern white pine | 3,035 | (N/A) | 1.6 | 1.7 | 23.71 |
| Thornless hawthorn | 507 | (N/A) | 1.5 | 0.3 | 4.09 |
| Tatarian maple | 349 | (N/A) | 1.5 | 0.2 | 2.91 |
| Canada Red chokecherry | 571 | (N/A) | 1.2 | 0.3 | 5.71 |
| Northern white cedar | 2,581 | (N/A) | 1.1 | 1.5 | 27.75 |
| Northern red oak | 854 | (N/A) | 1.1 | 0.5 | 9.82 |
| Eastern cottonwood | 4,255 | (N/A) | 1.0 | 2.4 | 51.89 |
| OTHER STREET TREES | 23,578 | (N/A) | 16.6 | 13.5 | 17.43 |
| Citywide total | 174,900 | (N/A) | 100.0 | 100.0 | 21.48 |

Appendix 1b.

Complete Population of Street Trees

1/5/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|---|----------------|------------|--------------|-----------|-----------|-----------|-----------|-----------|----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Broadleaf Deciduous Large (BDL) | | | | | | | | | | |
| Green ash | 17 | 19 | 506 | 10 | 1 | 0 | 0 | 0 | 0 | 553 |
| White ash | 11 | 6 | 395 | 2 | 0 | 0 | 0 | 0 | 0 | 414 |
| Freeman maple | 55 | 45 | 276 | 0 | 0 | 0 | 0 | 0 | 0 | 376 |
| Elm | 82 | 10 | 131 | 0 | 0 | 0 | 0 | 0 | 0 | 223 |
| Silver maple | 0 | 1 | 28 | 15 | 31 | 76 | 33 | 4 | 1 | 189 |
| Sugar maple | 2 | 5 | 124 | 2 | 2 | 0 | 0 | 0 | 0 | 135 |
| Northern hackberry | 58 | 30 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 128 |
| American basswood | 3 | 7 | 87 | 14 | 10 | 0 | 3 | 0 | 0 | 124 |
| Kentucky coffeetree | 6 | 0 | 112 | 0 | 0 | 0 | 0 | 0 | 0 | 118 |
| Northern red oak | 34 | 3 | 22 | 6 | 1 | 1 | 0 | 1 | 0 | 68 |
| Red maple | 4 | 6 | 19 | 0 | 3 | 0 | 0 | 0 | 0 | 32 |
| Blue ash | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| Eastern cottonwood | 0 | 0 | 2 | 2 | 3 | 6 | 4 | 7 | 3 | 27 |
| State Street maple | 4 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 24 |
| Paper birch | 2 | 6 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| Northern catalpa | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| Mancana ash | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Chinkapin oak | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| White oak | 1 | 0 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 6 |
| Shagbark hickory | 0 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 5 |
| Black walnut | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Tulip tree | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| American beech | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| American elm | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 |
| Butternut | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Cottonwood | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Bigtooth aspen | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Bur oak | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Pin oak | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| English oak | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 279 | 144 | 1,856 | 52 | 53 | 84 | 42 | 12 | 4 | 2,526 (±NaN) |
| Broadleaf Deciduous Medium (BDM) | | | | | | | | | | |
| Honeylocust | 171 | 56 | 283 | 3 | 0 | 0 | 0 | 0 | 0 | 513 |
| Norway maple | 19 | 19 | 427 | 10 | 7 | 0 | 0 | 0 | 0 | 482 |
| Littleleaf linden | 51 | 36 | 328 | 0 | 1 | 0 | 0 | 0 | 0 | 416 |
| Sunset maple | 213 | 18 | 147 | 0 | 0 | 0 | 0 | 0 | 0 | 378 |
| Callery pear | 133 | 31 | 115 | 0 | 0 | 0 | 0 | 0 | 0 | 279 |
| Swamp white oak | 40 | 41 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 155 |
| Turkish filbert | 27 | 2 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 47 |
| Crimean linden | 1 | 12 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 46 |
| Ginkgo | 2 | 1 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 44 |
| Ohio buckeye | 0 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 43 |
| Swamp x Bur oak | 10 | 1 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 41 |
| Sterling Silver linden | 23 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| River birch | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| Other | 0 | 2 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| Boxelder | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 1 | 0 | 6 |
| Russian olive | 0 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 5 |
| Yellow buckeye | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Black ash | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Amur corktree | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Siberian elm | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| Northern pin oak | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Yellowwood | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Willow | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 690 | 221 | 1,587 | 16 | 14 | 0 | 0 | 1 | 0 | 2,529 (±NaN) |
| Broadleaf Deciduous Small (BDS) | | | | | | | | | | |

Complete Population of Street Trees

1/5/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|---|----------------|------------|--------------|-----------|-----------|-----------|-----------|-----------|----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Japanese tree lilac | 53 | 79 | 183 | 0 | 0 | 0 | 0 | 0 | 0 | 315 |
| Crabapple | 15 | 160 | 133 | 0 | 0 | 0 | 0 | 0 | 0 | 308 |
| Tatarian maple | 36 | 35 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 113 |
| Thornless hawthorn | 10 | 39 | 63 | 0 | 0 | 0 | 0 | 0 | 0 | 112 |
| Canada Red chokecherry | 8 | 0 | 83 | 0 | 0 | 0 | 0 | 0 | 0 | 91 |
| Pekin lilac | 0 | 1 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 38 |
| Autumn Brilliance servicebe | 6 | 23 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 30 |
| Summer Glow cherry | 0 | 3 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 27 |
| Korean Sun pear | 18 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| Musclewood | 19 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Korean mountainash | 0 | 1 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| Eastern hophornbeam | 10 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 17 |
| Amur maackia | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Leprechaun ash | 1 | 1 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Persian parrotia | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Washington hawthorn | 0 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| European mountainash | 3 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| Amur maple | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| European smoketree | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Hawthorn | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Common black cherry | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 4 |
| Cherry plum | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| European alder | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Eastern redbud | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Plum | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Lilac species | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 179 | 367 | 636 | 2 | 0 | 0 | 0 | 0 | 0 | 1,184 (±NaN) |
| Broadleaf Evergreen Large (BEL) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Medium (BEM) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Small (BES) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Conifer Evergreen Large (CEL) | | | | | | | | | | |
| White spruce | 5 | 4 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| Dawn redwood | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Eastern white pine | 1 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Norway spruce | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Ponderosa pine | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Red pine | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| Scotch pine | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 7 | 5 | 38 | 1 | 0 | 0 | 0 | 0 | 0 | 51 (±NaN) |
| Conifer Evergreen Medium (CEM) | | | | | | | | | | |
| Blue spruce | 3 | 17 | 36 | 6 | 0 | 2 | 0 | 0 | 0 | 64 |
| Techny arborvitae | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| Serbian spruce | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| Austrian pine | 1 | 1 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 8 |
| Balsam fir | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Japanese larch | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Black spruce | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 5 | 19 | 91 | 7 | 0 | 2 | 0 | 0 | 0 | 124 (±NaN) |
| Conifer Evergreen Small (CES) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Grand Total | 1,160 | 756 | 4,208 | 78 | 67 | 86 | 42 | 13 | 4 | 6,414 (±0) |

Replacement Value for Street Trees by Species

1/5/2010

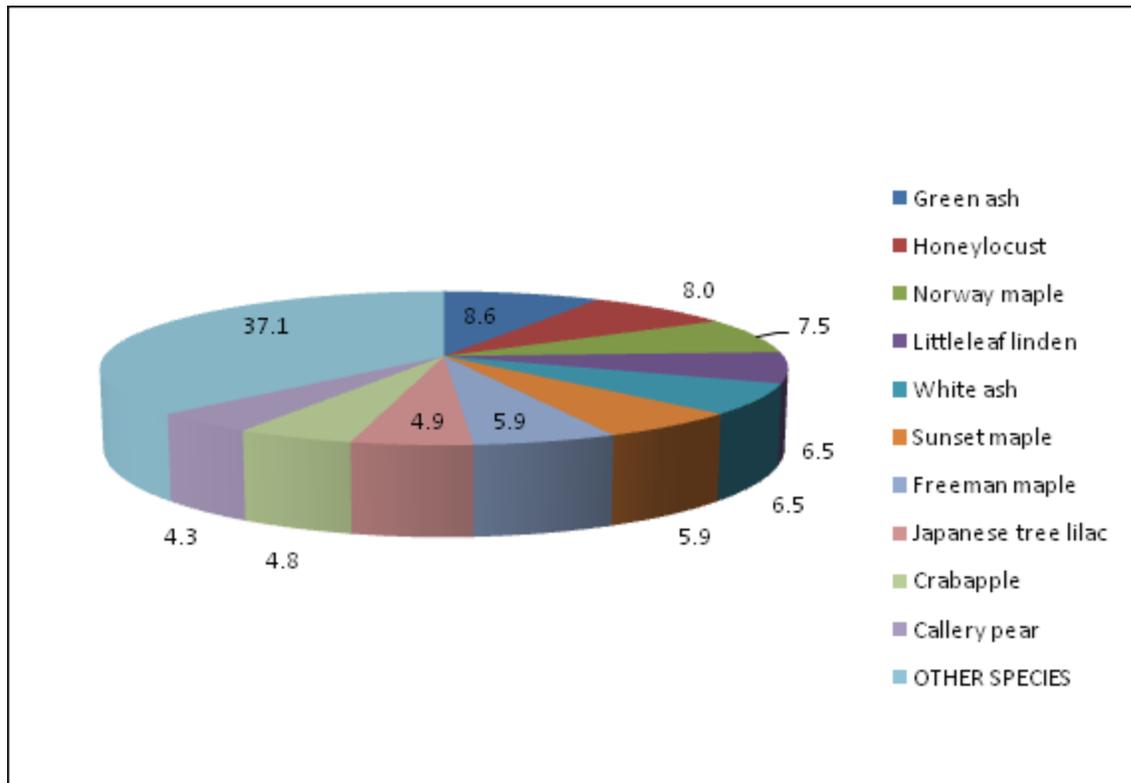
| Species | DBH Class (in) | | | | | | | | | Total | Standard Error | % of Total |
|--------------------------|----------------|--------|---------|--------|--------|---------|--------|--------|--------|--------------|----------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | | |
| Green ash | 4,633 | 6,705 | 249,031 | 7,318 | 1,241 | 0 | 0 | 0 | 0 | 268,929 (±0) | 7.43 | |
| Honeylocust | 50,105 | 19,245 | 140,454 | 2,805 | 0 | 0 | 0 | 0 | 0 | 212,608 (±0) | 5.88 | |
| Norway maple | 6,186 | 6,414 | 220,103 | 9,846 | 10,696 | 0 | 0 | 0 | 0 | 253,244 (±0) | 7.00 | |
| Littleleaf linden | 16,101 | 14,267 | 200,343 | 0 | 1,642 | 0 | 0 | 0 | 0 | 232,353 (±0) | 6.42 | |
| White ash | 3,443 | 2,353 | 224,220 | 1,688 | 0 | 0 | 0 | 0 | 0 | 231,704 (±0) | 6.40 | |
| Sunset maple | 70,618 | 7,060 | 91,765 | 0 | 0 | 0 | 0 | 0 | 0 | 169,443 (±0) | 4.68 | |
| Freeman maple | 18,005 | 17,863 | 177,064 | 0 | 0 | 0 | 0 | 0 | 0 | 212,932 (±0) | 5.88 | |
| Japanese tree lilac | 18,953 | 32,036 | 129,097 | 0 | 0 | 0 | 0 | 0 | 0 | 180,086 (±0) | 4.98 | |
| Crabapple | 4,909 | 52,189 | 89,407 | 0 | 0 | 0 | 0 | 0 | 0 | 146,505 (±0) | 4.05 | |
| Callery pear | 42,885 | 12,159 | 70,660 | 0 | 0 | 0 | 0 | 0 | 0 | 125,704 (±0) | 3.47 | |
| Elm | 24,079 | 3,529 | 71,829 | 0 | 0 | 0 | 0 | 0 | 0 | 99,437 (±0) | 2.75 | |
| Silver maple | 0 | 251 | 11,858 | 11,886 | 40,349 | 153,272 | 95,017 | 15,108 | 4,199 | 331,940 (±0) | 9.17 | |
| Swamp white oak | 13,609 | 18,521 | 61,038 | 0 | 0 | 0 | 0 | 0 | 0 | 93,169 (±0) | 2.57 | |
| Sugar maple | 593 | 1,667 | 77,881 | 1,610 | 3,529 | 0 | 0 | 0 | 0 | 85,279 (±0) | 2.36 | |
| Northern hackberry | 18,471 | 11,987 | 24,116 | 0 | 0 | 0 | 0 | 0 | 0 | 54,574 (±0) | 1.51 | |
| American basswood | 672 | 2,092 | 37,231 | 9,357 | 12,995 | 0 | 9,520 | 0 | 0 | 71,867 (±0) | 1.99 | |
| Kentucky coffeetree | 2,044 | 0 | 86,625 | 0 | 0 | 0 | 0 | 0 | 0 | 88,668 (±0) | 2.45 | |
| Tatarian maple | 13,826 | 15,259 | 29,097 | 0 | 0 | 0 | 0 | 0 | 0 | 58,182 (±0) | 1.61 | |
| Thornless hawthorn | 3,477 | 16,234 | 42,783 | 0 | 0 | 0 | 0 | 0 | 0 | 62,493 (±0) | 1.73 | |
| Canada Red chokecherry | 2,782 | 0 | 50,985 | 0 | 0 | 0 | 0 | 0 | 0 | 53,767 (±0) | 1.49 | |
| Northern red oak | 13,090 | 1,308 | 13,987 | 4,829 | 1,029 | 3,912 | 0 | 5,116 | 0 | 43,271 (±0) | 1.20 | |
| Blue spruce | 628 | 4,584 | 14,616 | 4,170 | 0 | 4,266 | 0 | 0 | 0 | 28,265 (±0) | 0.78 | |
| Turkish filbert | 8,683 | 784 | 11,350 | 0 | 0 | 0 | 0 | 0 | 0 | 20,818 (±0) | 0.58 | |
| Crimean linden | 317 | 4,795 | 21,565 | 0 | 0 | 0 | 0 | 0 | 0 | 26,677 (±0) | 0.74 | |
| Ginkgo | 686 | 444 | 31,928 | 0 | 0 | 0 | 0 | 0 | 0 | 33,058 (±0) | 0.91 | |
| Ohio buckeye | 0 | 0 | 32,419 | 0 | 0 | 0 | 0 | 0 | 0 | 32,419 (±0) | 0.90 | |
| Swamp x Bur oak | 3,216 | 392 | 17,433 | 0 | 0 | 0 | 0 | 0 | 0 | 21,041 (±0) | 0.58 | |
| Pekin lilac | 0 | 436 | 23,053 | 0 | 0 | 0 | 0 | 0 | 0 | 23,489 (±0) | 0.65 | |
| Red maple | 802 | 1,598 | 8,889 | 0 | 4,925 | 0 | 0 | 0 | 0 | 16,214 (±0) | 0.45 | |
| Blue ash | 0 | 0 | 12,064 | 0 | 0 | 0 | 0 | 0 | 0 | 12,064 (±0) | 0.33 | |
| Techny arborvitae | 0 | 0 | 14,023 | 0 | 0 | 0 | 0 | 0 | 0 | 14,023 (±0) | 0.39 | |
| Autumn Brilliance servic | 2,086 | 9,771 | 734 | 0 | 0 | 0 | 0 | 0 | 0 | 12,591 (±0) | 0.35 | |
| Eastern cottonwood | 0 | 0 | 811 | 1,542 | 3,958 | 12,303 | 11,794 | 24,866 | 12,598 | 67,871 (±0) | 1.88 | |
| Summer Glow cherry | 0 | 1,308 | 15,887 | 0 | 0 | 0 | 0 | 0 | 0 | 17,195 (±0) | 0.48 | |
| White spruce | 1,081 | 1,134 | 7,770 | 0 | 0 | 0 | 0 | 0 | 0 | 9,986 (±0) | 0.28 | |
| Sterling Silver linden | 7,295 | 0 | 2,033 | 0 | 0 | 0 | 0 | 0 | 0 | 9,328 (±0) | 0.26 | |

| Species | DBH Class (in) | | | | | | | | | Total Standard Error | % of Total |
|----------------------|----------------|-------|--------|-------|-------|-------|-------|-------|-----|----------------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | |
| State Street maple | 1,269 | 0 | 13,553 | 0 | 0 | 0 | 0 | 0 | 0 | 14,822 (±0) | 0.41 |
| Korean Sun pear | 6,259 | 2,180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8,438 (±0) | 0.23 |
| Musclewood | 6,606 | 0 | 2,202 | 0 | 0 | 0 | 0 | 0 | 0 | 8,808 (±0) | 0.24 |
| Paper birch | 514 | 1,234 | 4,470 | 0 | 0 | 0 | 0 | 0 | 0 | 6,218 (±0) | 0.17 |
| Korean mountainash | 0 | 436 | 13,944 | 0 | 0 | 0 | 0 | 0 | 0 | 14,380 (±0) | 0.40 |
| Eastern hophornbeam | 3,477 | 0 | 5,137 | 0 | 0 | 0 | 0 | 0 | 0 | 8,614 (±0) | 0.24 |
| River birch | 0 | 0 | 6,486 | 0 | 0 | 0 | 0 | 0 | 0 | 6,486 (±0) | 0.18 |
| Northern catalpa | 0 | 0 | 9,020 | 0 | 0 | 0 | 0 | 0 | 0 | 9,020 (±0) | 0.25 |
| Other | 0 | 554 | 6,825 | 0 | 0 | 0 | 0 | 0 | 0 | 7,379 (±0) | 0.20 |
| Serbian spruce | 0 | 0 | 5,697 | 0 | 0 | 0 | 0 | 0 | 0 | 5,697 (±0) | 0.16 |
| Amur maackia | 0 | 0 | 8,073 | 0 | 0 | 0 | 0 | 0 | 0 | 8,073 (±0) | 0.22 |
| Leprechaun ash | 348 | 436 | 5,655 | 0 | 0 | 0 | 0 | 0 | 0 | 6,439 (±0) | 0.18 |
| Mancana ash | 0 | 784 | 4,414 | 0 | 0 | 0 | 0 | 0 | 0 | 5,198 (±0) | 0.14 |
| Dawn redwood | 0 | 0 | 3,365 | 0 | 0 | 0 | 0 | 0 | 0 | 3,365 (±0) | 0.09 |
| Persian parrotia | 0 | 0 | 6,605 | 0 | 0 | 0 | 0 | 0 | 0 | 6,605 (±0) | 0.18 |
| Chinkapin oak | 0 | 0 | 3,858 | 0 | 0 | 0 | 0 | 0 | 0 | 3,858 (±0) | 0.11 |
| Washington hawthorn | 0 | 2,282 | 518 | 0 | 0 | 0 | 0 | 0 | 0 | 2,801 (±0) | 0.08 |
| Austrian pine | 232 | 279 | 2,062 | 815 | 0 | 0 | 0 | 0 | 0 | 3,389 (±0) | 0.09 |
| European mountainash | 634 | 359 | 1,554 | 0 | 0 | 0 | 0 | 0 | 0 | 2,547 (±0) | 0.07 |
| Eastern white pine | 230 | 200 | 1,915 | 0 | 0 | 0 | 0 | 0 | 0 | 2,345 (±0) | 0.06 |
| Boxelder | 0 | 147 | 811 | 771 | 770 | 0 | 0 | 2,203 | 0 | 4,701 (±0) | 0.13 |
| White oak | 343 | 0 | 1,892 | 0 | 0 | 3,117 | 4,542 | 0 | 0 | 9,894 (±0) | 0.27 |
| Shagbark hickory | 0 | 0 | 1,014 | 427 | 1,241 | 0 | 0 | 0 | 0 | 2,681 (±0) | 0.07 |
| Russian olive | 0 | 251 | 405 | 0 | 3,958 | 0 | 0 | 0 | 0 | 4,614 (±0) | 0.13 |
| Black walnut | 0 | 564 | 1,834 | 0 | 0 | 0 | 0 | 0 | 0 | 2,398 (±0) | 0.07 |
| Amur maple | 0 | 564 | 1,355 | 0 | 0 | 0 | 0 | 0 | 0 | 1,919 (±0) | 0.05 |
| Yellow buckeye | 0 | 0 | 1,780 | 0 | 0 | 0 | 0 | 0 | 0 | 1,780 (±0) | 0.05 |
| European smoketree | 0 | 0 | 2,288 | 0 | 0 | 0 | 0 | 0 | 0 | 2,288 (±0) | 0.06 |
| Hawthorn | 0 | 795 | 518 | 0 | 0 | 0 | 0 | 0 | 0 | 1,313 (±0) | 0.04 |
| Black ash | 0 | 0 | 2,616 | 0 | 0 | 0 | 0 | 0 | 0 | 2,616 (±0) | 0.07 |
| Common black cherry | 0 | 180 | 302 | 1,610 | 0 | 0 | 0 | 0 | 0 | 2,091 (±0) | 0.06 |
| Balsam fir | 232 | 197 | 309 | 0 | 0 | 0 | 0 | 0 | 0 | 739 (±0) | 0.02 |
| Tulip tree | 0 | 0 | 1,667 | 0 | 0 | 0 | 0 | 0 | 0 | 1,667 (±0) | 0.05 |
| Amur corktree | 0 | 0 | 2,277 | 0 | 0 | 0 | 0 | 0 | 0 | 2,277 (±0) | 0.06 |
| Norway spruce | 241 | 0 | 978 | 0 | 0 | 0 | 0 | 0 | 0 | 1,218 (±0) | 0.03 |
| Ponderosa pine | 0 | 0 | 1,122 | 0 | 0 | 0 | 0 | 0 | 0 | 1,122 (±0) | 0.03 |
| Siberian elm | 0 | 0 | 392 | 1,159 | 0 | 0 | 0 | 0 | 0 | 1,551 (±0) | 0.04 |
| American beech | 0 | 0 | 1,036 | 0 | 0 | 0 | 0 | 0 | 0 | 1,036 (±0) | 0.03 |
| Japanese larch | 0 | 0 | 876 | 0 | 0 | 0 | 0 | 0 | 0 | 876 (±0) | 0.02 |
| Black spruce | 0 | 0 | 793 | 0 | 0 | 0 | 0 | 0 | 0 | 793 (±0) | 0.02 |
| Red pine | 0 | 0 | 465 | 896 | 0 | 0 | 0 | 0 | 0 | 1,361 (±0) | 0.04 |

