2012 COMMUNITY TREE MANAGEMENT PLAN

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Executive Summary

Overview

This plan was developed to assist the City of Walnut with managing its urban forest, including budgeting and future planning. Trees can provide a multitude of benefits to the community, and sound management allows a community to best take advantage of these benefits. Management is especially important considering the serious threats posed by forest pests such as the emerald ash borer (EAB). EAB is an invasive insect imported from Eastern Asia on wood shipping crates that kills all species of ash trees (this does not include mountain ash). There is a strong possibility that 14% of Walnut's city owned trees (ash) will die once EAB becomes established in the community. With proper planning and management, the costs of removing dead and dying trees can be extended over years, mitigating public safety issues.

Inventory and Results

In 2012, a tree inventory was conducted using Global Positioning System (GPS) data collectors. The inventory was a complete inventory of street and park trees. Below are some key findings of the 383 trees inventoried.

- Walnut's trees provide $75,586 of benefits annually, an average of $197 a tree
- There are over 48 species of trees
- The top three genus are: Maple 36%, Ash 14%, and Oak 7%
- 20% of trees are in need of some type of management (75 total trees/383 total = 20%) – see table in hazardous trees section for a breakdown by recommended management and associated tasks.
- 37 trees are recommended for removal

Recommendations

The core recommendations are detailed in the Recommendations Section. The Emerald Ash Borer Plan includes management recommendations as well. Below are some key recommendations.

- Of the 37 trees needing removal, 26 trees are over 18 inches in diameter at 4.5 ft and must be addressed immediately *City ownership of the trees recommended for removal should be verified prior to any removal*
- 2 of the 52 ash trees are in need of follow up because they are displaying signs and symptoms associated with EAB
- All trees should be pruned on a routine schedule- one third of the city every other year

Plant a diverse mix of trees that do not include: ash, maple, cottonwood, poplar, box elder, Chinese or Siberian elm, elm, evergreen, willow, black walnut, tree of heaven, exotic mulberry trees (white mulberry is very common), and Bradford/Callery Pear. Please also be careful not to plant the following shrubs, as they are considered invasive species: autumn olive, honeysuckles, salt cedar, rhododendron, multiflora rose, buckthorn, Japanese Barberry, Burning Bush, and Oriental bittersweet (a vine). For additional information on invasive species and native alternatives, please read my article at: http://api.ning.com/files/upDJWQuP3By62jwQaDQ*HIqC08KqOZIIyknTyIMIfSpJ1cU3EKH*F7hmZYMBaDhDCj0jivi-px1jKSL8TEKs7YPG9gU*Y9EA/CHECKYOURYARDFORFUGITIVES.pdf.

- Check ash trees with a visual survey yearly

- With the current budget it could take 5 years to remove ash – Suggestion: request a budget increase to which ever option (listed below the budget/work schedule table) best fits your community's finances and abilities. Also annually apply for grants to plant replacement trees.

Introduction

This plan was developed to assist Walnut with the management, budgeting and future planning of their urban forest. Across the state, forestry budgets continue to decrease with more and more of that money spent on tree removal. With the anticipated arrival of Emerald Ash Borer (EAB), an invasive pest that kills native ash trees, it is time to prepare for the increased costs of tree removal and replacement planting. With proper planning and management of the current canopy in Walnut, these costs can be extended over years and public safety issues from dead and dying ash trees mitigated.

Trees are an important component of Walnut's infrastructure and one of the greatest assets to the community. The benefits of trees are immense. Trees provide the community with improved air quality, stormwater runoff interception, energy conservation, lower traffic speeds, increased property values, reduced crime, improved mental health and create a desirable place to live, to name just a few benefits. It is essential that these benefits be maintained for the people of Walnut and future generations through good urban forestry management.

Good urban forestry management involves setting goals and developing management strategies to achieve these goals. An essential part of developing management strategies is a comprehensive public tree inventory. The inventory supplies information that will be used for maintenance, removal schedules, tree planting and budgeting. Basing actions on this information will help meet Walnut's urban forestry goals.

Inventory

In 2012, a tree inventory was conducted that included 100% of the city owned trees on both streets and parks. The tree data was collected using a handheld Global Positioning System (GPS) receiver. The data collector gives Geographic Information Systems (GIS) coordinates with an accuracy of 3 meters, which can be used in Arc GIS as an active GIS data layer. Because the inventory is a digital document the data can be updated with new information and become a working document.

The programming used to collect tree information on the data collectors was written to be compatible with a state-of-the-art software suite called i-Tree. i-Tree was developed by the USDA Forest Service to quantify the structure of community trees and the environmental services that trees provide. The i-Tree suite is a public domain which can be accessed for free.