| Species | DBH Class (in) | | | | | | | | | Total Standard Error | % of Total |
|-----------------------|----------------|----------------|------------------|---------------|---------------|----------------|----------------|---------------|---------------|-----------------------|---------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | |
| Cherry plum | 0 | 700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 700 (±0) | 0.02 |
| Northern pin oak | 0 | 0 | 734 | 0 | 1,764 | 0 | 0 | 0 | 0 | 2,498 (±0) | 0.07 |
| American elm | 0 | 0 | 0 | 0 | 1,319 | 0 | 2,964 | 0 | 0 | 4,284 (±0) | 0.12 |
| European alder | 0 | 0 | 734 | 0 | 0 | 0 | 0 | 0 | 0 | 734 (±0) | 0.02 |
| Eastern redbud | 0 | 294 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 294 (±0) | 0.01 |
| Yellowwood | 0 | 0 | 631 | 0 | 0 | 0 | 0 | 0 | 0 | 631 (±0) | 0.02 |
| Butternut | 0 | 145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 145 (±0) | 0.00 |
| Scotch pine | 0 | 0 | 438 | 0 | 0 | 0 | 0 | 0 | 0 | 438 (±0) | 0.01 |
| Cottonwood | 0 | 247 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 247 (±0) | 0.01 |
| Bigtooth aspen | 0 | 0 | 392 | 0 | 0 | 0 | 0 | 0 | 0 | 392 (±0) | 0.01 |
| Plum | 0 | 245 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 245 (±0) | 0.01 |
| Bur oak | 0 | 0 | 571 | 0 | 0 | 0 | 0 | 0 | 0 | 571 (±0) | 0.02 |
| Pin oak | 0 | 0 | 500 | 0 | 0 | 0 | 0 | 0 | 0 | 500 (±0) | 0.01 |
| English oak | 0 | 0 | 556 | 0 | 0 | 0 | 0 | 0 | 0 | 556 (±0) | 0.02 |
| Willow | 0 | 0 | 0 | 0 | 1,442 | 0 | 0 | 0 | 0 | 1,442 (±0) | 0.04 |
| Lilac species | 0 | 308 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 308 (±0) | 0.01 |
| Citywide total | 373,658 | 279,767 | 2,448,794 | 60,726 | 90,857 | 176,870 | 123,837 | 47,293 | 16,798 | 3,618,601 (±0) | 100.00 |

Species Distribution of Street Trees (%)

1/5/2010



| Species | Percent |
|---------------------|---------|
| Green ash | 8.6 |
| Honeylocust | 8.0 |
| Norway maple | 7.5 |
| Littleleaf linden | 6.5 |
| White ash | 6.5 |
| Sunset maple | 5.9 |
| Freeman maple | 5.9 |
| Japanese tree lilac | 4.9 |
| Crabapple | 4.8 |
| Callery pear | 4.3 |
| OTHER SPECIES | 37.1 |
| Total | 100.0 |

| |
|--|
| Total Annual Benefits of Street Trees by Species (\$) |
|--|

1/5/2010

| Species | Energy | CO ₂ | Air Quality | Stormwater | Aesthetic/Other | Total (\$) | Standard Error | % of Total \$ |
|------------------------|---------|-----------------|-------------|------------|-----------------|------------|----------------|---------------|
| Green ash | 11,064 | 1,459 | 1,616 | 8,899 | 15,335 | 38,373 | (±0) | 10.3 |
| Honeylocust | 9,555 | 991 | 1,362 | 5,301 | 9,711 | 26,920 | (±0) | 7.3 |
| Norway maple | 11,520 | 1,387 | 1,656 | 7,723 | 12,187 | 34,473 | (±0) | 9.3 |
| Littleleaf linden | 6,276 | 907 | 876 | 4,259 | 10,833 | 23,151 | (±0) | 6.2 |
| White ash | 8,105 | 1,003 | 1,174 | 6,694 | 13,422 | 30,399 | (±0) | 8.2 |
| Sunset maple | 3,994 | 475 | 561 | 2,484 | 4,669 | 12,183 | (±0) | 3.3 |
| Freeman maple | 7,193 | 750 | 1,062 | 4,862 | 8,565 | 22,431 | (±0) | 6.0 |
| Japanese tree lilac | 3,802 | 368 | 528 | 1,469 | 1,336 | 7,503 | (±0) | 2.0 |
| Crabapple | 3,297 | 322 | 454 | 1,254 | 1,181 | 6,508 | (±0) | 1.8 |
| Callery pear | 3,239 | 388 | 454 | 2,007 | 3,779 | 9,868 | (±0) | 2.7 |
| Elm | 2,815 | 368 | 408 | 2,244 | 4,320 | 10,155 | (±0) | 2.7 |
| Silver maple | 11,403 | 2,118 | 2,019 | 19,302 | 16,957 | 51,799 | (±0) | 14.0 |
| Swamp white oak | 2,223 | 271 | 312 | 1,369 | 2,578 | 6,753 | (±0) | 1.8 |
| Sugar maple | 2,993 | 320 | 423 | 2,063 | 2,876 | 8,676 | (±0) | 2.3 |
| Northern hackberry | 1,470 | 108 | 202 | 845 | 1,512 | 4,137 | (±0) | 1.1 |
| American basswood | 3,170 | 358 | 447 | 2,543 | 2,333 | 8,850 | (±0) | 2.4 |
| Kentucky coffeetree | 2,315 | 304 | 336 | 1,848 | 3,230 | 8,033 | (±0) | 2.2 |
| Tatarian maple | 984 | 96 | 136 | 373 | 342 | 1,932 | (±0) | 0.5 |
| Thornless hawthorn | 1,366 | 132 | 189 | 526 | 484 | 2,697 | (±0) | 0.7 |
| Canada Red chokecherry | 1,517 | 146 | 212 | 597 | 532 | 3,003 | (±0) | 0.8 |
| Northern red oak | 929 | 96 | 131 | 760 | 627 | 2,543 | (±0) | 0.7 |
| OTHER STREET TREE | 15,995 | 1,795 | 2,331 | 14,515 | 16,220 | 50,856 | (±0) | 13.7 |
| Citywide Total | 115,225 | 14,162 | 16,888 | 91,938 | 133,030 | 371,243 | (±0) | 100.0 |

Appendix 1c.

Population Summary of Park Trees

1/18/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|--------------------|----------------|------------|------------|------------|-----------|-----------|-----------|----------|----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Grand Total | 254 | 200 | 453 | 156 | 56 | 24 | 17 | 7 | 3 | 1,170 (±0) |

Replacement Value for Park Trees by Species

1/5/2010

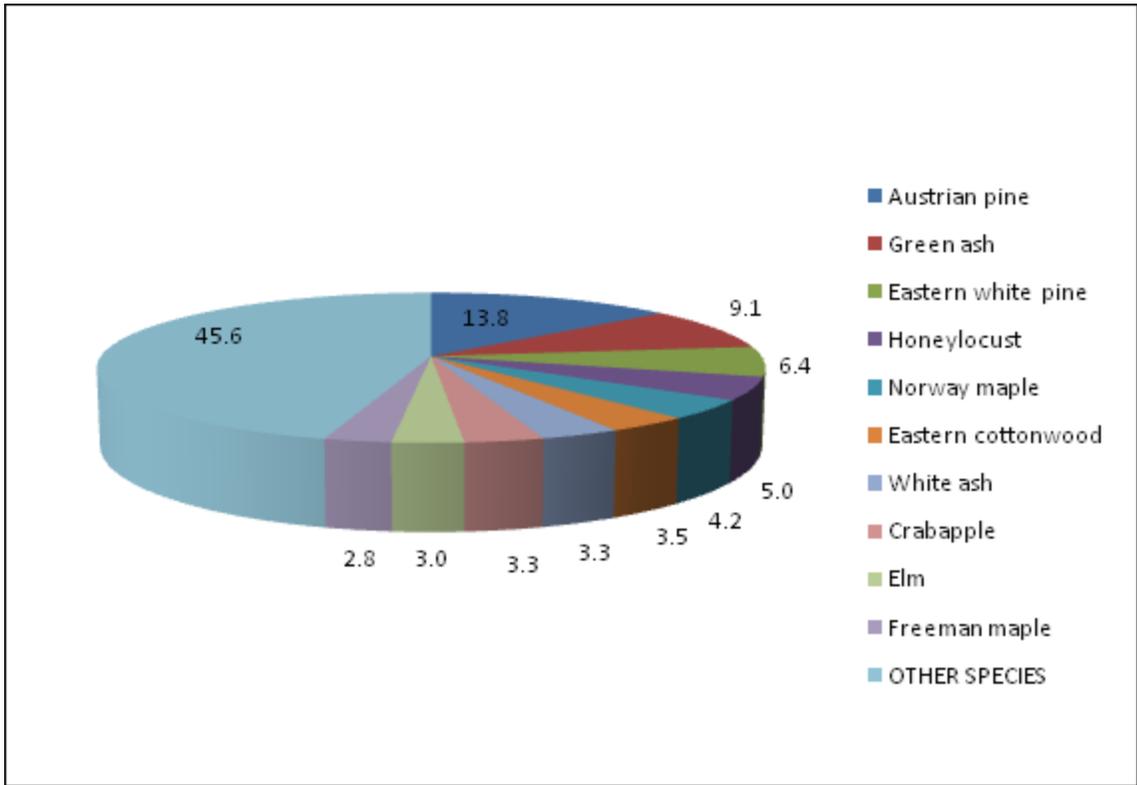
| Species | DBH Class (in) | | | | | | | | | Total | Standard Error | % of Total |
|---------------------|----------------|--------|--------|--------|--------|-------|--------|--------|--------|-------------|----------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | | |
| Austrian pine | 0 | 476 | 43,977 | 32,787 | 0 | 0 | 0 | 0 | 0 | 77,240 (±0) | 10.31 | |
| Green ash | 586 | 4,339 | 26,482 | 15,672 | 7,963 | 9,599 | 0 | 0 | 0 | 64,642 (±0) | 8.63 | |
| Eastern white pine | 919 | 284 | 9,850 | 14,224 | 18,495 | 4,804 | 2,402 | 3,131 | 0 | 54,109 (±0) | 7.22 | |
| Honeylocust | 9,508 | 4,588 | 5,950 | 1,586 | 1,758 | 0 | 0 | 0 | 0 | 23,390 (±0) | 3.12 | |
| Norway maple | 1,192 | 1,177 | 15,356 | 12,307 | 0 | 0 | 0 | 0 | 0 | 30,031 (±0) | 4.01 | |
| Eastern cottonwood | 0 | 753 | 4,425 | 7,260 | 28,255 | 7,860 | 1,692 | 3,777 | 0 | 54,023 (±0) | 7.21 | |
| White ash | 1,589 | 2,745 | 14,837 | 0 | 0 | 0 | 0 | 0 | 0 | 19,171 (±0) | 2.56 | |
| Crabapple | 839 | 15,003 | 734 | 0 | 0 | 0 | 0 | 0 | 0 | 16,575 (±0) | 2.21 | |
| Elm | 8,801 | 1,059 | 1,667 | 0 | 0 | 0 | 0 | 0 | 0 | 11,528 (±0) | 1.54 | |
| Freeman maple | 2,537 | 2,609 | 10,723 | 0 | 0 | 0 | 0 | 0 | 0 | 15,869 (±0) | 2.12 | |
| Northern hackberry | 6,306 | 282 | 6,537 | 0 | 0 | 0 | 0 | 0 | 0 | 13,126 (±0) | 1.75 | |
| American basswood | 1,175 | 5,523 | 2,113 | 4,561 | 0 | 0 | 0 | 0 | 0 | 13,372 (±0) | 1.78 | |
| Leprechaun ash | 348 | 8,976 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9,324 (±0) | 1.24 | |
| Littleleaf linden | 3,172 | 682 | 8,211 | 0 | 0 | 0 | 0 | 0 | 0 | 12,065 (±0) | 1.61 | |
| Norway spruce | 4,839 | 297 | 546 | 943 | 0 | 0 | 0 | 0 | 0 | 6,625 (±0) | 0.88 | |
| Callery pear | 5,391 | 392 | 3,153 | 0 | 0 | 0 | 0 | 0 | 0 | 8,936 (±0) | 1.19 | |
| White spruce | 689 | 284 | 4,898 | 2,687 | 0 | 0 | 0 | 0 | 0 | 8,557 (±0) | 1.14 | |
| Northern red oak | 245 | 436 | 5,742 | 1,186 | 0 | 3,912 | 11,812 | 5,116 | 3,320 | 31,769 (±0) | 4.24 | |
| Red maple | 317 | 0 | 4,345 | 2,280 | 4,651 | 7,073 | 7,470 | 0 | 0 | 26,137 (±0) | 3.49 | |
| White oak | 0 | 0 | 3,230 | 0 | 2,802 | 7,534 | 15,202 | 19,845 | 15,627 | 64,240 (±0) | 8.57 | |
| Silver maple | 0 | 607 | 4,155 | 771 | 4,508 | 0 | 5,865 | 0 | 0 | 15,906 (±0) | 2.12 | |
| Paper birch | 0 | 816 | 1,690 | 3,841 | 0 | 0 | 0 | 0 | 0 | 6,347 (±0) | 0.85 | |
| Kentucky coffeetree | 1,603 | 1,659 | 5,667 | 0 | 0 | 0 | 0 | 0 | 0 | 8,929 (±0) | 1.19 | |
| Blue spruce | 0 | 838 | 3,686 | 2,301 | 0 | 0 | 0 | 0 | 0 | 6,825 (±0) | 0.91 | |
| Sunset maple | 3,973 | 0 | 1,261 | 0 | 0 | 0 | 0 | 0 | 0 | 5,234 (±0) | 0.70 | |
| Thornless hawthorn | 1,043 | 3,231 | 734 | 0 | 0 | 0 | 0 | 0 | 0 | 5,008 (±0) | 0.67 | |
| Swamp white oak | 2,149 | 0 | 2,013 | 0 | 3,105 | 0 | 0 | 6,501 | 0 | 13,768 (±0) | 1.84 | |
| Willow | 0 | 0 | 0 | 3,727 | 841 | 7,652 | 8,222 | 0 | 0 | 20,443 (±0) | 2.73 | |
| Boxelder | 0 | 858 | 0 | 2,634 | 5,827 | 0 | 0 | 0 | 0 | 9,319 (±0) | 1.24 | |
| Bur oak | 2,144 | 0 | 1,381 | 3,334 | 0 | 0 | 0 | 0 | 0 | 6,859 (±0) | 0.92 | |
| Sugar maple | 348 | 744 | 820 | 0 | 4,999 | 6,673 | 0 | 0 | 0 | 13,584 (±0) | 1.81 | |
| Japanese tree lilac | 691 | 1,113 | 2,277 | 0 | 0 | 0 | 0 | 0 | 0 | 4,081 (±0) | 0.54 | |
| Korean mountainash | 348 | 872 | 3,022 | 0 | 0 | 0 | 0 | 0 | 0 | 4,242 (±0) | 0.57 | |
| Amur maple | 0 | 1,998 | 1,156 | 0 | 0 | 0 | 0 | 0 | 0 | 3,154 (±0) | 0.42 | |
| Tatarian maple | 1,984 | 0 | 734 | 0 | 0 | 0 | 0 | 0 | 0 | 2,718 (±0) | 0.36 | |
| Apple | 1,738 | 0 | 302 | 0 | 1,029 | 0 | 0 | 0 | 0 | 3,070 (±0) | 0.41 | |

| Species | DBH Class (in) | | | | | | | | | Total Standard Error | % of Total |
|--------------------------|----------------|-----|-------|-------|-------|-------|-------|-------|-----|----------------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | |
| Canada Red chokecherry | 1,043 | 615 | 1,468 | 0 | 0 | 0 | 0 | 0 | 0 | 3,126 (±0) | 0.42 |
| Korean Sun pear | 2,086 | 436 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,522 (±0) | 0.34 |
| Serbian spruce | 232 | 559 | 1,315 | 0 | 0 | 0 | 0 | 0 | 0 | 2,106 (±0) | 0.28 |
| Pekin lilac | 941 | 0 | 1,986 | 0 | 0 | 0 | 0 | 0 | 0 | 2,927 (±0) | 0.39 |
| Sterling Silver linden | 1,586 | 0 | 678 | 0 | 0 | 0 | 0 | 0 | 0 | 2,264 (±0) | 0.30 |
| River birch | 1,558 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,558 (±0) | 0.21 |
| Musclewood | 348 | 436 | 2,202 | 0 | 0 | 0 | 0 | 0 | 0 | 2,985 (±0) | 0.40 |
| Blue ash | 586 | 0 | 1,667 | 0 | 0 | 0 | 0 | 0 | 0 | 2,253 (±0) | 0.30 |
| Dawn redwood | 324 | 0 | 1,395 | 0 | 0 | 0 | 0 | 0 | 0 | 1,720 (±0) | 0.23 |
| Scotch pine | 0 | 0 | 2,191 | 0 | 0 | 0 | 0 | 0 | 0 | 2,191 (±0) | 0.29 |
| Northern white cedar | 0 | 0 | 2,249 | 0 | 0 | 0 | 0 | 0 | 0 | 2,249 (±0) | 0.30 |
| Ginkgo | 0 | 627 | 1,569 | 0 | 0 | 0 | 0 | 0 | 0 | 2,195 (±0) | 0.29 |
| Turkish filbert | 322 | 0 | 705 | 0 | 0 | 0 | 0 | 0 | 0 | 1,026 (±0) | 0.14 |
| American elm | 0 | 356 | 0 | 1,092 | 0 | 2,905 | 0 | 0 | 0 | 4,353 (±0) | 0.58 |
| Ohio buckeye | 0 | 880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 880 (±0) | 0.12 |
| Yellow buckeye | 322 | 0 | 631 | 0 | 0 | 0 | 0 | 0 | 0 | 952 (±0) | 0.13 |
| Autumn Brilliance servic | 143 | 308 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 451 (±0) | 0.06 |
| Black walnut | 0 | 0 | 478 | 550 | 0 | 0 | 0 | 0 | 0 | 1,029 (±0) | 0.14 |
| Eastern red cedar | 0 | 269 | 438 | 0 | 0 | 0 | 0 | 0 | 0 | 707 (±0) | 0.09 |
| Amur maackia | 0 | 0 | 1,468 | 0 | 0 | 0 | 0 | 0 | 0 | 1,468 (±0) | 0.20 |
| Eastern hophornbeam | 348 | 0 | 0 | 0 | 0 | 3,912 | 0 | 0 | 0 | 4,260 (±0) | 0.57 |
| Trembling aspen | 0 | 249 | 0 | 1,037 | 0 | 0 | 0 | 0 | 0 | 1,286 (±0) | 0.17 |
| Double Flowering cherry | 348 | 436 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 784 (±0) | 0.10 |
| Scarlet oak | 586 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 586 (±0) | 0.08 |
| Swamp x Bur oak | 322 | 0 | 445 | 0 | 0 | 0 | 0 | 0 | 0 | 767 (±0) | 0.10 |
| Balsam fir | 0 | 0 | 438 | 0 | 0 | 0 | 0 | 0 | 0 | 438 (±0) | 0.06 |
| Hedge maple | 348 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 348 (±0) | 0.05 |
| State Street maple | 0 | 0 | 678 | 0 | 0 | 0 | 0 | 0 | 0 | 678 (±0) | 0.09 |
| Serviceberry | 0 | 0 | 518 | 0 | 0 | 0 | 0 | 0 | 0 | 518 (±0) | 0.07 |
| Cumulus serviceberry | 348 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 348 (±0) | 0.05 |
| Shagbark hickory | 207 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 207 (±0) | 0.03 |
| Northern catalpa | 291 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 291 (±0) | 0.04 |
| Eastern redbud | 0 | 294 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 294 (±0) | 0.04 |
| Katsuratree | 0 | 308 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 308 (±0) | 0.04 |
| Yellowwood | 322 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 322 (±0) | 0.04 |
| Washington hawthorn | 348 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 348 (±0) | 0.05 |
| Winter King hawthorn | 348 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 348 (±0) | 0.05 |
| Black ash | 319 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 319 (±0) | 0.04 |
| European larch | 0 | 197 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 197 (±0) | 0.03 |
| Tamarack | 0 | 279 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 279 (±0) | 0.04 |
| Amur corktree | 0 | 311 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 311 (±0) | 0.04 |

| Species | DBH Class (in) | | | | | | | | | Total Standard Error | % of Total |
|---------------------|----------------|--------|---------|---------|--------|--------|--------|--------|--------|----------------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | |
| Bristlecone pine | 0 | 284 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 284 (±0) | 0.04 |
| Ponderosa pine | 162 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 162 (±0) | 0.02 |
| American sycamore | 0 | 145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 145 (±0) | 0.02 |
| Cherry plum | 295 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 295 (±0) | 0.04 |
| Purpleleaf plum | 0 | 436 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 436 (±0) | 0.06 |
| Amur chokecherry | 245 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 245 (±0) | 0.03 |
| Summer Glow cherry | 348 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 348 (±0) | 0.05 |
| Common black cherry | 0 | 0 | 302 | 0 | 0 | 0 | 0 | 0 | 0 | 302 (±0) | 0.04 |
| Northern pin oak | 0 | 436 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 436 (±0) | 0.06 |
| Chinkapin oak | 0 | 0 | 556 | 0 | 0 | 0 | 0 | 0 | 0 | 556 (±0) | 0.07 |
| English oak | 0 | 0 | 556 | 0 | 0 | 0 | 0 | 0 | 0 | 556 (±0) | 0.07 |
| Staghorn sumac | 0 | 436 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 436 (±0) | 0.06 |
| Weeping willow | 0 | 0 | 0 | 0 | 1,442 | 0 | 0 | 0 | 0 | 1,442 (±0) | 0.19 |
| Baldcypress | 232 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 232 (±0) | 0.03 |
| Techny arborvitae | 0 | 0 | 438 | 0 | 0 | 0 | 0 | 0 | 0 | 438 (±0) | 0.06 |
| Siberian elm | 0 | 0 | 556 | 0 | 0 | 0 | 0 | 0 | 0 | 556 (±0) | 0.07 |
| Citywide total | 79,377 | 70,937 | 226,601 | 114,780 | 85,675 | 61,925 | 52,665 | 38,369 | 18,948 | 749,279 (±0) | 100.00 |

Species Distribution of Park Trees (%)

1/18/2010



| Species | Percent |
|--------------------|---------|
| Austrian pine | 13.8 |
| Green ash | 9.1 |
| Eastern white pine | 6.4 |
| Honeylocust | 5.0 |
| Norway maple | 4.2 |
| Eastern cottonwood | 3.5 |
| White ash | 3.3 |
| Crabapple | 3.3 |
| Elm | 3.0 |
| Freeman maple | 2.8 |
| OTHER SPECIES | 45.6 |
| Total | 100.0 |

| |
|--|
| Total Annual Benefits of Park Trees by Species (\$) |
|--|

1/5/2010

| Species | Energy | CO ₂ | Air Quality | Stormwater | Aesthetic/Other | Total (\$) | Standard Error | % of Total \$ |
|---------------------|--------|-----------------|-------------|------------|-----------------|------------|----------------|---------------|
| Austrian pine | 2,838 | 226 | 311 | 4,294 | 3,593 | 11,262 | (±0) | 14.9 |
| Green ash | 2,863 | 391 | 454 | 2,776 | 3,469 | 9,952 | (±0) | 13.1 |
| Eastern white pine | 1,599 | 151 | 124 | 3,282 | 2,044 | 7,200 | (±0) | 9.5 |
| Honeylocust | 753 | 83 | 111 | 472 | 960 | 2,378 | (±0) | 3.1 |
| Norway maple | 1,394 | 169 | 217 | 1,016 | 1,345 | 4,141 | (±0) | 5.5 |
| Eastern cottonwood | 1,884 | 259 | 315 | 2,292 | 1,930 | 6,679 | (±0) | 8.8 |
| White ash | 567 | 70 | 82 | 452 | 935 | 2,106 | (±0) | 2.8 |
| Crabapple | 210 | 21 | 28 | 73 | 79 | 410 | (±0) | 0.5 |
| Elm | 98 | 12 | 14 | 77 | 282 | 485 | (±0) | 0.6 |
| Freeman maple | 489 | 50 | 72 | 320 | 566 | 1,497 | (±0) | 2.0 |
| Northern hackberry | 363 | 27 | 50 | 214 | 368 | 1,022 | (±0) | 1.3 |
| American basswood | 351 | 37 | 50 | 229 | 239 | 906 | (±0) | 1.2 |
| Leprechaun ash | 136 | 14 | 18 | 47 | 51 | 266 | (±0) | 0.4 |
| Littleleaf linden | 255 | 37 | 35 | 169 | 454 | 951 | (±0) | 1.3 |
| Norway spruce | 74 | 6 | 7 | 104 | 174 | 364 | (±0) | 0.5 |
| Callery pear | 148 | 17 | 21 | 89 | 185 | 460 | (±0) | 0.6 |
| White spruce | 244 | 21 | 27 | 328 | 306 | 926 | (±0) | 1.2 |
| Northern red oak | 607 | 49 | 85 | 691 | 227 | 1,659 | (±0) | 2.2 |
| Red maple | 756 | 72 | 135 | 827 | 559 | 2,350 | (±0) | 3.1 |
| White oak | 1,175 | 148 | 227 | 2,091 | 926 | 4,567 | (±0) | 6.0 |
| Silver maple | 581 | 99 | 94 | 813 | 906 | 2,492 | (±0) | 3.3 |
| Paper birch | 495 | 68 | 80 | 431 | 582 | 1,656 | (±0) | 2.2 |
| Kentucky coffeetree | 171 | 23 | 25 | 136 | 285 | 640 | (±0) | 0.8 |
| Blue spruce | 252 | 20 | 28 | 373 | 328 | 1,000 | (±0) | 1.3 |
| Sunset maple | 62 | 7 | 9 | 36 | 85 | 199 | (±0) | 0.3 |
| Thornless hawthorn | 64 | 6 | 9 | 23 | 23 | 125 | (±0) | 0.2 |
| OTHER STREET TREE | 3,296 | 353 | 511 | 3,157 | 2,746 | 10,062 | (±0) | 13.3 |
| Citywide Total | 21,723 | 2,437 | 3,136 | 24,812 | 23,647 | 75,754 | (±0) | 100.0 |

Appendix 1d.

Complete Population of VGGC Trees

1/5/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|---|----------------|-----------|-----------|-----------|-----------|-----------|-----------|----------|----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Broadleaf Deciduous Large (BDL) | | | | | | | | | | |
| Green ash | 0 | 1 | 33 | 13 | 3 | 3 | 3 | 0 | 0 | 56 |
| Silver maple | 0 | 0 | 3 | 7 | 9 | 6 | 11 | 3 | 5 | 44 |
| Lombardy poplar | 0 | 6 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 17 |
| Paper birch | 0 | 0 | 1 | 11 | 2 | 2 | 0 | 0 | 0 | 16 |
| Eastern cottonwood | 0 | 0 | 0 | 3 | 4 | 4 | 1 | 0 | 1 | 13 |
| Freeman maple | 6 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 11 |
| American elm | 0 | 0 | 2 | 2 | 3 | 0 | 0 | 0 | 0 | 7 |
| Bur oak | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 1 | 0 | 5 |
| American basswood | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| White ash | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Elm | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| White oak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Total | 6 | 10 | 56 | 41 | 21 | 16 | 16 | 4 | 7 | 177 (±NaN) |
| Broadleaf Deciduous Medium (BDM) | | | | | | | | | | |
| Norway maple | 1 | 0 | 2 | 7 | 20 | 9 | 1 | 0 | 0 | 40 |
| Boxelder | 3 | 3 | 4 | 8 | 5 | 2 | 1 | 0 | 0 | 26 |
| Callery pear | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Siberian elm | 0 | 2 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 7 |
| River birch | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Ginkgo | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Honeylocust | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| Turkish filbert | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Littleleaf linden | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 8 | 14 | 16 | 16 | 26 | 11 | 2 | 0 | 0 | 93 (±NaN) |
| Broadleaf Deciduous Small (BDS) | | | | | | | | | | |
| Crabapple | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Prairie Gem pear | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Canada Red chokecherry | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| Japanese tree lilac | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Hawthorn | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Amur maackia | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Korean mountainash | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| American mountainash | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 5 | 0 | 9 | 2 | 1 | 0 | 0 | 0 | 0 | 17 (±NaN) |
| Broadleaf Evergreen Large (BEL) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Medium (BEM) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Small (BES) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Conifer Evergreen Large (CEL) | | | | | | | | | | |
| Northern white cedar | 0 | 0 | 17 | 58 | 7 | 0 | 0 | 0 | 0 | 82 |
| Eastern white pine | 2 | 4 | 17 | 12 | 1 | 1 | 0 | 0 | 0 | 37 |
| Norway spruce | 2 | 15 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 19 |
| White spruce | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Scotch pine | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 4 |
| Dawn redwood | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Red pine | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 7 | 22 | 36 | 72 | 10 | 1 | 0 | 0 | 0 | 148 (±NaN) |
| Conifer Evergreen Medium (CEM) | | | | | | | | | | |
| Austrian pine | 1 | 2 | 1 | 7 | 17 | 9 | 1 | 0 | 0 | 38 |
| Serbian spruce | 0 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Techny arborvitae | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |

Complete Population of VGGC Trees

1/5/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|--------------------------------------|----------------|-----------|------------|------------|-----------|-----------|-----------|----------|----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Swiss Stone pine | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Japanese larch | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Blue spruce | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 5 | 12 | 15 | 7 | 17 | 9 | 1 | 0 | 0 | 66 (±NaN) |
| Conifer Evergreen Small (CES) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Grand Total | 31 | 58 | 132 | 138 | 75 | 37 | 19 | 4 | 7 | 501 (±0) |

Howard

Replacement Value for VGGC Trees by Species

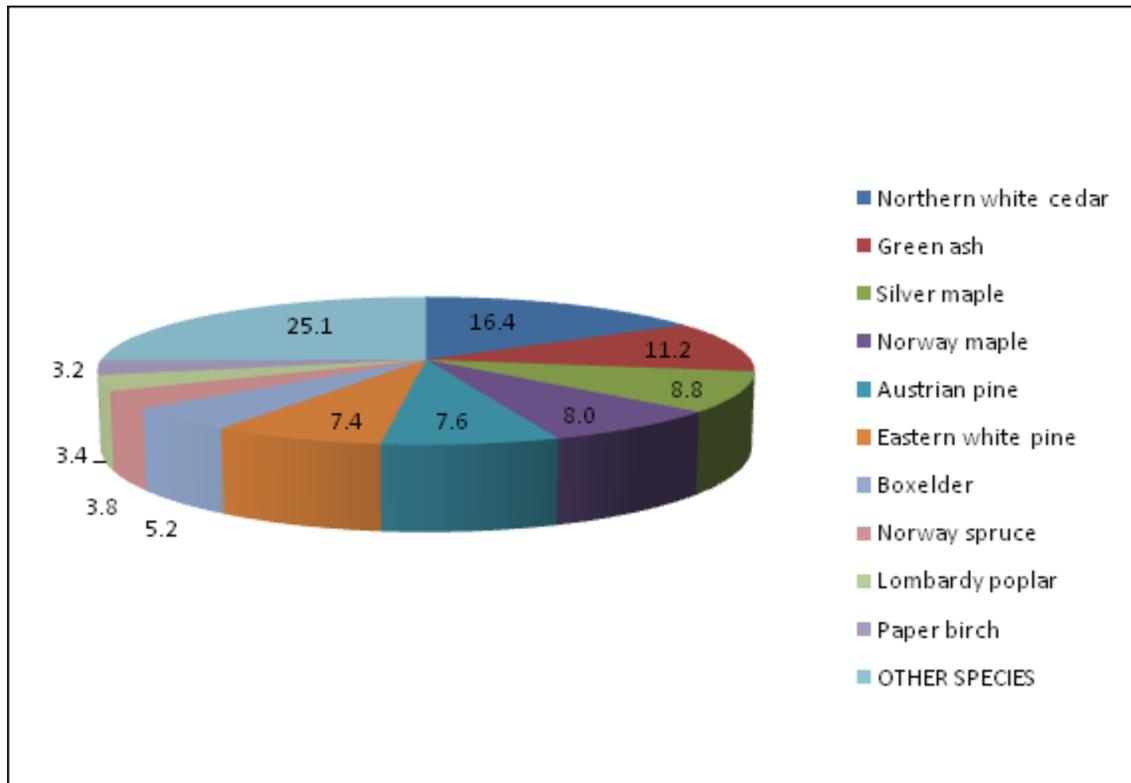
1/5/2010

| Species | DBH Class (in) | | | | | | | | | Total | Standard Error | % of Total |
|------------------------|----------------|-------|--------|--------|--------|--------|--------|--------|--------|--------------|----------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | | |
| Northern white cedar | 0 | 0 | 6,986 | 44,759 | 10,120 | 0 | 0 | 0 | 0 | 61,866 (±0) | 12.00 | |
| Green ash | 0 | 249 | 16,870 | 12,257 | 4,240 | 5,760 | 10,469 | 0 | 0 | 49,846 (±0) | 9.67 | |
| Silver maple | 0 | 0 | 1,385 | 6,682 | 15,722 | 17,429 | 39,465 | 14,479 | 24,497 | 119,658 (±0) | 23.21 | |
| Norway maple | 322 | 0 | 1,261 | 6,611 | 35,452 | 21,091 | 4,585 | 0 | 0 | 69,321 (±0) | 13.44 | |
| Austrian pine | 232 | 559 | 180 | 4,218 | 20,617 | 14,179 | 2,124 | 0 | 0 | 42,109 (±0) | 8.17 | |
| Eastern white pine | 324 | 967 | 7,086 | 10,747 | 1,541 | 2,402 | 0 | 0 | 0 | 23,068 (±0) | 4.47 | |
| Boxelder | 154 | 377 | 1,013 | 7,131 | 6,597 | 3,247 | 2,964 | 0 | 0 | 21,483 (±0) | 4.17 | |
| Norway spruce | 340 | 4,197 | 978 | 0 | 0 | 0 | 0 | 0 | 0 | 5,514 (±0) | 1.07 | |
| Lombardy poplar | 0 | 374 | 981 | 183 | 0 | 0 | 0 | 0 | 0 | 1,537 (±0) | 0.30 | |
| Paper birch | 0 | 0 | 191 | 6,565 | 1,699 | 3,062 | 0 | 0 | 0 | 11,517 (±0) | 2.23 | |
| Eastern cottonwood | 0 | 0 | 0 | 2,634 | 5,827 | 9,056 | 2,900 | 0 | 2,450 | 22,867 (±0) | 4.43 | |
| Freeman maple | 1,437 | 564 | 0 | 4,010 | 0 | 0 | 0 | 0 | 0 | 6,011 (±0) | 1.17 | |
| Serbian spruce | 0 | 2,432 | 438 | 0 | 0 | 0 | 0 | 0 | 0 | 2,870 (±0) | 0.56 | |
| Techny arborivitaе | 0 | 0 | 3,944 | 0 | 0 | 0 | 0 | 0 | 0 | 3,944 (±0) | 0.76 | |
| Callery pear | 0 | 2,238 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 2,498 (±0) | 0.48 | |
| American elm | 0 | 0 | 980 | 1,863 | 4,508 | 0 | 0 | 0 | 0 | 7,350 (±0) | 1.43 | |
| Siberian elm | 0 | 498 | 1,733 | 0 | 1,241 | 0 | 0 | 0 | 0 | 3,472 (±0) | 0.67 | |
| Swiss Stone pine | 792 | 0 | 876 | 0 | 0 | 0 | 0 | 0 | 0 | 1,669 (±0) | 0.32 | |
| Crabapple | 1,738 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,738 (±0) | 0.34 | |
| Bur oak | 0 | 0 | 1,619 | 0 | 0 | 4,669 | 6,662 | 8,719 | 0 | 21,669 (±0) | 4.20 | |
| River birch | 0 | 1,067 | 574 | 0 | 0 | 0 | 0 | 0 | 0 | 1,642 (±0) | 0.32 | |
| Ginkgo | 1,271 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,271 (±0) | 0.25 | |
| White spruce | 459 | 567 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,027 (±0) | 0.20 | |
| Scotch pine | 0 | 0 | 0 | 1,150 | 2,354 | 0 | 0 | 0 | 0 | 3,504 (±0) | 0.68 | |
| Prairie Gem pear | 0 | 0 | 2,936 | 0 | 0 | 0 | 0 | 0 | 0 | 2,936 (±0) | 0.57 | |
| Honeylocust | 0 | 0 | 948 | 1,037 | 0 | 0 | 0 | 0 | 0 | 1,985 (±0) | 0.38 | |
| American basswood | 0 | 0 | 957 | 1,337 | 0 | 0 | 0 | 0 | 0 | 2,293 (±0) | 0.44 | |
| White ash | 0 | 392 | 631 | 0 | 0 | 0 | 0 | 0 | 0 | 1,023 (±0) | 0.20 | |
| Japanese larch | 0 | 0 | 876 | 0 | 0 | 0 | 0 | 0 | 0 | 876 (±0) | 0.17 | |
| Canada Red chokecherry | 0 | 0 | 518 | 1,017 | 0 | 0 | 0 | 0 | 0 | 1,535 (±0) | 0.30 | |
| Japanese tree lilac | 0 | 0 | 1,518 | 0 | 0 | 0 | 0 | 0 | 0 | 1,518 (±0) | 0.29 | |
| Elm | 0 | 0 | 1,112 | 0 | 0 | 0 | 0 | 0 | 0 | 1,112 (±0) | 0.22 | |
| Turkish filbert | 0 | 0 | 445 | 0 | 0 | 0 | 0 | 0 | 0 | 445 (±0) | 0.09 | |
| Hawthorn | 0 | 0 | 0 | 1,017 | 0 | 0 | 0 | 0 | 0 | 1,017 (±0) | 0.20 | |
| Amur maackia | 0 | 0 | 734 | 0 | 0 | 0 | 0 | 0 | 0 | 734 (±0) | 0.14 | |
| Dawn redwood | 0 | 284 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 284 (±0) | 0.05 | |

| Species | DBH Class (in) | | | | | | | | | Total Standard Error | % of Total |
|----------------------|----------------|--------|--------|---------|---------|--------|--------|--------|--------|----------------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | |
| Blue spruce | 0 | 279 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 279 (±0) | 0.05 |
| Red pine | 230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 230 (±0) | 0.04 |
| White oak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9,161 | 9,161 (±0) | 1.78 |
| Korean mountainash | 0 | 0 | 518 | 0 | 0 | 0 | 0 | 0 | 0 | 518 (±0) | 0.10 |
| American mountainash | 0 | 0 | 0 | 0 | 1,764 | 0 | 0 | 0 | 0 | 1,764 (±0) | 0.34 |
| Littleleaf linden | 0 | 0 | 478 | 0 | 0 | 0 | 0 | 0 | 0 | 478 (±0) | 0.09 |
| Citywide total | 7,299 | 15,044 | 59,027 | 113,218 | 111,681 | 80,894 | 69,170 | 23,198 | 36,108 | 515,639 (±0) | 100.00 |

Species Distribution of VGGC Trees (%)

1/5/2010



| Species | Percent |
|----------------------|---------|
| Northern white cedar | 16.4 |
| Green ash | 11.2 |
| Silver maple | 8.8 |
| Norway maple | 8.0 |
| Austrian pine | 7.6 |
| Eastern white pine | 7.4 |
| Boxelder | 5.2 |
| Norway spruce | 3.8 |
| Lombardy poplar | 3.4 |
| Paper birch | 3.2 |
| OTHER SPECIES | 25.1 |
| Total | 100.0 |

| |
|--|
| Total Annual Benefits of VGGC Trees by Species (\$) |
|--|

1/5/2010

| Species | Energy | CO ₂ | Air Quality | Stormwater | Aesthetic/Other | Total (\$) | Standard Error | % of Total \$ |
|-----------------------|---------------|-----------------|--------------|---------------|-----------------|---------------|----------------|---------------|
| Northern white cedar | 1,844 | 181 | 199 | 3,256 | 2,466 | 7,946 | (±0) | 13.4 |
| Green ash | 1,893 | 257 | 309 | 2,042 | 2,123 | 6,623 | (±0) | 11.2 |
| Silver maple | 2,874 | 574 | 528 | 5,291 | 4,456 | 13,724 | (±0) | 23.1 |
| Norway maple | 2,260 | 236 | 401 | 2,663 | 1,473 | 7,034 | (±0) | 11.9 |
| Austrian pine | 1,061 | 96 | 118 | 2,186 | 682 | 4,142 | (±0) | 7.0 |
| Eastern white pine | 613 | 57 | 61 | 1,006 | 762 | 2,499 | (±0) | 4.2 |
| Boxelder | 838 | 131 | 136 | 997 | 994 | 3,097 | (±0) | 5.2 |
| Norway spruce | 113 | 9 | 11 | 121 | 145 | 399 | (±0) | 0.7 |
| Lombardy poplar | 286 | 39 | 43 | 232 | 420 | 1,019 | (±0) | 1.7 |
| Paper birch | 764 | 106 | 128 | 807 | 780 | 2,585 | (±0) | 4.4 |
| Eastern cottonwood | 823 | 110 | 146 | 1,172 | 740 | 2,992 | (±0) | 5.0 |
| Freeman maple | 169 | 22 | 29 | 140 | 212 | 572 | (±0) | 1.0 |
| Serbian spruce | 77 | 5 | 8 | 83 | 132 | 306 | (±0) | 0.5 |
| Techny arborivita | 133 | 10 | 14 | 184 | 190 | 531 | (±0) | 0.9 |
| Callery pear | 78 | 10 | 11 | 42 | 104 | 245 | (±0) | 0.4 |
| American elm | 315 | 31 | 50 | 325 | 266 | 987 | (±0) | 1.7 |
| Siberian elm | 151 | 18 | 23 | 140 | 157 | 488 | (±0) | 0.8 |
| Swiss Stone pine | 36 | 2 | 4 | 45 | 62 | 150 | (±0) | 0.3 |
| OTHER STREET TREE | 1,197 | 135 | 186 | 1,374 | 1,107 | 3,999 | (±0) | 6.7 |
| Citywide Total | 15,523 | 2,029 | 2,406 | 22,109 | 17,272 | 59,339 | (±0) | 100.0 |

Appendix 1e.