To quantify the urban forest structure and benefits, specific data is collected for each tree. This data includes: location, land use, species, diameter at 4.5 ft, recommended maintenance, priority of that maintenance, leaf health, and wood condition. Additionally, signs and symptoms of EAB were noted for all ash trees. The signs and symptoms noted were canopy dieback, epicormic shoots, bark splitting, D-shaped borer exit holes, and wood pecker damage.

Inventory_Results

The data collected for the 383 city trees was entered into the USDA Forest service program Street Tree Resource Analysis Tool for Urban forestry Management (STRATUM), part of the i-Tree suite. The following are results from the i-Tree STRATUM analysis. Findings

Annual Benefits

Annual Energy Benefits

Trees conserve energy by shading buildings and blocking winds. Walnut's trees reduce energy related costs by approximately $19,692 annually (Appendix A, Table 1). These savings are both in Electricity (93.1 MWh) and in Natural Gas (12,884.2 Therms).

Annual Stormwater Benefits

Walnut's trees intercept about 1,117,211 gallons of rainfall or snow melt a year (Appendix A, Table 2). This interception provides $30,279 of benefits to the city.

Annual Air Quality Benefits

Air quality is a persistent public health issue in Iowa. The urban forest improves air quality by removing pollutants, lowering air temperature, and reducing energy consumption, which in turn reduces emissions from power plants, and emitting volatile organic mater (ozone). In Walnut, it is estimated that trees remove 1,255.5 lbs of air pollution (ozone (O_3), particulate matter less than 10 microns (PM10), carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2)) per year with a net value of $3,559 (Appendix A, Table 3).

Annual Carbon Benefits

Carbon sequestration and storage reduce the amount of carbon in the atmosphere, mitigating climate change. In Walnut, trees sequester about 226,988 lbs of carbon a year with an associated value of $1,702 (Appendix A, Table 4). In addition, the trees store 4,491,009 lbs of carbon, with a yearly benefit of $33,683 (Appendix A, Table 5).

Annual Aesthetics Benefits

Social benefits of trees are hard to capture. The analysis does have a calculation for this area that includes: aesthetic value, property values, lowered rates of mental illness and crime, city livability and much more. Walnut receives $19,345 in annual social benefits from trees (Appendix A, Table 6).

Financial Summary of all Benefits

According to the USDA Forest Service i-Tree STRATUM analysis, Walnut's trees provide $75,586 of benefits annually. Benefits of individual trees vary based on size, species, health and location, but on average each of the 383 trees in Walnut provide approximately $197 annually (Appendix A, Table 7).

Forest Structure

Species Distribution

Walnut has over 48 different tree species along city streets and parks (Appendix A, Figure 1).
The distribution of trees by genus is as follows:

Maple	138		36%
Ash	52		14%
Oak	28		7%
Hackberry	26		7%
Apple	22		6%
Lilac	12		3%
Linden	11		3%
Pear	11		3%
Elm	10		3%
Prunus (cherry/plum)	10		3%
Broadleaf deciduous	7		2%
Walnut	7		2%
Pine	6		2%
Willow	5		1%
Sycamore	5		1%
Juniper	4		1%
Conifer Evergreen	4		1%
Buckeye	4		1%
Poplar	3		<1%
Honeylocust	3		<1%
Spruce	3		<1%
Kentucky Coffee Tree	2		<1%
Cedar	2		<1%
Mulberry	2		<1%
Birch	1		<1%
Hickory	1	<1%	
Redbud	1	<1%	
Gingko	1		<1%
Tulip Tree	1		<1%

Age Class

Most of Walnut's trees (70%) are between 6 and 36 inches in diameter at 4.5 ft (Appendix A, Figure 2). The 24-30" diameter range is the most populous, with almost 19% of the city tree population. For age, a Bell Curve is preferred and shows the highest amount of trees around 18 inches in diameter at 4.5 ft. Walnut's size curve is slightly on the larger side, indicating a slightly older than average stand. In general, the age distribution looks pretty good though!

Condition: Wood and Foliage

Both wood condition and leaf condition are good indicators of the overall health of the urban forest. The foliage condition results for Walnut indicate that 41% of the trees are in good health, with only 5% of the foliage in poor health, dead or dying (Appendix A, Figure 3 & Appendix B, Figure 3). 54% of Walnut's trees are in good health for wood condition (appendix A, Figure 4 & Appendix B, Figure 3). Wood condition that is in poor health, dead or dying is about 12% of the population. This 12% is an estimate of trees that need management follow up. I estimate the foliar condition was less than optimum based on heat and drought, explaining why the foliar and wood condition percentages were not closer in percentages.