Complete Population of Public Trees

Other Village Properties

1/5/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|---|----------------|----------|-----------|----------|----------|----------|----------|----------|----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Broadleaf Deciduous Large (BDL) | | | | | | | | | | |
| Green ash | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| White oak | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Freeman maple | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Eastern cottonwood | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Scarlet oak | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 2 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 8 (±NaN) |
| Broadleaf Deciduous Medium (BDM) | | | | | | | | | | |
| Norway maple | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| Honeylocust | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Littleleaf linden | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Ohio buckeye | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Ginkgo | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Swamp white oak | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 1 | 1 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 9 (±NaN) |
| Broadleaf Deciduous Small (BDS) | | | | | | | | | | |
| Crabapple | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Pekin lilac | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Serviceberry | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 2 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 (±NaN) |
| Broadleaf Evergreen Large (BEL) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Medium (BEM) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Small (BES) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Conifer Evergreen Large (CEL) | | | | | | | | | | |
| Eastern white pine | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Northern white cedar | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| White spruce | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 3 | 3 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 16 (±NaN) |
| Conifer Evergreen Medium (CEM) | | | | | | | | | | |
| Austrian pine | 1 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Techny arborvitae | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Total | 1 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 15 (±NaN) |
| Conifer Evergreen Small (CES) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Grand Total | 9 | 9 | 36 | 1 | 0 | 1 | 0 | 0 | 0 | 56 (±0) |

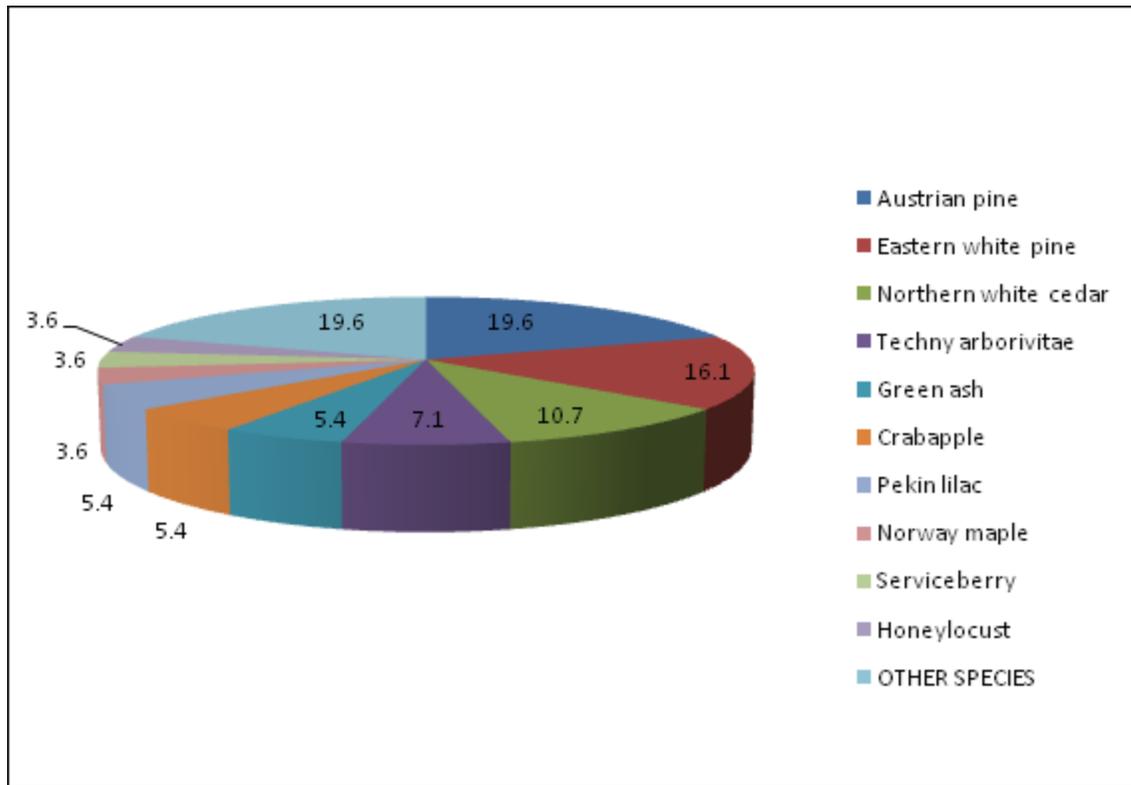
Replacement Value for Public Trees by Species

Other Village Properties

1/5/2010

| Species | DBH Class (in) | | | | | | | | | Total | Standard Error | % of Total |
|----------------------|----------------|-------|--------|-------|-------|-------|-------|-------|-----|-------------|----------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | | |
| Austrian pine | 232 | 0 | 3,996 | 0 | 0 | 0 | 0 | 0 | 0 | 4,228 (±0) | 15.96 | |
| Eastern white pine | 0 | 0 | 3,639 | 0 | 0 | 0 | 0 | 0 | 0 | 3,639 (±0) | 13.74 | |
| Northern white cedar | 462 | 813 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,275 (±0) | 4.81 | |
| Techny arborvitae | 0 | 0 | 1,753 | 0 | 0 | 0 | 0 | 0 | 0 | 1,753 (±0) | 6.62 | |
| Green ash | 0 | 0 | 1,667 | 0 | 0 | 0 | 0 | 0 | 0 | 1,667 (±0) | 6.29 | |
| Crabapple | 0 | 872 | 518 | 0 | 0 | 0 | 0 | 0 | 0 | 1,390 (±0) | 5.25 | |
| Pekin lilac | 0 | 1,308 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,308 (±0) | 4.94 | |
| Norway maple | 0 | 0 | 631 | 1,196 | 0 | 0 | 0 | 0 | 0 | 1,826 (±0) | 6.89 | |
| Serviceberry | 695 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 695 (±0) | 2.62 | |
| Honeylocust | 0 | 0 | 948 | 0 | 0 | 0 | 0 | 0 | 0 | 948 (±0) | 3.58 | |
| White oak | 686 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 686 (±0) | 2.59 | |
| Littleleaf linden | 0 | 0 | 1,355 | 0 | 0 | 0 | 0 | 0 | 0 | 1,355 (±0) | 5.12 | |
| Freeman maple | 0 | 0 | 478 | 0 | 0 | 0 | 0 | 0 | 0 | 478 (±0) | 1.81 | |
| Ohio buckeye | 0 | 0 | 536 | 0 | 0 | 0 | 0 | 0 | 0 | 536 (±0) | 2.02 | |
| Ginkgo | 0 | 444 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 444 (±0) | 1.68 | |
| White spruce | 0 | 0 | 465 | 0 | 0 | 0 | 0 | 0 | 0 | 465 (±0) | 1.76 | |
| Eastern cottonwood | 0 | 0 | 0 | 0 | 0 | 2,905 | 0 | 0 | 0 | 2,905 (±0) | 10.96 | |
| Swamp white oak | 338 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 338 (±0) | 1.28 | |
| Scarlet oak | 0 | 0 | 556 | 0 | 0 | 0 | 0 | 0 | 0 | 556 (±0) | 2.10 | |
| Citywide total | 2,414 | 3,437 | 16,542 | 1,196 | 0 | 2,905 | 0 | 0 | 0 | 26,493 (±0) | 100.00 | |

1/5/2010



| Species | Percent |
|----------------------|---------|
| Austrian pine | 19.6 |
| Eastern white pine | 16.1 |
| Northern white cedar | 10.7 |
| Techny arborivita | 7.1 |
| Green ash | 5.4 |
| Crabapple | 5.4 |
| Pekin lilac | 5.4 |
| Norway maple | 3.6 |
| Serviceberry | 3.6 |
| Honeylocust | 3.6 |
| OTHER SPECIES | 19.6 |
| Total | 100.0 |

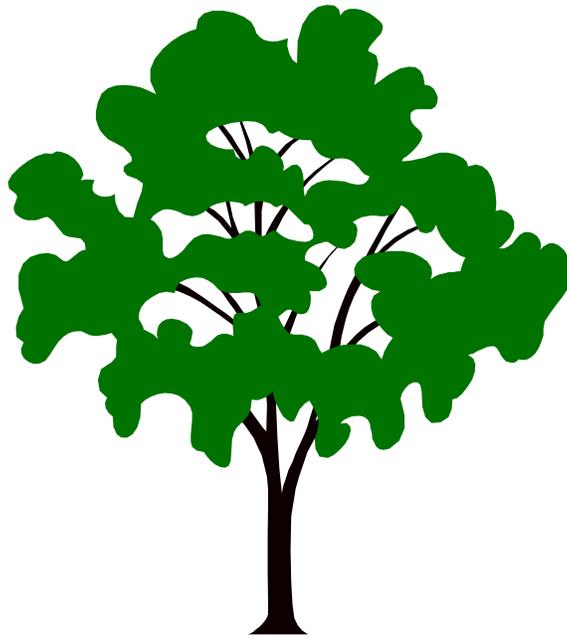
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| Species | Energy | CO ₂ | Air Quality | Stormwater | Aesthetic/Other | Total (\$) | Standard Error | % of Total \$ |
|----------------------|--------|-----------------|-------------|------------|-----------------|------------|----------------|---------------|
| Austrian pine | 150 | 11 | 16 | 206 | 216 | 598 | (±0) | 21.9 |
| Eastern white pine | 122 | 10 | 13 | 145 | 139 | 429 | (±0) | 15.7 |
| Northern white cedar | 20 | 1 | 2 | 21 | 38 | 82 | (±0) | 3.0 |
| Techny arborvitae | 59 | 4 | 6 | 82 | 84 | 236 | (±0) | 8.6 |
| Green ash | 62 | 8 | 9 | 49 | 86 | 214 | (±0) | 7.8 |
| Crabapple | 29 | 3 | 4 | 11 | 11 | 57 | (±0) | 2.1 |
| Pekin lilac | 16 | 2 | 2 | 6 | 6 | 32 | (±0) | 1.2 |
| Norway maple | 71 | 9 | 11 | 54 | 65 | 211 | (±0) | 7.7 |
| Serviceberry | 2 | 0 | 0 | 0 | 0 | 3 | (±0) | 0.1 |
| Honeylocust | 60 | 6 | 9 | 34 | 63 | 172 | (±0) | 6.3 |
| White oak | 1 | 0 | 0 | 1 | 11 | 13 | (±0) | 0.5 |
| Littleleaf linden | 37 | 5 | 5 | 25 | 62 | 134 | (±0) | 4.9 |
| Freeman maple | 25 | 3 | 4 | 17 | 30 | 78 | (±0) | 2.8 |
| Ohio buckeye | 24 | 3 | 3 | 16 | 26 | 73 | (±0) | 2.7 |
| Ginkgo | 5 | 0 | 1 | 2 | 3 | 10 | (±0) | 0.4 |
| White spruce | 14 | 1 | 1 | 16 | 15 | 48 | (±0) | 1.7 |
| Eastern cottonwood | 71 | 10 | 12 | 107 | 66 | 266 | (±0) | 9.7 |
| Swamp white oak | 1 | 0 | 0 | 0 | 3 | 4 | (±0) | 0.2 |
| Scarlet oak | 21 | 3 | 3 | 16 | 29 | 71 | (±0) | 2.6 |
| OTHER STREET TREE | 0 | 0 | 0 | 0 | 0 | 0 | (±0) | 0.0 |
| Citywide Total | 788 | 79 | 102 | 809 | 952 | 2,730 | (±0) | 100.0 |

Appendix 2.

VILLAGE OF HOWARD

ARBORICULTURAL SPECIFICATIONS MANUAL



Revised: April 2004

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INTRODUCTION

FUNCTION: The purpose of the Arboricultural Specifications Manual is to enable the Village of Howard to maintain and manage all trees located within the parkways, along village streets, and within the acres of public parks and recreational land by specifying proper treatments. This involves all phases of arboricultural work from planting to maintenance to removal. To carry out these functions, certain guiding policies and procedures have evolved and been adopted. Through these policies, the Forestry Division of the Parks, Recreation, and Forestry Department makes every effort to produce maximum public service for the Village's urban forest.

PURPOSE: The policy of the Village is to regulate and control the planting, transplanting, removal, maintenance, and protection of public trees and shrubs in the Village in order to maximize utility and function of the urban forest and minimize and guard against dangerous conditions which may result in injury to persons using the streets, alleys, sidewalks, or other property of the Village. It is also Village policy to promote and enhance the beauty and general welfare of the Village, and protect trees and shrubs located in the public areas from undesirable and unsafe planting, removal, treatment, and maintenance practices. (Exceptions - public school sites are not included.)

ORGANIZATION: The Village's forestry effort is administered and managed by the Village Forester of the Forestry Division in the Parks, Recreation, and Forestry Department. The Village Forester maintains an office at the Village Hall located at 2456 Glendale Avenue. Urban forestry guidance and input is provided by the Village of Howard Tree Board and the Parks, Recreation, and Forestry Department Director.

PERSONNEL: The Forestry Division is supervised and managed by the Village Forester and is staffed by seasonal and full-time employees or contracted out to a professional service. Recruiting and utilizing volunteers is an important part of staffing also.

"This document was funded in part by an urban forestry grant from the State of Wisconsin Department of Natural Resources Forestry Program as authorized under Wis. stat. 23.097."

I. MASTER STREET TREE PLANTING PLAN

The Master Street Tree Planting Plan covers the street tree planting programs, installation time periods of street tree plantings, planting permits, recommended street tree species selection list, and banned street trees. This document should be referenced for all questions regarding how street tree planting is laid out, paid for, requirements for what trees are allowed and banned from planting in the right-of-way.

A. Street Tree Planting Programs:

1. New Subdivision – This program was established to plant trees in new subdivisions platted after 1999. Funding for this program is provided by developer monies charged at the establishment of the subdivision by the linear foot of frontage. Planting in these subdivisions will begin once 75% of the lots are developed and will continue until all tree planting locations in the subdivision are filled. Tree sizes for this program will include 1 ½" – 1 ¾" bare root and 1 ¾" – 2 ½" balled and burlap depending on availability from nurseries.
2. Neighborhood Tree Program (NTP) – This program is to allow older neighborhoods (platted before 1999) the opportunity to have the Village plant trees along their street. This is a cost share program where the property owner will purchase the tree thru the Village at wholesale cost and the Village will plant and maintain the tree for life. Property owners will have a choice of bare root or balled and burlap trees in the sizes indicated in A.1. above.
3. Street Reconstruction – When trees are removed in preparation for reconstruction or widening of any established street, new trees will be planted provided there is space in the terrace to support tree growth. The cost of replacing these trees will be at the expense of the Village, budgeted in the project fund for that street. Tree sizes for reconstruction planting will typically be 1 ¾" – 2 ½" balled and burlap depending on availability.
4. Replacement – Removed trees will be replaced, if space provides, with 1 ¾" – 2 ½" balled and burlap stock at the expense of the Village. Exceptions are trees destroyed by vandalism, vehicles, lawn equipment, etc. Such trees shall be replaced at a cost to the person causing the damage, if known.
5. Unimproved Streets – No trees shall be planted in the terrace where no curb exists.

B. Installation Time Periods:

1. Street tree plantings will take place during two time periods per season. The first plantings will be in the spring, typically mid-April until the end of May. The other planting period occurs in the fall, around the month of November.
2. Some tree species can only be transplanted in the spring for optimal establishment so these species will only be available once per year.
3. Evergreen trees, when planted, should only be planted in the spring or summer to ensure establishment prior to freezing weather in the fall. Because evergreens continue to transpire throughout winter they should not be planted in the fall since water will not be available for uptake by the tree.

- C. Planting Permit: Property owners who wish to plant trees in the Village right-of-way must first complete a planting permit application (Appendix A). Upon completion of application the Village Forester will accept or deny this application following a site inspection and administer a planting permit for such plantings (Appendix B). Planting permit recipients must follow the tree planting procedures as outlined in Section III of these specifications.
- D. Recommended Street Tree Planting List: (Appendix C)
- E. Banned Tree List: (Appendix D)

II. DIGGERS HOTLINE AND LOCAL UTILITIES

Diggers Hotline and the local utility companies must be notified of all locations before any digging commences including planting, root repair, staking and stump removal. This is required so that no underground utility facilities are damaged. It takes three to ten days for the utilities to locate them. This not only prevents the disruption of service to the residents, but prevents a serious safety hazard to the employees.

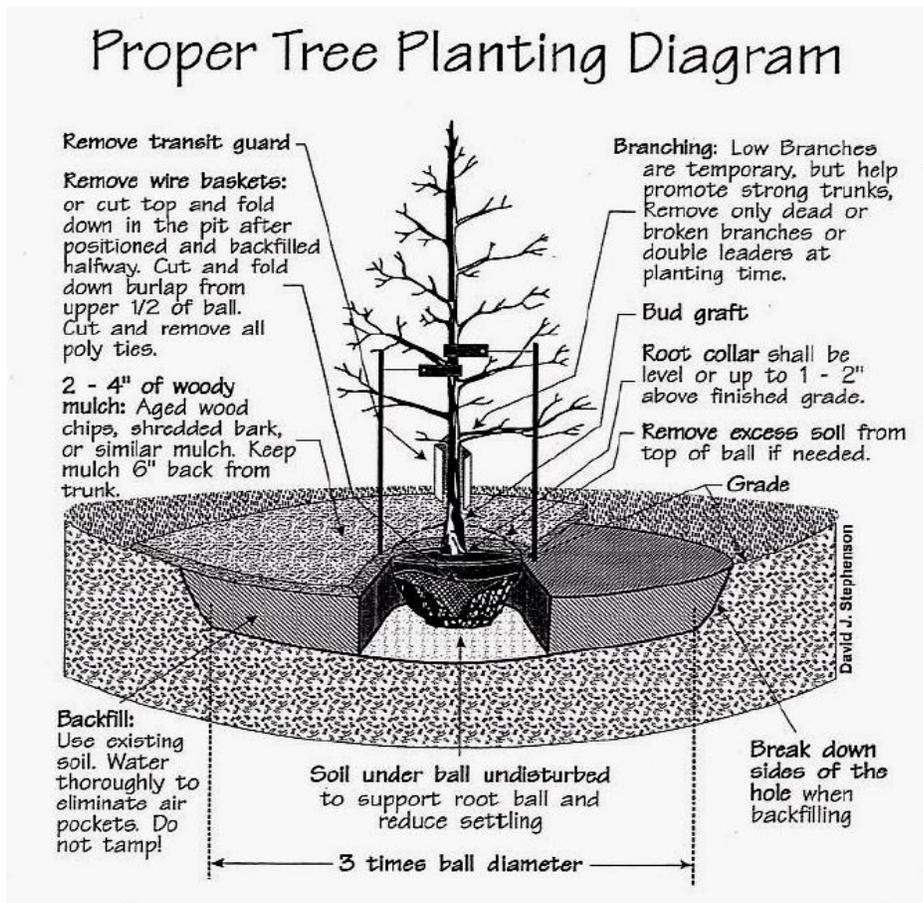
III. TREE PLANTING STANDARDS

- A. Condition: All trees must be in healthy conditions with evidence of vigorous growth during previous year. Shade trees must have single trunks, with a dominant central leader, which will develop into a desirable crown. Ornamental trees may have multiple leaders, in all areas except street right-of-ways.
- B. Diameter Of Tree Trunk: All trees planted along public streets must be of sufficient size to absorb the abuse and conditions common to street trees. Unless otherwise permitted for special reasons, the minimum size will be 1 ½" diameter and may not exceed 3" diameter.
- C. Location: Generally all street trees shall be planted midway between the sidewalk and curb, following all guidelines listed below:
 - 1. 40' from an approach corner (corner as traffic is approaching intersection)
 - 2. 25' from a non-approach corner (corner that traffic is departing from intersection)
 - 3. 20' from a street light
 - 4. 10' from a driveway or carriage walk
 - 5. 10' from a fire hydrant
 - 6. 10' from underground utility valves and t's
 - 7. 25' from an approaching sign (front of sign)
 - 8. 10' from a non-approach sign (back side of sign)
- D. Parkway Width: No trees will be planted where the grassy terrace between the sidewalk and curb is less than 4 feet wide.
- E. Planting Depth: The planting depth is determined by root collar. All new plantings should be placed so that the root collar is even with the soil surface or slightly higher, where conditions and species favor the tree being slightly above grade.
- F. Spacing: All small trees will be planted a minimum of 30' apart. Medium trees will be spaced a minimum of 40' apart and large trees will be spaced a minimum of 50' apart. Greater spacing maybe needed depending on each species mature form.
- G. Transplanted Trees: When digging and planting trees bare root, care must be taken to prevent unnecessary injury to roots. All broken roots should be pruned. When digging balled and burlap trees, the following guide should be used to determine the diameter of the ball:

| <u>Tree Diameter</u> | <u>Root Ball Diameter</u> | <u>Approximate Root Ball Weight</u> |
|----------------------|---------------------------|-------------------------------------|
| 1 ½" | 22" | 270# |
| 2" | 24" | 350# |
| 2 ½" | 28" | 625# |
| 3" | 32" | 850# |
| 4" | 38" | 1250# |
| 5" | 46" | 2500# |

H. Tree Planting Procedures:

1. Select the right tree for the right place:
 - a. Carefully review all aspects of the site.
 1. How much physical space is available above ground and below ground. Will the tree you want fit within this space at maturity? Don't plant a tree that will grow to a large size under power lines.
 2. Closely review the soil. Find out about the ability of moisture to drain through the soil. What is the pH?
 3. Consider environmental factors such as exposure to the sun, drying winds, and pollution.
 - b. Choose a tree species which matches, or is adaptable, to the growing conditions you have found during the site analysis.
2. Select a healthy tree from a reputable nursery.
 - a. Avoid plants that have damaged twigs, branches, trunk, and roots.
 - b. Is the tree well anchored in the pot or burlap root ball?
 - c. Don't buy plants that look unhealthy and have dried out roots.
3. Plant the tree properly.



Wisconsin Dept. Of Natural Resources - Oct. 2000

- a. Prepare the site by digging a hole 1-3 inches shallower than the root ball/system and three times as wide. Leave a pedestal in the center of the hole to rest the root system on.
 - b. Find the root collar and plant the tree even or slightly shallower than this point.
 - c. Remove at least ½ of the wire basket and burlap from the top part of the ball on balled and burlap trees.
 - d. Use the soil removed from the hole as backfill. Discard any rocks, sod, and large objects from the soil before backfilling.
 - e. Water the soil thoroughly to remove air pockets. Don't pack the soil down (water will do this naturally with the help of gravity). Fill in any voids with more soil after watering.
 - f. Create a mulch bed using wood chips that extends from the trunk outward to at least the drip line of the canopy to a depth of 4-6". (Don't pile the woodchips up around the trunk.)
 - g. Stake the tree only if it will not remain upright in a moderate wind.
 - 1. If you must stake, use a wide belt-like material when supporting the tree to avoid injuring the bark.
 - 2. Trees need to move in the wind. Make sure there is some play in the support system to allow the trunk to sway without being uprooted.
 - 3. Check tree following one (1) year and remove stakes if tree is stable.
 - h. Wrapping the trunk is not necessary. If rodent damage is a concern, place a plastic tree protector around trunk.
 - i. Prune any broken, dead, or dying limbs without damaging the branch collar at the time of planting. Routine pruning to train branching structure should be started one year after planting. Do not use pruning paint or wound dressing on the pruning cuts.
 - j. Wait until one year after planting to fertilize, if needed.
 - k. Diggers Hotline and the local utility companies must be notified of all locations before any digging occurs.
- I. Additional Care: Additional care will be given to newly planted trees in the following years, including pruning, mulching and fertilizing as needed.

IV. MAINTENANCE OF NEWLY PLANTED TREES

- A. Fertilization & Amendments: Fertilization of newly planted trees in the first year is not recommended. Typically a tree can be fertilized once it has become established usually 2 or 3 years after planting, however most homeowners will provide this when they fertilize their turf. Fertilization and amendments are typically applied in spring or fall. Sulfur is applied to bring down the soil pH and make up take of some nutrients possible. Typically the Village of Howard uses an autumn application in year two or three to give establishing trees supplemental nutrients to soils that are just beginning to develop structure and have low existing nutrient levels. In addition to this fertilizing, in specific situations where specific nutrients are lacking a micro-nutrient fertilizer is used to supplement these deficiencies.
- B. Mulching: A layer of wood chip mulch around the base of the tree will help conserve the soil moisture, help protect the tree from lawn mower damage, and reduce competition from grass for nutrients. It will also decompose over the years to provide nutrients, organic matter, and improve soil structure. The mulch should not be piled around the trunk, known as "mulch volcanoes". Piles of mulch at base of trees provide a home for small rodents that will chew bark and can cause damage to the trunk. Mulch also holds moisture by the trunk promoting fungal problems if decay is present and mulch against the trunk provides protection for insect pests. Mulch belongs on the ground, not on trees.
- C. Tree Pruning: No pruning should occur at the time of planting. Pruning at this time will reduce the amount of stored energy that the tree contains and could cause added stress to the tree. The exceptions to this rule are the pruning of any broken, dead, or dying limbs without damaging the branch collar at the time of planting. Routine pruning to train branching structure should be started one year after planting and continue every 3rd year for the first 15 years. Do not use pruning paint or wound dressing on the pruning cuts.
- D. Tree Staking: Stake only trees that will not stand in a strong wind. If staking is required, use wide bands of nylon strap, carpet, or canvas to support the tree. Make sure that the tree has a small amount of room to move. Never use wire and a garden hose.
- E. Tree Wrapping: Is not necessary and should be avoided.
- F. Tree Guards: Plastic tree guards will be put on at the time of planting and will remain on the tree until the bark thickens enough to prevent damage or mortality from trunk injuries.
- G. Watering: All trees are watered by the Village at the time of planting. Following planting the Village requests that the homeowner waters the tree for at least the first two years. Watering of street trees is addressed in detail in the Adverse Conditions Plan in the Village of Howard Comprehensive Urban Forestry Management Plan. Watering for this plan is based on current weather conditions and establishment of the tree.

V. PRUNING

STREET TREE PRUNE PLAN AND POLICY: The Village of Howard is divided into 17 different management units for management, maintenance, and to increased efficiency by reducing crew travel time to a minimum. To establish an orderly way of pruning street trees for an appearance of uniformity and tree health, a "Rotation Prune Schedule" will be put into operation.

- A. Training Pruning (Trees up to 15 years of age) – These trees are pruned on a rotation of every three years after planting for the following reasons:
1. Develop a central leader
 2. Raise the crown
 3. Establish good branch structure
 4. Eliminate poor branch angles
 5. Heading of temporary branches
 6. Remove damaged, dead, or diseased branches
- B. Routine Pruning (Trees older than 15 years old) – Routine pruning of mature trees on a 5 year cycle. With this pruning system, street trees are thoroughly pruned for low hanging branches, deadwood, and clearance of branches overhanging buildings. Class II type pruning will be used in most cases, which is standard pruning. The selective removal of plant parts for specific reasons, such as:
1. Policy: See Above.
 2. Sanitation: Remove dead, dying, or diseased branches.
 3. Traffic Clearance: Provide for 10' minimum over sidewalks and at least 14' over streets, along with providing a clear line of site to street signs and intersections.
 4. Light Clearance: Remove sufficient branch wood to allow adequate street lighting pattern on pavement.
 5. Tree Structure: Remove interfering branches and those that form weak branch unions. Prune for balance around tree and branch spacing to equalize wind resistance and weight.
 6. Storm Damage Repair: Preserve as much of the tree as possible, and train new growth for the future.
 7. Building Clearance: Remove interfering branches extending over buildings, and a minimum of a 6' clearance from buildings.

VI. PRUNING SPECIFICATIONS

All specifications shall be in accordance with ANSI A300 Standards.

- A. Pruning Cuts
1. All cuts should be made sufficiently close to the trunk or parent limb without cutting into the branch bark ridge or branch collar so that callus growth can readily start under normal conditions.
 2. Branches too large to support with one hand shall be precut (3 cut method) to avoid tearing or splitting of the bark. (See figure 1)
 3. Removal of dead branches shall have the final cut outside of the collar of live tissue.
 4. All limbs 4" in diameter or larger should be lowered to the ground by proper ropes.
 5. No more than 1/4 of the foliage on mature trees should be removed within one growing season.
 6. Heading cuts should consist of cutting the parent branch back to a lateral branch at minimum 1/3 the size of the parent limb.
 7. Topping of trees shall not be allowed. Topping consists of cutting a branch between lateral branches or pruning the parent limb to a lateral branch that is less than 1/3 the size of the parent limb.

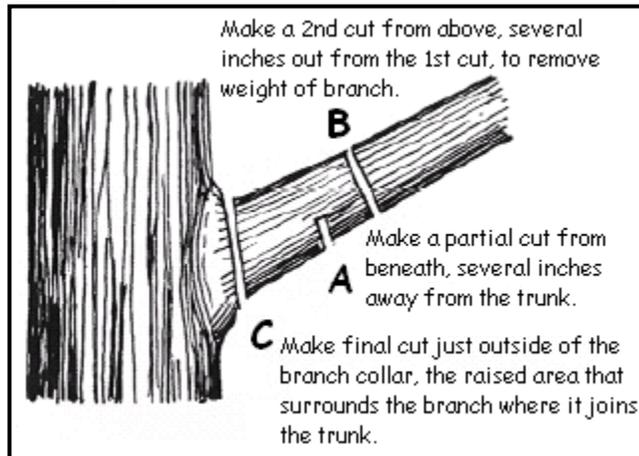
B. Wound Treatment

1. Pruning paints and wound dressings shall not be used to cover pruning cuts. Research has shown that wound dressings do not improve wound closure and may actually promote disease at site of application.
2. Repairing of bark wounds should only include the removal of loose bark, disturbing as little of the live tissue as possible, and using rounded edges when possible.
3. Tree cavities shall not be filled with concrete, bricks, wire, or any other non flexible substances. If cavity filling is required expandable foam should be used.

C. Miscellaneous Specifications

1. Climbing spikes or spurs shall not be used during pruning operations.
2. Vehicle and pedestrian warning devices shall be properly placed prior to any tree work being performed.
3. On thin bark species, just enough limbs are to be removed to obtain necessary results. Sucker growth can result from too heavy pruning.
4. All girdling roots visible to the eye, where practicable, should be treated with one of the following: Cutting of the root at either end, notching of the root in center with chisel, or removing the root without injury to bark or parent stem.
5. All wires are to be considered as "HOT" or "LIVE"; any branches that are within 10' should not be pruned. All tree workers shall abide by clearance standards outlined in the ANSI Z133.1 Standards. Call the appropriate utility for assistance if necessary. Any branches which accidentally fall against or hang on wires must be removed by the appropriate utility.

Figure 1

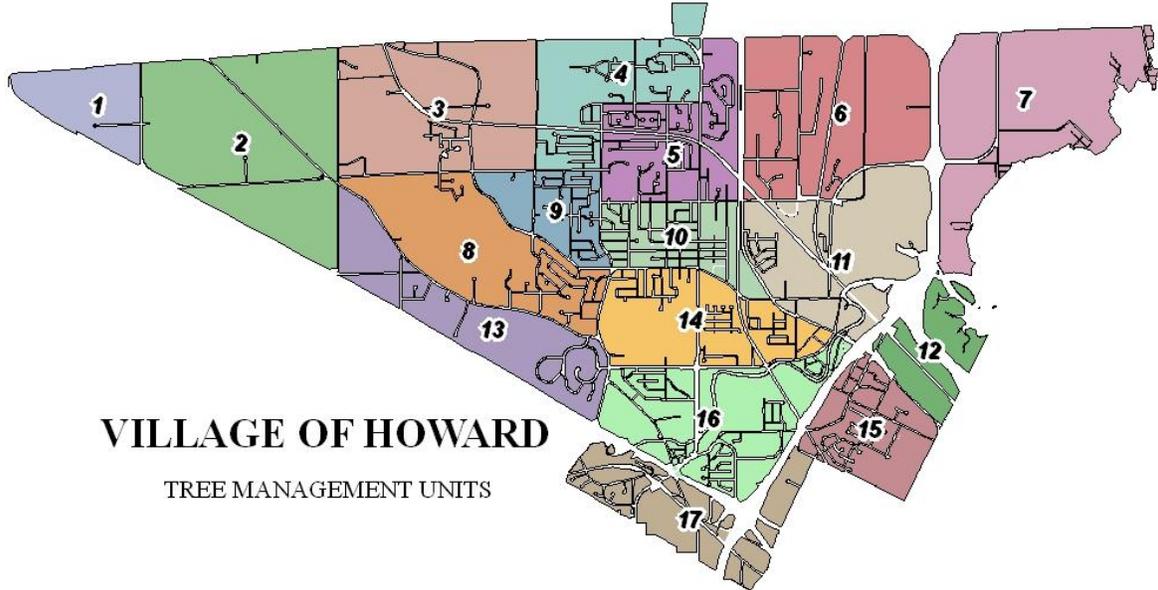


Tree City USA Bulletin #2

VII. PRUNING OPERATIONS

A. Section Pruning:

1. The Village is divided into 17 management units. Trees will be pruned on the appropriate cycle (3 or 5 year) depending on age. All public trees are to be inspected at the time of pruning and appropriate maintenance will be performed if needed.



2. Vehicle and pedestrian traffic must be adequately warned and controlled during operations according to the Village of Howard Safety Manual.
3. Trees found to be in unsafe condition and/or require major repair or maintenance are to be reported immediately to the Village Forester.
4. All residents and pedestrians are to be treated with respect and courtesy at all times, regardless of conditions.
5. At the end of each working day, all limbs, branches, twigs, and debris shall be cleaned up before leaving work area.
6. No equipment shall be left at the work site overnight.
7. Report all unusual situations or conditions to the Village Forester.
8. Update tree inventory.

B. Spot & Request Pruning:

1. Pruning for special purpose: Safety, light clearance, traffic clearance, building clearance, house moving, and construction. These are special assignments and should be handled as such.
2. Contact with adjoining property owner shall be made before work assignment.
3. Homeowner requests for pruning will be inspected by the Village Forester and appropriate maintenance will be scheduled at earliest available time.

VIII. TREE PROTECTION

- A. Bridging, Tunneling, Drilling, Etc.: The protection of trees shall involve bridging, tunneling, drilling or boring underneath the existing trees. The surface area directly adjacent to the tree shall not be disturbed under the following guidelines:
1. 3" DBH trees or less - two feet on either side of tree with a minimum three foot depth
 2. 3" to 8" DBH trees - four feet on either side of tree with a minimum three foot depth
 3. 8" DBH trees and over - five feet on either side of tree with a four foot minimum depth
- C. Depositing Material Near Trees: No person shall place or maintain upon the ground in a public street or right-of-way of the Village of Howard any soil, stone, cement, lumber, or other substance or material which shall impede the free passage of water and air to any tree or shrub without leaving an open space of ground outside of said tree or the base of said shrub of an area not less than 16 square feet. Before depositing any such materials near to trees or shrubs, the person so depositing said material shall place such guards around the trees and shrubs as shall effectually prevent injury to them.
- D. Moving Of Buildings: The contractor shall notify the Village Forester at least 48 hours in advance of moving any buildings. If any pruning is necessary as the building is being moved, the pruning will be coordinated by the Village Forester and costs absorbed by the contractor.
- E. Root Care: Exposed tree roots shall be covered with backfill as soon as possible following curb and gutter removal. Root foundations must remain adequate to withstand heavy windstorms.
- F. Sidewalk, Driveway, And Curb And Gutter Removal:
1. Caution should be used during removal to avoid any unnecessary damage to the tree or its root system.
 2. Roots requiring removal shall not be cut by means of mechanical root cutting machines. If root removal is essential, roots shall be manually cut with sharp hand implements.
 3. Root systems on the sidewalk or driveway side of the tree shall be cut no deeper than 9 inches below the finished grade of the new walk and not more than 5 inches from the edge of the new walk or driveway.
 4. Root systems on the curb side shall be cut not more than 12 inches behind the back of the new curb and not more than 18 inches in depth when constructing new curb and gutter.
- G. Tree Replacement: The Village Forester may remove and replace, at the contractor's expense, any tree(s) which has been determined to be excessively damaged.
- H. Trunks And Lines:
1. At least 48 hours before start of construction, the contractor shall call the Village Forester to discuss problems with overhanging branches that might be damaged in spite of his/her exercising care in construction.
 2. Tree trunks shall be enclosed with wood slats, rubber tires, or snow fence wired in place where contractor's operation may scar the trunk or compact the root zone of the tree. The contractor shall exercise care to assure tree trunks, limbs, and roots are not damaged by its operation.
 3. Damage to branches of the trees due to the contractor's negligence will be repaired by the Village Forestry Division and billed to the contractor by the Parks, Recreation, and Forestry Department.

IX. DISEASE AND INSECT PROBLEMS

- A. Dutch Elm Disease: Dutch Elm Disease is caused by the fungus *Ceratocystis ulmi* attacking American elms by infecting the water carrying xylem vessels resulting in wilting and eventual death of the tree. Spread of this disease is either via root grafts or from overland spread via sap feeding elm bark beetles. Stopping the spread is virtually impossible; however sanitation removals of dead elms to try and prevent the spread where practical can limit or slow the spread of Dutch Elm Disease. Wood from infected trees should either be debarked or destroyed to prevent further spread to new areas.
- B. Gypsy Moth: The gypsy moth is an exotic insect that feeds on the leaves and can defoliate many tree species especially oaks. The Village of Howard has been monitoring numbers since 2001 and has been working with the WDNR to aerial spray *Bt* on high population areas since 2002. This is a cost share program in which the Village is reimbursed a portion of the money spent in monitoring and spraying for the gypsy moth. This insect is becoming established in our area and we will need to continue to monitor and control pockets of higher populations for a long time. The Forestry Division also applies soybean oil to egg masses on public trees and burlaps them during the caterpillar stage to aid in the control of the gypsy moth.
- C. Oak Wilt: The Village of Howard Tree Board established an Oak Wilt Policy on August 11, 1993 which imposes a ban on the pruning or wounding of any Oak trees growing within the Village limits during the period from **April 1st to July 1st**. This ban is necessary to prevent the further spread of Oak Wilt Disease, which is spread by sap-feeding, Picnic Beetles.
- D. Emerald Ash Borer: The Emerald Ash Borer (EAB) is an exotic beetle from Asia that has become established in southeast Michigan that feeds on all ash (*Fraxinus spp.*) trees. The larvae of the EAB feed in the cambium between the bark and the wood, producing galleries that eventually girdle the branches killing them and the tree. As of 2004 we have not found them in Wisconsin; however the WDNR is confident that it is a matter of time until they appear here. As of now there is limited research about the control of EAB.

X. NUISANCE TREES

- A. Hazardous Tree Policy:
- B. Nuisance Tree Policy: The Nuisance Tree Policy is governed by the Village of Howard Ordinance 19.37 Public Nuisances.