Management Needs

The following outlines the specific management needs of the street and park trees by number of trees and percent of canopy (Appendix B, Figure 3).

Crown Cleaning	112	29%
Tree Staking	45	12%
Tree Removal	37	10%
Crown Raising	11	3%
Treat Pest/Disease	10	3%
Crown Reduction	0	0%

Canopy Cover

The canopy cover of Walnut is approximately 11 acres (Appendix A, Figure 4). According to the 2010 census, Walnut occupies 1,370 acres. Thus the canopy cover on city land is about 1%.

Land Use and Location

The majority of Walnut's city and park trees are in planting strips in single family residential neighborhoods (Appendix A, Figure 6 & Appendix A, Figure7). The following describes the land use and locations for the street and park trees.

Land Use	
Single family residential	70.9%
Park/vacant/other	22.5%
Industrial/Large commercial	0%
Small commercial	6.5%
Multifamily residential	0%

Location	
Planting strip	64.9%
Other maintained locations	0%
Cutout (surrounded by pavement)	5.5%
Front yard	29.6%

Recommendations

Risk Management

Hazardous trees can be a significant threat to both people and property. Trees that are dead or dying, or that have large issues such as trunk cracks longer than 18 inches should be removed. Broken branches and branches that interfere with motorist's vision of pedestrians, vehicles, traffic signs and signals, etc should be removed.

Hazardous trees

Walnut has 45 critical concern trees that need immediate attention. These trees can be seen on the Location of Trees with Recommended Maintenance map (Appendix B, Figure 4) and the table below. It is

recommended to start with the large diameter critical concern trees first. There are 26 critical removal trees over 18 inches in diameter at 4.5 ft that should be addressed immediately. Please refer to the four year maintenance plan at the end of this section. After all of the critical concern trees are addressed, there should be follow up on the trees marked as needing maintenance that do not include trimming. There are a total of 26 trees with these needs (pest, immediate removals, and needs further inspection from an arborist).

PRIORITY TASK	# BY TASK UNDER CRITICAL CONCERN	# BY TASK UNDER MATURE TREE IMMEDIATE	# BY TASK UNDER YOUNG TREE IMMEDIATE
NONE (NEEDS FURTHER INSPECTION BY ARBORIST)	5	5	
STAKE/TRAIN		2	1
CLEAN		15	
RAISE			
REDUCE			
REMOVE	31	4	2
TREAT PEST/DISEASE	9	1	
TOTAL	45	27	3

Poor tree species

After the removal of the critical concern trees, ash trees in poor health should be assessed for removal (Appendix B, Figure 3 & Appendix B, Figure 4). Of the 37 total removals, 4 are ash trees. There are a total of 52 ash trees, and 2 of those have signs and symptoms that have been associated with EAB. In addition, there are 7 trees that are in poor health. *City ownership of the trees recommended for removal should be verified prior to any removal*

Pruning Cycle

Proper pruning can extend the life and good health of trees, as well as reduce public safety issues. In the Management Needs section of the Findings there are four main maintenance issues to be addressed: routine pruning, crown cleaning, crown raising, and crown reduction. Crown cleaning removes dead, diseased, and damaged limbs. Crown raising is the removal of lower branches that are 2 inches in diameter or larger in the case of providing clearance for pedestrians or vehicles. Crown reduction is removing individual limbs from structures or utility wires. It is recommended that all trees be pruned on a routine schedule every five to seven years. Please refer to the six year maintenance plan for further information.

Planting

Most of the planting over the next 4-6+ years will replace the trees that are removed. It is recommended to plant 1.2 trees for every tree removed, since survival rates will not be 100%. Please refer to the six year maintenance plan at the end of this section. It is not essential that the new trees be planted in the same location of the trees being removed. However, maintaining the same number of trees helps ensure continuation of the benefits of the existing forest in Walnut.

It is important to plant a diverse mix of species in the urban forest to maintain canopy health, since most insects and diseases target a genus (ash) or species (green ash) of trees. Current diversity recommendations advise that a genus (i.e. maple, oak) not make up more than 20% of the urban forest and a single species (i.e. silver maple, sugar maple, white oak, bur oak) not make up more than 10% of the total urban forest. Presently, the forest is heavily planted with Maple (36%) (Appendix A, Figure 1). Maples should not be planted until this percentage can be lowered. Also, ash trees have not been recommended since 2002, due to the threat of EAB. Other species to avoid because they are public nuisances include: cottonwood, poplar, box elder, Chinese elm, evergreen, willow or black walnut, as outlined in section 151.02 of the city ordinance (Appendix C). All trees planted must meet the restrictions in city ordinance 151.02 (Appendix C).