XI. TREE REMOVAL POLICY

A. Reason For Removal:

1. Trees located in the Village right-of-way, parks, and other public property are removed only when they are dead, dying, dangerous, or condemned because of disease. The cost of removal will then be assumed by the Village of Howard.
2. Public trees that must be removed due to street reconstruction will be determined by the Village Forester and cost of said removals shall be assumed by that reconstruction project funding.
3. Damage to any public tree that is determined, by the Village Forester, to require removal shall be assumed by and charged to the individual causing damage, if known.
4. Property owner requests for the removal of any public tree will be evaluated and a determination made by the Village Forester and/or the Village of Howard Tree Board. Cost of removal will be charged to the property owner.
5. Removal of undesirable tree species will be determined by the Village Forester and/or the Village of Howard Tree Board.

B. Safety Standards: All safety standards shall be in accordance, but not limited to, ANSI Z133.1 Standards. Proper PPE shall be worn at all times while performing tree work.

C. Site:

1. Check location and description of tree on work order before starting removal.
2. Vehicle and pedestrian traffic must be adequately warned and controlled prior to and during removal operations according to the Village of Howard Safety Manual.
3. If both lanes of traffic are to be closed in the removal operations, the Public Works Director, Police, Fire, and Rescue must be notified prior to work commencing.
4. Note location of overhead power lines, utilities, homeowner obstruction, etc. and avoid.
5. All residents and pedestrians are to be treated with respect and courtesy at all times, regardless of conditions.

D. Removal Procedure:

1. The tree shall be removed using the safest and most efficient arboricultural procedures.
2. All precautions shall be made to prevent damage to any public or private property.
3. Any limb that cannot be controlled by hand while being cut off shall have a rope or ropes attached for controlled lowering using the appropriate equipment and ropes.
4. No equipment shall be left at the work site overnight.
5. Climbing spikes or spurs may be used during the removal of a tree.

E. Clean Up:

1. At the end of each working day, all limbs, branches, twigs, and debris shall be cleaned up before leaving work area.
2. Any wood generated from the removal process can be offered to the property owner at the location where the tree is being removed providing:
 - a. The wood is not to be left on the terrace overnight. The wood is to be placed off of the right-of-way for safety and liability reasons.
 - b. The Village employee is not to perform extra work for said property owner (i.e. cutting wood into firewood size pieces, stacking wood, etc.)
3. If the property owner does not want the wood then it shall be cleaned up and hauled to the Department of Public Works prior to the end of each day. At no time is wood to be left in the right-of-way overnight or without safety cones during the work day.
4. Report all unusual situations or conditions to the Village Forester as soon as possible.

XII. STUMP REMOVAL PROGRAM

The Village of Howard's stump removal program consists of removal of stumps where trees were formally standing on the street right-of-away, in the Village Parks and on other public property within the Village.

- A. Underground Utilities: Diggers Hotline shall be contacted at least 3 days prior to any stump grinding operations.

- B. Stump Removal Operations:
 - 1. This operation will be performed by qualified Village of Howard employees or will be contracted out to a professional service.
 - 2. All precautions shall be made to limit flying debris from damaging private property.
 - 3. All stumps are to be removed completely or to a depth of 18" whichever is reached first.
 - 4. All surface roots and mounded turf shall be ground down to final grade for a 10' radius around the stump.
 - 5. Any stump grindings and holes that are not immediately cleaned up should be barricaded or coned to alert vehicles and pedestrians of a hazardous situation.

- C. Stump Clean Up Operations:
 - 1. All of the debris generated from stump grinding operations located outside of hole and at least ½ of the debris in the hole shall be removed from the site.
 - 2. Topsoil is placed in hole and graded to a finish grade.
 - 3. Initial seeding of the area is to be done by the Village, it is the responsibility of the property owner to water and establish the grass in these locations.

Appendix A

**VILLAGE OF HOWARD
RIGHT-OF-WAY PLANTING PERMIT APPLICATION**

As required by Ordinance Number 19.36

A planting permit is required before planting any tree, shrub, or other vegetation that at maturity will exceed 24” in height, within the Village Right-of Way or other Village owned properties. Typically this is the area from the curb to the back of the sidewalk (or where the sidewalk would be). The location of the sidewalk can often be seen in the driveways. If you are unsure please call and ask.

Tree species and location or landscape designs MUST be approved by the Village Forester prior to any planting in the Village right-of-way.

Site Address: _____

Name of Applicant: _____

Street Address: _____

City-State-Zip: _____ Phone: _____

Estimated date of planting _____

Species of tree(s) to be planted (choose from recommended street trees on back page) or landscape design.

Specific location to be planted (i.e. number of feet from property line or driveway, left or right side, etc.) NOTE: Trees shall be planted ½ the distance from the curb to the street side of the sidewalk. No trees will be planted in a terrace that is three feet or less in width.

Number of trees to be planted (estimate 30’-50’ spacing) _____

Diameter (caliper) at 6” above the ground of the tree(s) to be planted. (1½” – 3”) _____

Landscape design with location and names of shrubs or other vegetation (please attach). _____

Signature of Applicant: _____ Date _____

**PLEASE RETURN TO: VILLAGE OF HOWARD
Attn: Village Forester
P.O. Box 12207
2456 Glendale Ave.
Green Bay, WI 54307-2207**

GUIDELINES: *(keep for your records)*

🌳 **No Evergreen Trees!**

🌳 Trees must be single stem form. No multi-stem specimens will be allowed.

🌳 Species selection recommended matching other street trees on your street for continuity.

🌳 **Minimum Clearances:**

🌳 10' from driveways or other property access points.

🌳 10' from fire hydrants.

🌳 10' from underground utility valves.

🌳 20'-30' from street lights.

🌳 40' from intersections (Note: this can vary depending on the intersection).

🌳 30'-50' spacing between trees depending on maturity size.

🌳 All trees shall be planted in the center of the terrace; ½ the distance between the curb and the street side of the sidewalk (or where the sidewalk would be).

🌳 The Village Forester will mark the planting location on the curb with a white "T".

🌳 Minimum caliper size is 1 ½" at 6" above the root collar.

🌳 Trees shall be planted with root collar at grade; contact Village Forester for proper tree planting procedures.

🌳 Trees shall be mulched to a depth of 3-4" and a diameter of 5' with wood mulch following planting. Mulch shall not be mounded around the tree trunk however.

🌳 If trees need to be staked contact the Village Forester for proper procedures.

🌳 Plastic trunk protectors can be obtained from the Village free of charge for street trees.

🌳 Obtain a "post planting care" informational handout from the Village Forester following tree planting or check on the website (www.villageofhoward.com).

🌳 Trees become the property of the Village of Howard following planting and will be maintained by the Village for the life of the tree.

🌳 A landscape design must accompany the application for shrub or other vegetation plantings.

🌳 Landscaping in the right-of-way is not exempt from damage if underground maintenance of utilities is needed in that specific location.

**Before you dig please call
Diggers Hotline 1-800-242-8511**

Appendix B

**VILLAGE OF HOWARD
RIGHT-OF-WAY PLANTING PERMIT**

As required by Ordinance No. 19.36 Permit No. _____

Site Address: _____

Name of Applicant: _____

Street Address: _____

City-State-Zip: _____ Phone: _____

Approved: _____ Tree Species 1. _____

2. _____

Quantity _____

Location of Planting _____

Tree Caliper _____ inches

Comments _____

Allowable Planting Period

From _____ To _____ 200__

Denied: _____ Reason for Denial: _____

If work is not completed within this allowable planting period, and planting is still desired, another planting permit must be obtained.

CHRIS CLARK

Village Forester

Date

Appendix C

Recommended Street Tree Planting List

SMALL TREES (30' Maximum Height) - Acceptable trees for terraces w/overhead power lines and/or if terrace is 3-5 feet wide. Can be planted in wider terraces.

| <u>Scientific Name</u> | <u>Common Name</u> | <u>Cultivars</u> |
|--|------------------------------------|---|
| <i>Acer ginnala</i> | Amur Maple (Tree Form) | |
| <i>Acer tataricum</i> | Tartarian Maple | |
| <i>Amalanchier canadensis</i> | Serviceberry | 'Autumn Brilliance' |
| <i>Carpinus caroliniana</i> | American Hornbeam | |
| <i>Crataegus crusgalli</i> var. <i>inermis</i> | Cockspur Thornless Hawthorn | |
| <i>Maackia amurensis</i> | Amur Maackia | |
| <i>Malus spp.</i> | Flowering Crab | 'Bob White', 'David', 'Harvest Gold', 'Indian Summer', 'Prairifire', 'Red Barron', 'Red Jade', 'Snowdrift', 'Spring Snow' |
| <i>Ostrya virginiana</i> | Ironwood | |
| <i>Prunus cerasifera</i> | Newport Plum | |
| <i>Prunus nigra</i> | Princess Kay Plum | 'Princess Kay' |
| <i>Prunus virginiana</i> | Canada Red Chokecherry | 'Canada Red' |
| <i>Syringa reticulata</i> | Japanese Tree Lilac | 'Ivory Silk', 'Summer Snow' |

MEDIUM TREES (30' - 45' Maximum Height) - Acceptable trees for terraces that are 5-8 feet wide. Can be planted in wider terraces if desired.

| | | |
|-------------------------------------|------------------------------|--|
| <i>Acer truncatum x platanoides</i> | Shantung Hybrid Maple | 'Norwegian Sunset', 'Pacific Sunset' |
| <i>Corylus columna</i> | Turkish Filbert | |
| <i>Fraxinus pennsylvanica</i> | Green Ash | 'Lepreechaun' |
| <i>Phellodendron amurense</i> | Amur Cork Tree | |
| <i>Pyrus calleryana</i> | Callery Pear | 'Autumn Blaze', 'Bradford', 'Cleveland Select' |
| <i>Sorbus alnifolia</i> | Korean Mountain Ash | |

LARGE TREES (50' Minimum Height) - Acceptable trees for terraces 8 foot and wider.

| | | |
|---------------------------------|------------------------------|--|
| <i>Acer x freemanii</i> | Freeman Maple | 'Autumn Blaze', 'Celebration', 'Marmo' |
| <i>Acer platanoides</i> | Norway Maple | 'Cleveland', 'Crimson King', 'Crimson Sentry', 'Crystal', 'Deborah', 'Emerald Lustre', 'Emerald Queen', 'Globosum', 'Royal Red', 'Schwedleri', 'Superform' |
| <i>Acer saccharum</i> | Sugar Maple | 'Green Mountain', 'Fairview', 'Goldspire' |
| <i>Aesculus hippocastanum</i> | Horsechestnut | 'Baumannii', 'Ruby Red' |
| <i>Celtis occidentalis</i> | Hackberry | 'Prairie Pride' |
| <i>Cercidiphyllum japonicum</i> | Katsuratree | |
| <i>Fraxinus americana</i> | White Ash | 'Autumn Applause', 'Autumn Blaze', 'Autumn Purple', 'Champaign County', 'Manitou', 'Skyline' |
| <i>Fraxinus mandshurica</i> | Manchurian Ash | 'Maneana' |
| <i>Fraxinus nigra</i> | Black Ash | 'Fallgold' |
| <i>Fraxinus pennsylvanica</i> | Green Ash | 'Cimmaron', 'Honeyshade', 'Marshall Seedless', 'Patmore', 'Summit' |
| <i>Ginkgo biloba</i> | Ginkgo (male) | |
| <i>Gleditsia triacanthos</i> | Thornless Honeylocust | 'Imperial', 'Moraine', 'Shademaster', 'Skyline', 'Sunburst' |

| | | |
|--------------------------------|----------------------------|---|
| <i>Gymnocladus dioica</i> | Kentucky coffeetree | |
| <i>Liriodendron tulipifera</i> | Tuliptree | |
| <i>Quercus alba</i> | White Oak | |
| <i>Quercus bicolor</i> | Swamp White Oak | |
| <i>Quercus macrocarpa</i> | Bur Oak | |
| <i>Quercus robur</i> | English Oak | ‘Skymaster’ |
| <i>Quercus rubra</i> | Northern Red Oak | |
| <i>Tilia americana</i> | American Linden | ‘Redmond’ |
| <i>Tilia cordata</i> | Littleleaf Linden | ‘Fairview’, ‘Glenleven’, ‘Greenspire’, ‘Prestige’ |
| <i>Tilia tomentosa</i> | Silver Linden | |
| <i>Ulmus x</i> | Hybrid Elm | ‘Accolade’, ‘Homestead’, ‘Pioneer’, ‘Regal’ |

Appendix D

Banned Street Tree Planting List

Nuisance Species – banned from planting in the right-of-way

| <u>Scientific Name</u> | <u>Common Name</u> | <u>Reason</u> |
|-----------------------------|------------------------------|---|
| | All Evergreen Species | Obstruct visibility |
| <i>Acer negundo</i> | Boxelder | Weak wooded, attracts boxelder bug |
| <i>Salix spp.</i> | All Willow Species | Weak wooded, diseased foliage |
| <i>Populus deltoides</i> | Cottonwood | Weak wooded, heaves pavement, heavy seed crop |
| <i>Robinia pseudoacacia</i> | Black Locust | Weak wooded, thorns, spread from root suckers |

Undesirable Species – unacceptable for planting in the right-of-way

| <u>Scientific Name</u> | <u>Common Name</u> | <u>Reason</u> |
|--------------------------|------------------------------|--|
| <i>Acer rubrum</i> | Red Maple | Intolerant of alkaline soils |
| <i>Acer saccharinum</i> | Silver Maple | Weak wooded, heaves pavement, heavy seed crop |
| <i>Betula papyrifera</i> | Paper Birch | Susceptible to insect & disease, intolerant of disturbed sites |
| <i>Betula pendula</i> | European White Birch | Susceptible to insect & disease, intolerant of disturbed sites |
| <i>Malus sylvestris</i> | Common Apple | Fruit tree |
| <i>Prunus serotina</i> | Black Cherry | Fruit tree |
| <i>Prunus domestica</i> | Garden Plum | Fruit tree |
| <i>Pyrus communis</i> | Common Pear | Fruit tree |
| <i>Quercus palustris</i> | Southern Pin Oak | Intolerant of alkaline soils |
| <i>Sorbus americana</i> | American Mountain Ash | Susceptible to disease & fungal rot, heavy fruit set |
| <i>Sorbus aucuparia</i> | European Mountain Ash | Susceptible to disease & fungal rot, heavy fruit set |

Appendix 3.

VILLAGE OF HOWARD
Park and Recreation Department
Forestry Division
STREET TREE PLANTING PLAN
CURRENT AS OF January 1 – 2002

Purpose: To put in place the foundation for a successful and beautiful street tree program. This plan will establish guidelines, not rigid policies. Trees and conditions that affect their health are constantly changing, which doesn't allow for rigid management. This plan should be updated annually, to take into consideration new information and research on tree growth, species, and other important changes within the Village of Howard.

SECTION 1: Species Distribution and Streetscape Design

The Plan: The street tree planting plan will focus mainly on diversity. Streets will have a minimum of two genera *Acer*(Maples), *Quercus*(Oaks), etc. on the same block, for initial planting of streets without existing trees. In addition to having a minimum of two genera per block, no more than three trees of the same genera will be planted side-by-side. Then as trees die and are replaced a minimum of one to two additional genera and/or species (*Acer platanoides*, *Acer saccharum*) will be incorporated into the existing tree population. This will be continued on the whole street or broken down on a neighborhood basis. Tree species that are planted on the same street, will have similar growth rates and maintenance needs, this will eliminate incurring additional costs to maintain these tree. Obvious changes will be made in species/genera, when site condition change (overhead utilities, sidewalks, right-of-way widths, soils, etc.) Site conditions will always be considered first before choosing species.

This diversification will also follow the same plan on streets with existing trees. If the trees on the street are still a desirable species they will be incorporated into the plan as stated above. If the existing species is found to no longer be desirable, then it will be replaced as the existing trees are removed. Again, when replacing, a minimum of two new genera will initially be incorporated and the above plan will be followed from there (i.e., silver maples). Exceptions to this rule will be approved on an individual basis. In some situations a single tree species may obtain a desired effect as with thoroughfares, arterial streets and entrances to subdivisions. These may all look better with a single species or just alternating two species.

Over the entire Village, no single genera will be allowed to exceed 20% of the entire population. Also, no single species will be allowed to exceed 10% of the entire population. This broadens the genera and species base and assures that if a disease or other problem increases and causes or leads to the cause of mortality of that genera or species, the amount of trees lost will be minimized. This will limit large fluctuations in maintenance budget costs. A complete species list can be found in Appendix 2.

Reasoning: This species diversity is important and will help to increase the value, beauty, and condition of our urban forest. Having species diversity will greatly improve the health of the urban forest, reduce mortality, and eliminate the other problems associated with monocultures. Also, streets become more attractive, year around, since different genuses have different fall color, flowers, growth habits, etc. With the exception of a few genera all can be mixed at no additional cost. (Those that can't be incorporated can still be used in specialized situation.)

Listed below are some benefits:

- Diseases will not be able to spread by root grafts (i.e., Dutch elm disease, oak wilt, etc.)
- Insects that usually have preferred species will not be able to build up large populations and defoliate, bore, etc. entire blocks
- Species/cultivars that are found to be poor for our site conditions and begin to decline can be replaced without losing the entire tree population of the street, maintaining canopy.
- Having different trees to choose from on each street will maximize planting spaces, allowing the use of a tree where a single species could not have been planted without interfering with the surrounding site. (i.e., a row of houses is set back 60' from the road, except for one home which existed before the rest and is only 20' from the road. The street has Red Oaks and Freeman Maples planted, but both are broad spreading trees. In this case a Little Leaf Linden could be planted, because of its more upright pyramidal form it will not become a constant problem growing into the house, thus lower maintenance costs.)

SECTION 2: Village Plantings

This is the proposed street tree planting plan for the Village of Howard. This part of the plan defines the areas that the Village will be responsible for planting. All major thoroughfares and main arterials that go into neighborhoods and subdivisions, as defined below:

As of Development up to 1-1-98

Thoroughfares:

Cardinal Lane from Memorial Drive to Lineville Road
Hillcrest Heights from Riverview Drive to Glendale Avenue
Glendale Avenue from Velp Avenue to Pawn Drive
Memorial Drive from Velp Ave to Cardinal Lane
Packerland Drive - All
Riverview Drive from Cardinal Lane to Hillcrest Heights
Riverdale Drive - All
Velp Avenue from Green Bay city limit to Lancaster Brook

Arterioles:

Hillcrest Heights from Glendale Avenue to Sunray Lane
Woodale Avenue from Velp Avenue to Hillcrest Heights

These are the streets that the village should be responsible for planting. For these streets, unlike residential streets, uniform plantings can be used. This is to gain the corridor effect and aesthetic values on our main streets. All other streets will rely on Neighborhood Tree Planting Program, Linear Foot Charge in new subdivisions or grants for funding of street tree plantings. Grants can also be used to fund plantings on the above listed streets.

SECTION 3: Residential Streets Before Subdivision Ordinance

All residential streets in place before the linear foot ordinance went into effect will be planted using a planting permit on individual request or by the Neighborhood Tree Planting Program, which will be used on a block, street, or subdivision basis. Replacement trees for this and other plantings will be covered by warrantee or the Village of Howard will pay for costs of replacement.

Planting permits will be used for planting, when a homeowner requests to plant trees themselves or contract with a commercial contractor to plant trees in the right-of-way. Permits are available on a request basis and are mailed or can be pick-up at Village Hall. It will be the responsibility of the Tree Board, Parks and Recreation Department, and the Village Forester to educate the public on ordinances and policies pertaining to trees and terrace plantings.

The Neighborhood Tree Planting Program has been evolving since its inception and will continue to evolve to meet the need of the village and do so, in a more cost effective manner. The program currently relies on homeowner response to mailings on a block with some of the residents showing interest in the program. The other more effective approach currently being used is having interested homeowner(s) on a street or in a subdivision go door to door and foster more citizen involvement in the program. This allows them to choose species from the Village's working list. Higher response rates have been achieved with this method. New and improved ideas will continually be needed to achieve the desired tree lined streets.

SECTION 4: Residential Streets With Subdivision Ordinance

This ordinance, which is located at 18.02(41 - 47); 18.05(3); 18.06(2-3) of the Municipal Codes of the Village of Howard, will eliminate the need for a Neighborhood Tree Planting Program in future subdivisions. In these new areas a linear foot charge of \$3.25/ linear curb foot has been established for the cost of planting trees in the terrace area. This will automatically provide funds to line these streets with trees.

The diversification plan outlined in Section 1 of this plan will be effective for these areas. Any thoroughfares or arterioles that run through these new areas will still be the responsibility of the Village of Howard. As outlined, the streets that the Village is responsible for do not have to follow Section 1, but should follow the plan outlined in Section 2.