Recommended Species for Western Iowa:

COMMON NAME	SCIENTIFIC NAME	CULTIVARS/SELECTIONS
LARGE SHADE TREES – Plant 35 feet apart and away from overhead power lines.		
Swamp White Oak	*Quercus bicolor*	
White Oak	*Quercus alba*	
Bur Oak	*Quercus macrocarpa*	
Red Oak	*Quercus rubra*	
Black Oak	*Quercus veluntina*	
Chinkapin Oak	*Quercus muehlenbergii*	
American Basswood (Linden)	*Tilia Americana*	Boulevard, Front Yard, Legend, Redmond
Thornless Honeylocust	*Gleditsia triacanthos var. inermis*	Shademaster, Skyline
American elm	*Ulmus Americana*	Independence, New harmony, Valley Forge
Cottonwood (seedless) - ***Not recommended for planting near any homes or structures	*Populous deltoides*	Siouxland
Sycamore	*Plantanus occidentalis*	
Gingko	*Gingko biloba*	Male only – Shangri-La, Princeton sentry, Emperor
Ohio Buckeye	*Aesculus hippocastanum*	
Yellowwood	*Cladrastis lutea*	
Kentucky coffeetree	*Gymnocladus diocius*	Expresso
Black Cherry	*Prunus serotina*	
Hackberry	*Celtis occidentalis*	Chicagoland, Prairie Pride, Windy City
LOW GROWING TREES (less than 30 feet tall) planted as close as 12 feet.		
Eastern redbud	*Cercis Canadensis*	
Thornless cockspur hawthorn or other native hawthorns	*Crataegus crusgalli var. inermis*	
Ironwood (hop hornbeam)	*Ostrya virginiana*	
American hornbeam	*Carpinus caroliniana*	
Serviceberry	*Amalanchier arborea*	Autumn brilliance, Cumulus, Princess Diana

Flowering crabapple	*Malus*	Prairiefire, Adams, Sentinel, Snowdrift
Red mulberry	*Morus rubra*	
American (wild) plum	*Prunus americana*	
EVERGREEN TREES – planted 25 feet apart and away from overhead power lines.		
Eastern White Pine	*Pinus strobes*	
Jack pine	*Pinus banksiana*	
Junipers (Eastern red cedar)	*Juniperus virginiana*	
Norway spruce	*Picea abies*	
Concolor fir	*Abies concolor*	
Bald cybress	*Taxodium distichum*	
Arborvitae (Northern White cedar)	*Thuja occidentalis*	Techny, Brandon, Holmstrup

Continual Monitoring

Due to the threat of EAB, it is important to continuously check the health of ash trees. It is recommended that ash trees be checked with a visual survey every year for tree death and for the following signs and symptoms: canopy dieback, epicormic shoots, bark splitting, D-shaped borer exit holes, and wood pecker damage.

Emerald Ash Borer Plan

Ash Tree Removal

Tree removal will be prioritized with dead, dying, hazardous trees to be removed first (Appendix B, Figure 4). Next will be all ash in poor condition and displaying signs and symptoms of EAB (Appendix B, Figure 2 & Appendix B, Figure 3). *City ownership of the tree recommended for removal should be verified prior to any removal*

EAB Quarantines

EAB is an extremely destructive plant pest and it is responsible for the death and decline of over 25 million ash trees. Ash in both forested and urban settings constitute a significant portion of the canopy cover in the United States. Current tools to detect, control, suppress and eradicate this pest are not as robust as the USDA would desire. In order to stay ahead of this hard to detect beetle, the USDA is attempting to contain the beetle before it spreads beyond its known positions by regulating articles.

A regulated article under the USDA's quarantine includes any of the following items:
- emerald ash borer
- firewood of all hardwood species (for example ash, oak, maple and hickory)
- nursery stock and green lumber of ash
- any other ash material, whether living, dead, cut or fallen, including logs, stumps, roots, branches, as well as composted and not composted chips of the genus ash (Mountain ash is not included)

In addition, any other article, product or means of conveyance not listed above may be designated as a regulated article if a USDA inspector determines that it presents a risk of spreading EAB once a quarantine is in effect for your county.

Wood Disposal

A very important aspect of planning is determining how wood infested with EAB will be handled, keeping in mind that quarantines will restrict its movement. Consider who will cut and haul the dead and dying trees? Is there an accessible, secured site big enough to store and sort the hundreds of trees and the associated brush and chips? How will wood be disposed of or utilized? Do you have equipment capable of handling the amount and size of ash trees your tree inventory has identified? Once your county is under quarantine for EAB, contact USDA-APHIS-PPQ at 515-251-4083 or visit the website http://www.aphis.usda.gov/plant_health/plant_pest_info/emerald_ash_b/regulatory.shtml. Wood waste can be disposed of as you normally would if your county is not part of a quarantine.

Canopy Replacement

As budget permits, all removed ash trees will be replaced. All trees will meet the restrictions in city ordinance 151.02 (Appendix C). The new plantings will be a diverse mix and will not include ash, maple, cottonwood, poplar, box elder, Chinese elm, evergreen, willow or black walnut. See other species to avoid in the Executive summary Recommendations section.

Postponed Work

While finances, staffing and equipment are focused on the management of ash, usual services may be delayed. Tree removal requests on genus other than ash will be prioritized by hazardous or emergency situations only.

Monitoring

It is recommended that ash trees be checked with a visual survey every year for tree death and for the following signs and symptoms: canopy dieback, epicormic shoots, bark splitting, D-shaped borer exit holes, and wood pecker damage.

Private Ash Trees

It is strongly recommended that private property owners start removing ash trees on their property upon arrival of EAB. City Code 151.06 states “If it is determined with reasonable certainty that any such condition exists (trees or shrubs in the City reported or suspected to be infected with or damaged by any disease or insect or disease pests) on private property and that the danger to other trees or to adjoining property or passing motorists or pedestrians is imminent, the Council shall notify by certified mail the owner, occupant or person in charge of such property to correct such condition by treatment or removal within fourteen (14) days of said notification. If such owner, occupant or person in charge of said property fails to comply within 14 days of receipt of notice, the Council may cause the condition to be corrected and the cost assessed against the property.”

Budget and Maintenance Plan – next 4+ years_(With no additional funding)___

YEAR	MAINTENANCE TASK	PRICE PER UNIT	SUBTOTAL	YEARLY EXPENDITURE
2013	CRTICIAL REMOVALS – START WITH C.R.'S >18" DIA (26 TOTAL). 13 WILL BE DONE EACH OF NEXT 2 YEARS.	$500/TREE X 13 TREES	$6,500	$7,250
	CRITICAL OTHER TASKS (ARBORIST INSPECTION, SMALL DIA. CRITICAL REMOVALS, PREST TREATMENTS) – 19 TOTAL, SPLIT BETWEEN FIRST TWO YEARS.	$75/TREE X 10 TREES	$750	
	VISUAL SURVEY FOR EAB SIGNS AND SYMPTOMS			
2014	REMAINING CRTICIAL LARGE DIA REMOVALS	$500/TREE X 13 TREES	$6,500	$7,175
	CRITICAL OTHER TASKS (ARBORIST INSPECTION, SMALL DIA. CRITICAL REMOVALS, PREST TREATMENTS) – REMAINING 9 TREES	$75/TREE X 9 TREES	$675	
	VISUAL SURVEY FOR EAB SIGNS AND SYMPTOMS			
2015	IMMEDIATE MATURE TREE REMOVALS	$500/TREE X 4 TREES	$2,000	$7,220
	ALL OTHER IMMEDIATE CONCERN TASKS (SMALL DIAMETER CRITICAL REMOVALS, PEST CONTROL, AND VARIOUS TRIMMING TASKS)	$75/TREE X 26 TREES	$1,950	
	PLANT, MAINTAIN, AND WATER 21 REPLACEMENT TREES	$100/REPLACEMENT TREE + $50/TREE FOR WATERING AND MAINTENANCE = $150 X 21 TREES	$3,270	
	VISUAL SURVEY FOR EAB SIGNS AND SYMPTOMS			
2016	REMAINING 23 REPLACEMENT TREES + MAINTENANCE & WATERING	$150 X 23 TREES	$3,450	$5,940
	ROUTINE TRIMMING ON ALL CITY TREES	383 TREES X $6.50/TREE	$2,490	
	VISUAL SURVEY FOR EAB			

	SIGNS AND SYMPTOMS	
2017/2018	SELECT BEST PLAN FOR BELOW FOR EMERALD ASH BORER (EAB) PREPAREDNESS	$34,000 TOTAL FOR REMOVALS AND REPLACEMENTS IF AVOCA GETS EAB.