SECTION 5: Individual Homeowner Obtaining a Planting Permit

An individual homeowner that chooses to purchase and plant trees in the right-of-way on their own, may choose from any of the species on the Village's working list (Appendix 2). This is of course, provided what they have selected is appropriate for the site. They will be required to obtain a planting permit, which requires a review by the forester before the planting is allowed. In this way the Village is allowing the individual homeowner the freedom to choose a species of their choice, but still regulating where they are planted. Appendix 1 shows the planting permit.

SECTION 6: Usefulness of Establishing a Nursery or Contract Growing with Existing Tree Nurseries

This would be an excellent way to grow the trees for our main streets and replacement trees. A working 250-500 tree nursery would allow the Village to save considerable money in tree costs. Trees can be container grown and pulled up in spring or fall for planting, using a U-blade or tree spade on our Bobcat. This would be a 2-4 year nursery, purchasing small whips and growing them for a few years to 1.5" - 2" caliper trees for planting. This would give the Village many other benefits, such as availability of difficult to find nursery stock.

The other option is to contract with local nurseries and have them grow the trees that the Village desires to have for parks and streets. This would eliminate the overhead of maintaining our own nursery and also, the overhead of equipment to grow and remove trees from the nursery.

Appendix 1

Appendix 1: VILLAGE OF HOWARD TREE PLANTING PERMIT
As required by Ordinance Number 92-23 PERMIT NO _____

This is required before planting any tree within the Village Right-of Way. This is the area from the curb to the back of the sidewalk (or where the sidewalk would be). The location of the sidewalk can often be seen in the driveways. If you are unsure please call and ask.

Tree species and location MUST be approved prior to any planting.

Site Address: _____

Name of Applicant: _____

Street Address: _____

City-State-Zip: _____ Phone: _____

Estimated date of planting: _____

Species of tree(s) to be planted (choose from recommended street trees on back page).

Specific location of tree(s) to be planted (ie. number of feet from curb or driveway, left or right side, etc.) NOTE: No trees will be planted in a terrace that is three feet or less in width.

Number of trees to be planted: _____

Diameter (caliper) at a half foot above the ground, of the tree(s) to be planted. (1 inch - 4 inch) _____

Signature of Applicant: _____ Date: _____

**Before you dig please call
Diggers Hotline 1-800-242-8511**

PLEASE RETURN TO: Howard Park & Recreation Dept.

Appendix 1

Attn: Village Forester
2456 Glendale Ave
Green Bay, WI 54313

=====
for office use only

Above ground utilities _____ Underground utilities _____

Terrace width _____ Proposed tree(s) acceptable _____

Location to existing signs etc. _____

Comments _____

Approved _____ Permit Number _____

Allowable Planting Period

From _____ To _____ 19 ____

Denied _____ Reason for denial _____

If tree(s) are not planted within this allowable planting period,
and planting is still desired, another permit must be filled out
and approved.

Approved by _____ Park & Recreation Dept. _____ Date _____

This is a list of acceptable tree to plant in the tree lawn area. If you want to plant a different tree that is not on this list or have any other question, please call the village forester at 434 - 4650 ext. 1316.

SMALL TREES (30' Maximum Height) - Acceptable trees for tree lawn w/overhead power lines and/or if tree lawn is 3-5 feet wide. Can be planted in wider tree lawns.

| <u>Scientific Name</u> | <u>Common Name</u> | <u>Cultivars</u> |
|--|-----------------------------|--|
| <i>Acer ginnala</i> | Amur Maple (Tree Form) | |
| <i>Acer tataricum</i> | Tartarian Maple | |
| <i>Amalanchier canadensis</i> | Serviceberry | 'Autumn Brilliance' |
| <i>Carpinus caroliniana</i> | American Hornbeam | |
| <i>Crataegus crusgalli</i> var. <i>inermis</i> | Cockspur Thornless Hawthorn | |
| <i>Maackia amurensis</i> | Amur Maackia | |
| <i>Malus</i> spp. 'Sugar Tyme' | Flowering Crab | 'Golden Raindrops', 'Indian Summer', 'Prairifire', 'Red Barron', 'Snowdrift', 'Spring Snow', |
| <i>Prunus nigra</i> | Princess Kay Plum | 'Princess Kay' |
| <i>Syringa pekinensis</i> | Pekin Tree Lilac | 'China Snow' |
| <i>Syringa japonica</i> | Japanese Tree Lilac | 'Ivory Silk' |

MEDIUM TREES (30' - 45' Maximum Height) - Acceptable trees for tree lawns that are 5-8 feet wide. Can be planted in wider tree lawns if desired.

| | | |
|-------------------------------------|------------------------|--------------------------------------|
| <i>Acer platanoides</i> | Norway Maple | 'Columnar' |
| <i>Acer truncatum x platanoides</i> | Shantung Hybrid Maple | 'Pacific Sunset', 'Norwegian Sunset' |
| <i>Alnus glutinosa</i> | European Alder | |
| <i>Betula nigra</i> | River Birch | |
| <i>Corylus columa</i> | Turkish Filbert | |
| <i>Fraxinus pennsylvanica</i> | Green Ash | 'Leprachon' |
| <i>Ostrya virginiana</i> | Ironwood | |
| <i>Phellodendron amurense</i> | Amur Corktree | |
| <i>Prunus padus</i> | Padus Cherry | 'Summer Glow' |
| <i>Prunus virginiana</i> | Canada Red Chokecherry | 'Canada Red' |
| <i>Sorbus alnifolia</i> | Korean Mountain Ash | |

LARGE TREES (50' Minimum Height) - Acceptable trees for 8 foot and wider.

| | | |
|--|----------------------------|--|
| <i>Acer x freemanii</i> | Freeman Maple | 'Autumn Blaze', 'Celebration', 'Marmo' |
| <i>Acer platanoides</i> | Norway Maple | 'Cleveland', 'Crimson King', 'Crimson Sentry', 'Crystal', 'Deborah', 'Emerald Lustre', |
| 'Emerald Queen', 'Globosum', 'Royal Red', 'Shwedleri', 'Superform' | | |
| <i>Acer saccharum</i> | Sugar Maple | 'Green Mountain', 'Fairview', 'Goldspire' |
| <i>Aesculus hippocastanum</i> | Horsechestnut | 'Baumannii' |
| <i>Celtis occidentalis</i> | Hackberry | 'Prairie Pride' |
| <i>Cercidiphyllum japonicum</i> | Katsuratree | |
| <i>Fraxinus americana</i> | White Ash | 'Autumn Applause', 'Autumn Blaze', 'Autumn Purple', 'Champaign County', 'Manitou', 'Skyline' |
| <i>Fraxinus mandshurica</i> | Manchurian Ash | |
| <i>Fraxinus nigra</i> | Black Ash | 'Fallgold' |
| <i>Fraxinus pennsylvanica</i> | Green Ash | 'Cimmaron', 'Honeyshade', 'Marshall Seedless', 'Patmore', 'Summit' |
| <i>Ginkgo biloba</i> | Ginkgo (male) | |
| <i>Gleditsia triacanthos</i> | Thornless Honeylocust | 'Halka', 'Imperial', 'Moraine', 'Shademaster', 'Skyline', 'Summer Lace', 'Sunburst' |
| <i>Gymnocladus dioica</i> | Kentucky Coffeetree (male) | |
| <i>Liriodendron tulipifera</i> | Tuliptree | |
| <i>Quercus alba</i> | White Oak | |
| <i>Quercus bicolor</i> | Swamp White Oak | |
| <i>Quercus macrocarpa</i> | Bur Oak | |
| <i>Quercus robur</i> | English Oak | 'Skymaster' |
| <i>Quercus rubra</i> | Northern Red Oak | |
| <i>Tilia americana</i> | American Linden | |
| <i>Tilia cordata</i> | Littleleaf Linden | 'Chancellor', 'Fairview', 'Glenleven', 'Greenspire', 'Olympic' |
| <i>Tilia tomentosa</i> | Silver Linden | 'Sterling' |

Appendix 2 : WORKING STREET TREE LIST

(Revised annually)

SMALL TREES - Up to 30'

1. ____ *Acer ginnala* - **Amur Maple** -
2. ____ *Acer tataricum* - **Tatarian Maple** -
3. ____ *Amalanchier canadensis* - **Serviceberry** – ‘**Autumn Brilliance**’ -
4. ____ *Crataegus crusgalli* var. *inermis* - **Cockspur Thornless Hawthorn** -
5. ____ *Crataegus viridis* - **Hawthorn** – ‘**Winter King**’ -
6. ____ *Fraxinus pennsylvanica* ‘*Leprachaun*’ - **Leprachaun Green Ash** -
7. ____ *Malus* spp. - **Crabapple** – ‘**Spring Snow**’ -
8. ____ *Malus* spp. – **Crabapple** – ‘**Prairiefire**’ –
9. ____ *Malus* spp. – **Crabapple** – ‘**Snowdrift**’ –
10. ____ *Malus* spp. – **Crabapple** – ‘**Golden Raindrops**’ –
11. ____ *Malus* spp. – **Crabapple** – ‘**Sugar Tyme**’ –
12. ____ *Syringa pekinensis* – ‘**China Snow**’ **Pekin Lilac** -
13. ____ *Syringa japonica* – ‘**Ivory Silk**’ **Japanese Tree Lilac** -

EXPERIMENTAL TREES

1. ____ *Caragana arborescens* - **Siberian Peashrub** -
2. ____ *Cercis canadensis* - **Eastern Redbud** -
3. ____ *Cotinus obovatus* - **American Smoketree** -
4. ____ *Evodia daniellii* - **Korean Evodia** -
5. ____ *Maackia amurensis* - **Amur Maackia** –
6. ____ *Parrotia persica* – **Persian Parrotia** -

MEDIUM TREES - Between 30' - 50'

1. ____ *Acer miyabei* ‘*State Street*’ – ‘**State Street**’ **Miyabei Maple** -
2. ____ *Acer platanoides* ‘*Columnare*’ - ‘**Columnar**’ **Norway Maple** -
3. ____ *Acer truncatum* x *platanoides* – ‘**Pacific Sunset**’ **Maple** -
4. ____ *Acer truncatum* x *platanoides* - ‘**Norwegian Sunset**’ **Maple** -
5. ____ *Alnus glutinosa* - **European Alder** -
6. ____ *Corylus columa* - **Turkish Filbert** -
7. ____ *Phellodendron amurense* - **Amur Corktree** -
8. ____ *Prunus padus* – ‘**Summer Glow**’ **Cherry** –
9. ____ *Prunus virginiana* – ‘**Canada Red**’ **Chokecherry**
10. ____ *Pyrus calleryana* – ‘**Autumn Blaze**’ **Callery Pear** –
11. ____ *Sorbus alnifolia* - **Korean Mountain Ash** -

EXPERIMENTAL TREES

Appendix 2

1. ____ *Ostrya virginiana* - **American Hophornbeam** -
2. ____ *Cladrastis lutea* - **American Yellowwood** –
3. ____ *Eucommia ulmoides* - **Hardy Rubber Tree** –
4. ____ *Pyrus ussuriensis* – **Ussurian Pear** –

LARGE TREES - Over 50'

1. ____ *Acer x freemanii* 'Autumn Blaze' – '**Autumn Blaze**' Freeman Maple -
2. ____ *Acer x freemanii* 'Celebration' – '**Celebration**' Freeman Maple –
3. ____ *Acer x freemanii* 'Marmo' – '**Marmo**' Freeman Maple –
4. ____ *Acer platnoides* - **Norway Maple** – **Many Cultivars**
5. ____ *Acer saccharum* - **Sugar Maple** –
6. ____ *Acer saccharum* – '**Green Mountain**' Sugar Maple –
7. ____ *Catalpa speciosa* – **Northern Catalpa** -
8. ____ *Celtis occidentalis* – '**Prairie Pride**' Common Hackberry -
9. ____ *Cercidiphyllum japonicum* - **Katsuratree** -
10. ____ *Fraxinus americana* - **White Ash** -
11. ____ *Fraxinus americana* – '**Autumn Purple**' White Ash -
12. ____ *Fraxinus americana* – '**Skyline**' White Ash -
13. ____ *Fraxinus mandshurica* - **Manchurian Ash** -
14. ____ *Fraxinus pennsylvanica* – '**Cimmaron**' Green Ash -
15. ____ *Fraxinus nigra* – '**Fallgold**' Black Ash –
16. ____ *Fraxinus quadrifolia* - **Blue Ash** -
17. ____ *Ginkgo biloba* – '**Autumn Gold**' Ginkgo -
18. ____ *Gleditsia triachanthos 'inermis'* - '**Skyline**' Honeylocust -
19. ____ *Gymnocladus dioica* - **Kentucky Coffeetree** -
20. ____ *Quercus alba* - **White Oak** -
21. ____ *Quercus bicolor* - **Swamp White Oak** -
22. ____ *Quercus macrocarpa* - **Bur Oak** -
23. ____ *Quercus rubra* - **Northern Red Oak** -
24. ____ *Quercus x schuettei* - **Swamp Bur Oak** -
25. ____ *Tilia americana* - **American Linden or Basswood** -
26. ____ *Tilia cordata* - **Littleleaf Linden** -
27. ____ *Tilia tomentosa* - **Silver Linden** –
28. ____ *Ulmus x 'Prospector'* – **Prospector Elm** -
29. ____ *Ulmus x 'Regal'* - **Regal Elm** -

EXPERIMENTAL TREES

1. ____ *Aesculus glabra* 'Sunset' – 'Sunset' Buckeye
2. ____ *Aesculus hippocastanum* 'Baumannii' – 'Baumannii' Horsechestnut –
3. ____ *Aesculus octandra* – **Yellow Buckeye -**
4. ____ *Acer pseudoplatnoides* - **Sycamore Maple -**
5. ____ *Kalopanax pictus* - **Castor Aralia -**
6. ____ *Larix spp.* - **Tamarack, European Larch, Japanese Larch -**
7. ____ *Liriodendron tulipifera* - **Tuliptree -**
8. ____ *Magnolia acuminata* - **Cucumbertree Magnolia –**
9. ____ *Metasequoia glyptostroboides* – **Dawn Redwood -**
10. ____ *Taxodium distichum* – 'Shawnee Brave' **Bald Cypress –**
11. ____ *Quercus muehlenbergii* – **Chinkapin Oak -**
12. ____ *Quercus velutina* - **Black Oak -**

Appendix 4.



VILLAGE OF HOWARD TREE MAINTENANCE PERMIT APPLICATION

As required by Ordinance Number 38-111

Permit No. _____

A tree maintenance permit is required prior to performing work on any tree within the Village Right-of Way or other Village owned properties. Typically this is the area from the curb to the back of the sidewalk (or where the sidewalk would be). The location of the sidewalk can often be seen in the driveways. If you are unsure please call and ask.

Any maintenance or removal of trees MUST be approved by the Village Forester prior to any work being done.

Site Address: _____

Name of Applicant: _____

Street Address: _____

City-State-Zip: _____ Phone: _____

Name of Contractor (if applicable) _____

Pesticide Applicator License # _____ Arborist Certification # _____

Contractor Address: _____

City-State-Zip: _____ Phone: _____

Estimated date of work: _____

Explanation of work to be performed on trees: _____

Specific location and number of trees to have work performed: _____

Signature of Applicant: _____ Date _____

PLEASE RETURN TO: VILLAGE OF HOWARD
Attn: Village Forester
1336 Cornell Rd.
Green Bay, WI 54313

* Certificate of Insurance enclosed?

VILLAGE OF HOWARD TREE PRUNING / REMOVAL GUIDELINES

(Keep for your records)

Insurance and Workers Compensation

No person without proper insurance may perform work on trees on any Village property. The Contractor shall furnish evidence of Workers Compensation, public liability and property damage insurance. Limits of liability shall not be less than:

1. Bodily Injury - \$1,000,000 each occurrence and \$1,000,000 aggregate
2. Property Damage - \$1,000,000 each occurrence and \$1,000,000 aggregate, including both injury and property damage caused by vehicles and machinery.

A certificate of insurance SHALL be filed with this application, listing the Village of Howard as an additional insured.

Tree Pruning Specifications

Tree pruning to be performed on Village trees by a contractor shall be completed by an International Society of Arboriculture Certified Arborist.

All pruning activities shall conform to the standards listed below following the National Arborist Association Class II (Standard Pruning) and Class III (Hazard Pruning) standards and American National Standard Institute (ANSI) A300 standards.

1. All cuts on live branches shall be made as close as possible to the trunk or parent limb, without cutting into the branch bark ridge and branch collar, or leaving a protruding stub. Bark at the edge of all pruning cuts should remain firmly attached. Cuts on dead branches shall be made as close as possible, without causing injury to the callus tissue when evident.
2. When removing a parent leader of limb to a lateral branch, the final cut should be made as close to parallel as possible with the branch bark ridge and the lateral limb. The cut should be made as close to the bark ridge as possible without cutting into it. Care should be taken to avoid damaging the lateral limb when the final cut is made.
3. All branches too large to support with one hand shall be precut to avoid splitting or tearing of the bark. Where necessary, ropes or other equipment should be used to lower large branches or stubs to the ground.
4. No more than 1/3 of the foliage shall be removed within one (1) growing season.
5. Equipment that will damage the bark and cambium layer shall not be used on or in the tree. For example, the use of climbing spikes (hooks, irons) is not acceptable work practice for pruning operations on live trees. Sharp tools shall be used so that clean cuts will be made at all times.
6. All cut limbs shall be removed from the crown upon completion of the pruning.
7. Wound dressing / pruning paints should not be used on pruning cuts.

Stump Grinding

Any tree removed in the Village right-of-way shall have the stump ground out and the debris generated shall be removed. The hole shall be filled with soil and seeded with grass seed. If a replacement tree is desired, a tree planting permit shall be completed prior to planting.

Inspection

The Village Forester shall inspect work periodically to insure that all specifications are adhered to.

Completion

All work shall be completed within the pruning/removal window stated on the permit. If the work is not performed within this window and is still desired, another permit must be filled out and completed.

**Before you dig please call
Diggers Hotline 1-800-242-8511**

Appendix 5.

Chapter 38

VEGETATION

Article I. In General

- Sec. 38-1. Purpose and intent.
- Sec. 38-2. Definitions.
- Secs. 38-3—38-22. Reserved.

Article II. Administration

Division 1. Generally

- Sec. 38-23. Interference with village forester or agent of the village tree board.
- Sec. 38-24. Violation and penalty.
- Sec. 38-25. Appeal.
- Secs. 38-26—38-53. Reserved.

Division 2. Village Tree Board

- Sec. 38-54. Established.
- Sec. 38-55. Composition.
- Sec. 38-56. Appointment of members.
- Sec. 38-57. Expiration or vacation of terms.
- Sec. 38-58. Duties.
- Secs. 38-59—38-89. Reserved.

Division 3. Village Forester

- Sec. 38-90. Established.
- Sec. 38-91. Duties.
- Secs. 38-92—38-110. Reserved.

Article III. Permits

- Sec. 38-111. Required.
- Sec. 38-112. Application.
- Sec. 38-113. Issuance.
- Secs. 38-114—38-139. Reserved.

Article IV. Public Nuisances

- Sec. 38-140. Declaration of nuisance conditions.
- Sec. 38-141. Right to inspect.
- Sec. 38-142. Abatement.
- Sec. 38-143. Notice.



ARTICLE I. IN GENERAL**Sec. 38-1. Purpose and intent.**

(a) *Purpose.* It is the purpose of this chapter to promote and protect the public health, safety, and general welfare by providing for the regulation of the planting, maintenance, and removal of trees, shrubs, and other plants within the village.

(b) *Intent.* It is the intent of the village board that the terms of this chapter shall be construed so as to promote:

- (1) The planting, maintenance, restoration, and survival of desirable trees, shrubs and other plants within the village; and
- (2) The protection of community residents from personal injury and property damage, and the protection of the village from property damage, caused or threatened by the improper planting, maintenance, or removal of trees, shrubs, or other plants located within the community.

(Comp. Ords. 2000, § 19.32)

Sec. 38-2. Definitions.

The following words, terms and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Arboricultural Specifications and Standards of Practice for the Village of Howard means the manual prepared by the village forester containing regulations and standards for the planting, maintenance and removal of trees, shrubs, and other plants upon village-owned property. Herein-after known as the arboricultural specifications manual.

Property owner means the record owner or contract purchaser of any parcel of land.

Trees, shrubs and other plants means all vegetation, woody or otherwise, except lawn grass and flowers less than 24 inches in height.

Village-owned property means property within the village limits, and the following:

- (1) Owned by the village in fee simple absolute; or
- (2) Implied or expressly dedicated to the public for present or future use for purposes of vehicular or pedestrian traffic or for public easements.

(Comp. Ords. 2000, § 19.33)

Secs. 38-3—38-22. Reserved.