** PRICES BASED ON AVERAGE CITY-WIDE CONTRACTS**

**NOTE – COMPLETE ASH REMOVAL HAS NOT BEEN FACTORED INTO THIS BUDGET OR WORK PLAN. AFTER THE 2 CRITICAL CONCERN ASH ARE REMOVED, 50 ASH REMAIN IN THE COMMUNITY. IF EAB AFFECTS AVOCA, IT WOULD TAKE $25,000 FOR REMOVALS AND $9,000 TO REPLACE AND MAINTAIN THE LOST TREES OR $34,000 TOTAL. IT WOULD TAKE 5 YEARS AT THE CURRENT BUDGET (I CHOOSE $7,220 SINCE YOU HAVE A MIXED STREET BUDGET), IF THIS WORK WAS STARTED IN YEAR 2017 (AFTER CRITICAL CONCERN TREES AND OTHER IMMEDIATE TASKS ARE TAKEN CARE OF FIRST). OTHER OPTIONS WOULD BE TO INCREASE THE BUDGET OF THE FIRST FOUR YEARS TO $4,890 (REMOVING AND REPLANTING 14% EACH OF THE FIRST 4 YEARS), AND KEEPING THE BUDGET OF 2017 AND 2018 AT $7220. A FINAL OPTION MIGHT BE TO STICK TO THIS CURRENT BUDGET AND SCHEDULE AND INCREASE THE BUDGET OF 2017 AND 2018 TO $17,000 EACH YEAR TO ACCOMMODATE FUTURE ASH REMOVALS AND REPLACEMENTS.

THIS LINK CAN ALSO BE USED TO ESTIMATE EAB COSTS: http://extension.entm.purdue.edu/treecomputer/.

Utility Company grants are usually between $500 and $10,000 for community-based, tree-planting projects that include parks, gateways, cemeteries, nature trails, libraries, nursing homes, and schools.

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Appendix A: i-Tree Data


Walnut, IA
Legend
All Trees
Miles
0
0.05
0.1
0.2
0.3
0.4

Appendix A: i-Tree Data

Table 1: Annual Energy Benefits

Walnut

Annual Energy Benefits of Public Trees by Species

11/10/2012

Species	Total Electricity (MWh)	Electricity ($)	Total Natural Gas (Therms)	Natural Gas ($)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Silver maple	24.9	1,890	3,298.3	3,232	5,122	(N/A)	18.9	26.0	71.14
Green ash	12.9	981	1,745.4	1,710	2,691	(N/A)	12.8	13.7	54.93
Norway maple	9.3	708	1,357.1	1,330	2,038	(N/A)	8.9	10.4	59.93
Northern hackberry	9.7	739	1,367.0	1,340	2,078	(N/A)	6.8	10.6	79.94
Sugar maple	6.0	453	808.2	792	1,245	(N/A)	5.8	6.3	56.58
Apple	1.7	128	262.7	257	385	(N/A)	5.8	2.0	17.51
Northern pin oak	4.9	374	728.1	714	1,087	(N/A)	4.2	5.5	67.94
Japanese tree lilac	0.8	60	135.9	133	193	(N/A)	3.1	1.0	16.06
Pear	0.7	50	109.1	107	157	(N/A)	2.9	0.8	14.31
Northern red oak	1.3	100	179.0	175	275	(N/A)	2.6	1.4	27.55
Red maple	1.3	101	183.5	180	281	(N/A)	1.8	1.4	40.17
Black walnut	2.3	175	316.4	310	485	(N/A)	1.8	2.5	69.26
American basswood	2.3	176	339.9	333	509	(N/A)	1.8	2.6	72.75
Broadleaf Deciduous	0.2	15	34.5	34	49	(N/A)	1.6	0.3	8.15
Plum	0.1	7	16.4	16	23	(N/A)	1.6	0.1	3.89
American sycamore	2.2	165	291.0	285	450	(N/A)	1.3	2.3	90.04
Willow	1.5	115	219.2	215	330	(N/A)	1.3	1.7	66.03
Siberian elm	1.8	139	241.8	237	376	(N/A)	1.3	1.9	75.15
Ohio buckeye	0.4	32	67.4	66	98	(N/A)	1.1	0.5	24.47
Eastern red cedar	0.1	9	18.4	18	27	(N/A)	1.1	0.1	6.84
Blue spruce	0.4	30	55.1	54	84	(N/A)	1.1	0.4	20.94
Common chokecherry	0.4	30	53.8	53	83	(N/A)	1.1	0.4	20.63
Littleleaf linden	0.6	47	92.1	90	137	(N/A)	1.1	0.7	34.27
Other street trees	7.2	543	963.7	944	1,487	(N/A)	10.5	7.6	37.18
Citywide total	93.1	7,065	12,884.2	12,626	19,692	(N/A)	100.0	100.0	51.55