ARTICLE II. ADMINISTRATION

DIVISION 1. GENERALLY

Sec. 38-23. Interference with village forester or agent of the village tree board.

No person shall unreasonably hinder, prevent, delay, or interfere with the village forester or designee of the village tree board while engaged in the execution or enforcement of this chapter. (Comp. Ords. 2000, § 19.38)

Sec. 38-24. Violation and penalty.

Any person who violates any provision of this chapter or fails to comply with any notice issued pursuant to the provisions of this chapter, upon being found guilty of violation, shall be subject to a fine not to exceed \$200.00 for each separate offense, each day during which any violation of the provisions of this chapter shall occur or continue shall be a separate offense. If, as the result of the violation of any provision of this chapter, the injury, mutilation, or death of a tree, shrub, or other plant located on village-owned property is caused, the cost of repair or replacement of such tree, shrub, or other plant shall be borne by the party in violation. The replacement value of trees and shrubs shall be determined in accordance with the most recent edition of A Guide to Plant Appraisal published by the International Society of Arboriculture. (Comp. Ords. 2000, § 19.39)

Sec. 38-25. Appeal.

Any party who elects to dispute any action or decision by the village forester or village tree board shall be entitled to file an appeal with the village board for a final determination. (Comp. Ords. 2000, § 19.40)

Secs. 38-26—38-53. Reserved.

DIVISION 2. VILLAGE TREE BOARD

Sec. 38-54. Established.

The village tree board is hereby established. Its functions and duties are limited to those set forth in this chapter. (Comp. Ords. 2000, § 19.34(1))

Sec. 38-55. Composition.

The village tree board shall be composed of seven members. Five members shall be appointed by the village president with the approval of the village board. These five members shall serve

without pay and shall reside within the village. The remaining two members shall be ex officio and shall not vote. The two ex officio members shall be the village park and recreation director and the village forester.

(Comp. Ords. 2000, § 19.34(2))

Sec. 38-56. Appointment of members.

Each village tree board member shall serve a two-year staggered term. The term shall start on the day appointed. The village tree board shall appoint the chair of the village tree board.

(Comp. Ords. 2000, § 19.34(3))

Sec. 38-57. Expiration or vacation of terms.

Within 30 days following the expiration of the term of any appointed village tree board member, a successor shall be appointed by the village president with the approval of the village board, and the successor shall serve for a term of two years. Should any member resign or be removed from the village tree board, a successor shall be appointed by the village president and shall serve for the unexpired term. A member of the village tree board may be removed by the village president with the approval of a majority of the village board.

(Comp. Ords. 2000, § 19.34(4))

Sec. 38-58. Duties.

The village tree board shall perform the following duties:

- (1) Advise and consult the village forester on any matter pertaining to this chapter and its enforcement. The topics under which this advice and consultation may be given may include, but are not limited to, any of the following:
 - a. Amendments to the this chapter, development, alterations and/or revisions to the arboricultural specifications manual, and alterations or revisions of the urban forestry plan;
 - b. Policy concerning selection, planting, maintenance, and removal of trees, shrubs, and other plants within the village;
 - c. Allocation of funds to the tree program, and expenditures of funds by the tree program;
 - d. Establishment of educational and informational programs.
- (2) Upon the request of any person who disagrees with the decision of the village forester, hear all issues of the disputes which arise between the village forester and any such person whenever those issues involve matters or the interpretation or enforcement of the arboricultural specifications manual, the urban forestry plan, or of the interpretation or enforcement of this chapter, including disputes regarding the issuance of permits by the village forester and permits required under other ordinances or laws or the abatement of nuisances. The

decision of the majority of the appointed members of the village tree board with regard to such disputes shall be binding upon the village forester. Nothing in this division shall be construed to limit the jurisdiction of any court of law with respect to such disputes.

(Comp. Ords. 2000, § 19.34(5))

Secs. 38-59—38-89. Reserved.

DIVISION 3. VILLAGE FORESTER

Sec. 38-90. Established.

The position of the village forester is hereby established.

(Comp. Ords. 2000, § 19.35(1))

Sec. 38-91. Duties.

The village forester shall perform the following duties:

- (1) Implement, monitor, evaluate and update the urban forestry plan, this chapter, and the provisions of the arboricultural specifications manual.
- (2) Perform whatever acts are necessary, including the planting and maintenance of trees, the removal of undesirable trees, shrubs, and other plants located on village-owned property, to ensure that all trees, shrubs, and other plants located on village-owned property conform to the urban forestry plan, the arboricultural specifications manual, and this chapter.
- (3) Issue such permits as are required by this chapter.
- (4) Make available to any interested person copies of this chapter, information about the activities of the village tree board, copies of the arboricultural specifications manual and copies of the urban forestry plan.
- (5) Implement a program of public information and education that will encourage the planting, maintenance, or removal of trees, shrubs, and other plants on private property in furtherance of the goals of the urban forestry plan.

(Comp. Ords. 2000, § 19.35(2))

Secs. 38-92—38-110. Reserved.

ARTICLE III. PERMITS

Sec. 38-111. Required.

No person except the village forester, a contractor hired by the village tree board, or designee of the village tree board may perform any of the following acts without first obtaining from the village forester a permit, and nothing in this article shall be construed to exempt any person from the requirements of obtaining any additional permits as are required by law:

- (1) Plant on village-owned property, or treat, prune, remove, or otherwise disturb any tree, shrub, or other plant located on village-owned property, except that this provision shall not

be construed to prohibit owners of property adjacent to village-owned property from watering or fertilizing without a permit any tree, shrub, or other plant located on such village-owned property;

- (2) Trim, prune, or remove any tree or portions thereof if such tree or portions thereof reasonable may be expected to fall on village-owned property and thereby to cause damage to persons or property;
 - (3) Place on village-owned property, either above or below ground level, a container for trees, shrubs, or other plants;
 - (4) Damage, cut, tap, carve, or transplant any tree, shrub, or other plant located on village-owned property;
 - (5) Attach any rope, sign, poster, or any other manmade object to any tree, shrub, or other plant located on village-owned property;
 - (6) Dig a tunnel or trench on village-owned property.
- (Comp. Ords. 2000, § 19.36(1))

Sec. 38-112. Application.

The village forester shall obtain as a condition precedent to the issuance of such permits, the written agreement of each person who applies for such permits that he will comply with the requirements of this chapter, the urban forestry plan, and with the regulation and standards of the arboricultural specifications manual. The village forester shall have the right to inspect all work performed pursuant to such permits. If the village forester finds that the work performed is not in compliance with the requirements of this chapter, the urban forestry plan, or with the regulations or standards of the arboricultural specifications manual, the village forester shall provide written notice of his finding to the permit applicant. The notice shall contain a copy of section V of the ordinance from which this section is derived, and the following:

- (1) The permit shall be nullified and shall be void;
- (2) The village forester may issue a written order that the permit applicant cease and desist all work for which the permit was required;
- (3) The permit applicant shall be subject to penalty under the terms of this chapter; and
- (4) The village forester may take steps to correct the results of the noncomplying work and the reasonable costs of such steps shall be charged to the permit applicant.

(Comp. Ords. 2000, § 19.35(2)(c))

Sec. 38-113. Issuance.

Within seven days of receipt of the application, the village forester or designee shall issue a permit to perform within 30 days of the day of issuance, any of the acts specified in section 38-111(1) and (2), for which a permit is requested whenever:

- (1) Such acts would result in the abatement of a public nuisance or such acts are not inconsistent with the development and implementation of the urban forestry plan or with any regulations or standards of the arboricultural specifications manual;

- (2) An application has been signed by the applicant and submitted to the village forester or designee detailing the location, number, size, and species of trees, shrubs, or other plants that will be affected by such acts, setting forth the purpose of such acts and the methods to be used, and presenting any additional information that the village forester may find reasonably necessary;
 - (3) The applicant agrees to perform the work for which the permit is sought in accordance with the provisions of this chapter, the urban forestry plan and with the regulations and standards set forth in the arboricultural specifications manual;
 - (4) The applicant certifies that he has read and understands those provisions of the urban forestry plan, this chapter and the arboricultural specifications manual which are pertinent to the work for which the permit is sought; and
 - (5) If the work for which a permit is issued entails the felling of any tree or part thereof, located on private property, which, as a result of such felling reasonably may be expected to fall upon village-owned property, and if such felling is done by one other than the owner of the property on which such felling is done, then the applicant shall agree to indemnify and to hold the village harmless for all damages resulting from work conducted pursuant to the permit and shall deposit with the village clerk a liability insurance policy in the most current dollar amounts per person and per accident for bodily injury liability and aggregate for property damage liability as determined by the village clerk which policy shall name the village as an additional insured.
- (Comp. Ords. 2000, § 19.36(2))

Secs. 38-114—38-139. Reserved.

ARTICLE IV. PUBLIC NUISANCES

Sec. 38-140. Declaration of nuisance conditions.

The following are hereby declared public nuisances:

- (1) Any dead or dying tree, shrub, or other plant, whether located on village-owned property, other publicly owned properties or on private property;
- (2) Any otherwise healthy tree, shrub, or other plant, whether located on village-owned property, other publicly owned properties or on private property, which harbors insects or diseases which reasonably may be expected to injure or harm any tree, shrub, or other plant;
- (3) Any tree, shrub, other plant, or portion thereof, whether located on village-owned property, other publicly owned properties or on private property, which by reason of location or condition constitutes an imminent danger to the health, safety, or welfare of the general public;
- (4) Any tree, shrub, or other plant or portion thereof whether located on village-owned property, other publicly owned properties or on private property which obstructs the free passage of pedestrian or vehicular traffic or which obstructs a street sign on village property;

- (5) Any tree, shrub or other plant or portion thereof whether located on village-owned property, other publicly owned properties or on private property which dangerously obstructs the view as such may be determined by the village forester pursuant to this chapter;
- (6) Any tree, shrub, or other plant which is a noxious weed as defined in Wis. Stats. § 66.0407. (Comp. Ords. 2000, § 19.37(1))

Sec. 38-141. Right to inspect.

The officers, agents, servants, and employees of the village have the authority to enter onto private property, after prior notification to property owner, whereon there is located a tree, shrub, plant or plant part that is suspected to be a public nuisance.
(Comp. Ords. 2000, § 19.37(2))

Sec. 38-142. Abatement.

The following are the prescribed means of abating public nuisances under this chapter:

- (1) Any public nuisance under this chapter which is located on village-owned property shall be pruned, removed, or otherwise treated by the village forester or designee in whatever fashion is required to cause the abatement of the nuisance within a reasonable time after its discovery.
- (2) Any public nuisance under this chapter which is located on other publicly owned property or privately owned property shall be pruned, removed, or otherwise treated by the property owner or his agent in whatever fashion is required to cause the abatement of the nuisance. No property owner may be found guilty of violating this provision unless and until the requirements of notice have been satisfied.
- (3) The village forester is empowered to cause the immediate abatement of any public nuisance provided that the nuisance is determined by the village forester or agent of the village tree board to be an immediate threat to any person, or property.
(Comp. Ords. 2000, § 19.37(3))

Sec. 38-143. Notice.

The village forester or designee shall cause a written notice to be personally served or sent by certified mail to the owner of the publicly owned property or the person to whom the tax bill was sent for the general taxes for the last preceding year. Such notice shall:

- (1) Describe the kind of tree, shrub, or the plant or plant part which has been declared to be a public nuisance, its location on the property and the reason for declaring it a nuisance.
- (2) Describe the premises by legal description or by common description.
- (3) State the actions that the property owner may undertake to abate the nuisance.
- (4) Require the elimination of the nuisance within 30 days after the notice is delivered or sent to the owner of the publicly owned property or the person to whom the tax bill was sent for the general taxes for the last preceding year.

- (5) State in the event that the nuisance is not abated by the date specified in the notice, the village forester or designee is authorized to cause the abatement of said nuisance.
(Comp. Ords. 2000, § 19.37(4))

ments as proposed by the developer or the improvements required by this chapter or a town subdivision ordinance to be inadequate to meet good development standards, it shall call attention to this fact in its plat evaluation report.

(Comp. Ords. 2000, § 18.06(1)(c); Ord. No. 1992-2; Ord. No. 2001-2, § 1(18.06(1)(c)), 2-12-2001)

Sec. 46-171. Privately owned utilities.

All privately owned utilities, including gas mains, electrical cables, telephone cables, cable television or any other nonpublic improvements, shall not be installed until such time as the sanitary sewer, storm sewer and water mains have been installed.

(Comp. Ords. 2000, § 18.06(1)(d); Ord. No. 1992-2; Ord. No. 2001-2, § 1(18.06(1)(d)), 2-12-2001)

Sec. 46-172. Responsibilities and duties of subdivider for public improvements.

In addition to all other pertinent sections of this chapter, the subdivider is responsible for all of the following duties to ensure the installation of all public improvements in a construction year:

- (1) After submission of the preliminary plat, the subdivider must secure all properly notarized waivers of hearings as provided in Wis. Stats. § 66.0703, for the respective construction of sanitary sewer mains, water mains, sidewalks, curb and gutter, or any other public improvements as petitioned for. If the subdivider is unable to obtain all the required signatures on the waivers required in this subsection, he shall, in writing, request to the village board an opportunity for a public meeting on this project. The village board will decide whether or not a meeting will be held on the project. All blank waiver forms shall be supplied by the village board for use by the subdivider.
- (2) If the subdivider is unable to obtain all the signatures for the waivers in subsection (1) of this section and/or the project is rejected by the village board after a public meeting, the subdivider may still promote the project by executing special written agreements with those individuals who did sign the waiver. The agreement would stipulate that the subdivider would conditionally assume the financial responsibilities of those respective uninterested parties.
- (3) After approval of the preliminary plat by the village board, the subdivider shall provide a fee of \$2,000.00 for the preliminary review of the public improvements necessary to construct the subdivision by the village engineer for design.
- (4) The subdivider shall assist in securing all required utility easements beyond the limits of the subdivision of which the location and width shall be determined by the village board. The village board will furnish blank easement forms to the subdivider who will be responsible for the proper legal description of the easement parcel and for the proper execution of the easement by the grantor. All completed easements shall be submitted to the village board, designated as the grantee for its review, and shall be recorded at the county register of deeds office by the village board.
- (5) The subdivider shall secure and furnish proof of an escrow account or letter of credit for the amount of the total sewer and water assessment levied against his properties abutting the improvements, the amount to also cover any assessments to properties covered under special agreements as provided in subsection (2) of this section. The account shall be so

arranged and a special agreement executed between the subdivider, the bank and the village to allow the latter to withdraw monthly amounts from the account sufficient to cover monthly construction costs to the contractor under contract with the village for sewer and water main construction. The amounts of monthly withdrawals, as determined by the village, shall be billed to the subdivider and shall be due within ten days of the date of billing.

- (6) The subdivider shall also execute any other special agreements deemed necessary by the village board.
- (7) The subdivider shall also be responsible for all the rough grading of streets to the subgrade and for all the necessary clearing and grubbing on all the streets in the proposed subdivision. The street grades shall be determined by the village engineer, and all necessary cut sheets and staking out work for the street grading shall be furnished by the village engineer. The subdivider shall employ the grading contractor and ensure adequate work progression to meet the requirements of section 46-173. The subdivider shall also be responsible for the disposal of excess materials from street excavating and/or the furnishing, hauling and placing of borrow materials for street grading. All topsoil shall be stripped from the street area and stockpiled to be made readily available by the village engineer for final finish grading of streets, ditches and drainageways for seeding and fertilizing in the prevention of soil erosion. This work shall conform to the specifications established by the village engineer.
- (8) Required street tree plantings. The subdivider shall pay a reasonable fee for every linear foot of frontage in the subdivision to plant street trees. This fee is determined by the village forester and is kept in an account by the finance department until the subdivision can be planted pursuant to section 46-173(a).

(Comp. Ords. 2000, § 18.06(2); Ord. No. 1992-2; Ord. No. 2001-2, § 1(18.06(2)), 2-12-2001)

Sec. 46-173. Specific deadlines for public improvements.

(a) To provide adequate time for all parties involved in the investigation, design, supervision, construction and administration of public improvement project, the following deadlines are required of the subdivider for public works construction in a given construction year:

| | |
|---|-------------|
| Preliminary plat submittal | September 1 |
| Final plat monumented per section 46-168 | November 15 |
| Final plat submittal | January 1 |
| Final plat recorded per section 46-141(d) | March 1 |
| General duties outlined in section 46-172(2) completion date | May 1 |
| Street grading outlined in section 46-172(6) completion date | June 15 |

(b) Failure to meet the deadlines in subsection (a) of this section may still result in final plat approval, but may delay public improvement construction until the following construction year.

(Comp. Ords. 2000, § 18.06(3)(intro.); Ord. No. 1992-2; Ord. No. 2001-2, § 1(18.06(3)(intro.)), 2-12-2001)

Sec. 46-174. Street tree plantings.

Street trees will not be planted until 75 percent of homes in that subdivision are issued occupancy certificates. At such time, all completed homes shall receive street trees in planting spots deemed acceptable by the village forester. Planting is the village forestry division's responsibility and shall be done according to the Arboricultural Specifications Manual.

(Comp. Ords. 2000, § 18.06(3)(a); Ord. No. 1992-2; Ord. No. 2001-2, § 1(18.06(3)(a)), 2-12-2001)

Sec. 46-175. Responsibilities of village board for public improvements.

The village board shall be responsible for the following applicable duties:

- (1) Provide all preliminary construction cost estimates based on all preliminary plat. Preliminary assessments will be provided upon request of the subdivider.
- (2) Determine the final construction cost estimate and final assessments based on the data of the final plat and current construction cost information. Final assessment rates may be amended by the village board pursuant to Wis. Stats. § 66.0703(10), to reflect the actual construction cost of the project, if applicable.
- (3) Conduct all public hearings and publish required legal notices.
- (4) Furnish all easement, waiver and special agreement forms. All completed forms will be reviewed by the village board upon submission by the subdivider. Easements will be recorded by the village board.
- (5) Conduct all necessary operations for project bidding, awarding of construction contracts and project supervision.
- (6) Secure department of natural resources and related project approvals.
- (7) Design and installation of all municipal owned utilities.
- (8) Provide street grades and staking-out work in connection with the rough grading of streets.
- (9) Where applicable, provide base course and curb and gutter and final finish grading of ditches and drainageways to include the placing, seeding and fertilizing of salvaged topsoil. All costs for this work will be assessed to abutting properties.
- (10) Provide storm sewers and detention ponds where applicable.

(Comp. Ords. 2000, § 18.06(4); Ord. No. 1992-2; Ord. No. 2001-2, § 1(18.06(4)), 2-12-2001)

Secs. 46-176—46-203. Reserved.**ARTICLE IV. OTHER LAND DIVISIONS****Sec. 46-204. Certified survey maps.**

(a) *Requirements.* A certified survey map shall be prepared in compliance with the requirements of Wis. Stats. § 236.34, which is hereby adopted by reference and incorporated herein as though fully set forth. There is a fee of \$25.00 for the review of the certified survey map (CSM) to the village clerk.

(b) *Procedure.* The subdivider shall file 12 copies of said certified survey map with the village clerk or deputy clerk. The village board shall review the proposed certified survey map (CSM) to ensure it is in accordance with the village comprehensive plan and official map, and within 20 days, approve, conditionally approve, or reject the map. The subdivider shall be notified in writing of any conditions of approval or reasons for rejection.

(c) *Certificates.*

- (1) The map shall include the certificate of the surveyor who surveyed and mapped the parcel as required by Wis. Stats. § 236.34, and shall be signed by the property owner.
- (2) The certificate of approval of the village board shall be typed, lettered or reproduced legibly with nonfading black ink on the face of the map.

(d) *Map.* The map shall be filed by the subdivider for recording with the register of deeds of the county. A copy of the final approved map shall be forwarded to the county regional planning commission. Additional copies of the final approved map shall be forwarded to the village board and appropriate agencies. The volume and page number of the recording file shall be noted on the final approved map.

(e) *Public improvements.* Procedures for installation of public improvements shall conform to pertinent requirements of division 5 of article III of this chapter or as determined by the village board. (Comp. Ords. 2000, § 18.07(1); Ord. No. 2001-2, § 1(18.07(1)), 2-12-2001)

Sec. 46-205. Subdivision created by successive divisions.

(a) When it is not practicable to require that a final plat of a subdivision created prior to this chapter by successive divisions be filed in accordance with this chapter, the village board may, in lieu thereof, order an assessor's plat to be made under Wis. Stats. § 70.27, and may assess the cost thereof as provided in such section or as provided for under Wis. Stats. § 236.31.

(b) Regardless of the type of plat filed, any such subdivision shall comply with all provisions of this chapter to the extent that they may be reasonably applied. (Comp. Ords. 2000, § 18.07(2); Ord. No. 2001-2, § 1(18.07(2)), 2-12-2001)