Table 2: Annual Stormwater Benefits

Walnut

Annual Stormwater Benefits of Public Trees by Species

11/10/2012

Species	Total rainfall interception (Gal)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Silver maple	382,601	10,369	(N/A)	18.9	34.3	144.02
Green ash	143,851	3,899	(N/A)	12.8	12.9	79.56
Norway maple	93,357	2,530	(N/A)	8.9	8.4	74.42
Northern hackberry	105,093	2,848	(N/A)	6.8	9.4	109.55
Sugar maple	69,791	1,891	(N/A)	5.8	6.3	85.98
Apple	6,007	163	(N/A)	5.8	0.5	7.40
Northern pin oak	57,047	1,546	(N/A)	4.2	5.1	96.63
Japanese tree lilac	2,782	75	(N/A)	3.1	0.3	6.28
Pear	3,235	88	(N/A)	2.9	0.3	7.97
Northern red oak	12,230	331	(N/A)	2.6	1.1	33.14
Red maple	11,466	311	(N/A)	1.8	1.0	44.39
Black walnut	28,808	781	(N/A)	1.8	2.6	111.54
American basswood	28,288	767	(N/A)	1.8	2.5	109.52
Broadleaf Deciduous	681	18	(N/A)	1.6	0.1	3.08
Plum	290	8	(N/A)	1.6	0.0	1.31
American sycamore	32,896	892	(N/A)	1.3	2.9	178.31
Willow	16,465	446	(N/A)	1.3	1.5	89.25
Siberian elm	22,898	621	(N/A)	1.3	2.1	124.11
Ohio buckeye	2,344	64	(N/A)	1.1	0.2	15.88
Eastern red cedar	1,708	46	(N/A)	1.1	0.2	11.57
Blue spruce	5,367	145	(N/A)	1.1	0.5	36.37
Common chokecherry	1,409	38	(N/A)	1.1	0.1	9.55
Littleleaf linden	6,664	181	(N/A)	1.1	0.6	45.15
Other street trees	81,932	2,221	(N/A)	10.5	7.3	55.51
Citywide total	1,117,211	30,279	(N/A)	100.0	100.0	79.26

Table 3: Annual Air Quality Benefits

Walnut

Annual Air Quality Benefits of Public Trees by Species

11/10/2012

Species	Deposition (lb) O_3	NO_2	PM_{10}	SO_2	Total Depos. ($)	Avoided (lb) NO_2	PM_{10}	VOC	SO_2	Total Avoided ($)	BVOC Emissions (lb)	BVOC Emissions ($)	Total (lb)	Total ($)	Standard Error	% of Total Trees	Avg. $/tree
Silver maple	68.8	11.7	33.4	3.1	370	117.6	17.2	16.4	112.6	735	-35.6	-133	345.2	972	(N/A)	18.8	13.50
Green ash	18.4	2.9	8.7	0.8	98	61.5	9.0	8.6	58.6	384	0.0	0	168.5	481	(N/A)	12.8	9.83
Norway maple	19.8	3.4	9.6	0.9	107	45.3	6.5	6.2	42.3	280	-4.6	-17	129.5	370	(N/A)	8.9	10.88
Northern hackberry	18.6	3.2	9.2	0.8	101	46.9	6.8	6.5	44.1	291	0.0	0	136.1	392	(N/A)	6.8	15.07
Sugar maple	9.8	1.7	4.8	0.4	53	28.4	4.1	3.9	27.0	177	-7.7	-29	72.6	201	(N/A)	5.8	9.14
Apple	1.4	0.2	0.7	0.1	8	8.3	1.2	1.1	7.6	51	0.0	0	20.6	59	(N/A)	5.8	2.66
Northern pin oak	13.0	2.2	6.2	0.6	70	24.0	3.5	3.3	22.3	148	-2.9	-11	72.2	207	(N/A)	4.2	12.95
Japanese tree lilac	0.5	0.1	0.3	0.0	3	4.0	0.6	0.5	3.6	24	0.0	0	9.5	27	(N/A)	3.1	2.24
Pear	1.0	0.2	0.5	0.0	5	3.3	0.5	0.4	3.0	20	0.0	0	8.9	26	(N/A)	2.9	2.32
Northern red oak	2.5	0.4	1.2	0.1	14	6.3	0.9	0.9	6.0	39	-3.6	-14	14.7	39	(N/A)	2.6	3.92
Red maple	2.7	0.5	1.3	0.1	15	6.4	0.9	0.9	6.0	40	-0.9	-3	17.9	51	(N/A)	1.8	7.25
Black walnut	3.9	0.6	1.8	0.2	21	11.0	1.6	1.5	10.4	69	0.0	0	31.0	89	(N/A)	1.8	12.72
American basswood	4.0	0.7	1.9	0.2	21	11.3	1.6	1.6	10.5	70	-3.3	-13	28.4	79	(N/A)	1.8	11.25
Broadleaf Deciduous	0.1	0.0	0.1	0.0	1	1.0	0.1	0.1	0.9	6	0.0	0	2.4	7	(N/A)	1.6	1.12
Plum	0.0	0.0	0.0	0.0	0	0.5	0.1	0.1	0.4	3	0.0	0	1.1	3	(N/A)	1.6	0.51
American sycamore	6.0	1.0	2.6	0.3	31	10.3	1.5	1.4	9.9	64	0.0	0	33.0	96	(N/A)	1.3	19.13
Willow	3.7	0.6	1.8	0.2	20	7.4	1.1	1.0	6.9	46	-0.8	-3	21.7	62	(N/A)	1.3	12.45
Siberian elm	4.5	0.8	2.1	0.2	24	8.6	1.3	1.2	8.3	54	0.0	0	27.0	78	(N/A)	1.3	15.60
Ohio buckeye	0.2	0.0	0.2	0.0	1	2.1	0.3	0.3	1.9	13	-0.1	0	4.9	14	(N/A)	1.0	3.47
Eastern red cedar	0.3	0.1	0.3	0.0	2	0.6	0.1	0.1	0.6	4	-0.9	-3	1.1	2	(N/A)	1.0	0.61
Blue spruce	0.7	0.1	0.6	0.1	5	1.9	0.3	0.3	1.8	12	-1.9	-7	3.8	9	(N/A)	1.0	2.26
Common chokecherry	0.4	0.1	0.2	0.0	2	1.9	0.3	0.3	1.8	12	0.0	0	4.9	14	(N/A)	1.0	3.48
Littleleaf linden	1.2	0.2	0.6	0.1	6	3.0	0.4	0.4	2.8	19	-0.6	-2	8.1	23	(N/A)	1.0	5.70
Other street trees	13.4	2.2	6.8	0.7	73	34.0	5.0	4.7	32.4	212	-6.9	-26	92.3	259	(N/A)	10.5	6.48
Citywide total	194.9	33.0	94.9	8.9	1,049	445.5	64.8	61.7	421.7	2,772	-69.9	-262	1,255.5	3,559	(N/A)	100.0	9.32

Table 4: Annual Carbon Stored

Walnut

Stored CO2 Benefits of Public Trees by Species

11/10/2012

Species	Total Stored CO2 (lbs)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Silver maple	1,600,859	12,006	(N/A)	18.9	35.7	166.76
Green ash	605,577	4,542	(N/A)	12.8	13.5	92.69
Norway maple	325,547	2,442	(N/A)	8.9	7.3	71.81
Northern	295,660	2,217	(N/A)	6.8	6.6	85.29
Sugar maple	287,851	2,159	(N/A)	5.8	6.4	98.13
Apple	23,454	176	(N/A)	5.8	0.5	8.00
Northern pin oak	215,303	1,615	(N/A)	4.2	4.8	100.92
Japanese tree lilac	9,435	71	(N/A)	3.1	0.2	5.90
Pear	16,218	122	(N/A)	2.9	0.4	11.06
Northern red oak	54,156	406	(N/A)	2.6	1.2	40.62
Red maple	29,678	223	(N/A)	1.8	0.7	31.80
Black walnut	127,505	956	(N/A)	1.8	2.8	136.61
American	145,524	1,091	(N/A)	1.8	3.2	155.92
Broadleaf	2,199	16	(N/A)	1.6	0.1	2.75
Plum	739	6	(N/A)	1.6	0.0	0.92
American	206,254	1,547	(N/A)	1.3	4.6	309.38
Willow	60,745	456	(N/A)	1.3	1.4	91.12
Siberian elm	108,695	815	(N/A)	1.3	2.4	163.04
Ohio buckeye	4,403	33	(N/A)	1.1	0.1	8.26
Eastern red cedar	1,110	8	(N/A)	1.1	0.0	2.08
Blue spruce	4,348	33	(N/A)	1.1	0.1	8.15
Common	6,266	47	(N/A)	1.1	0.1	11.75
Littleleaf linden	24,668	185	(N/A)	1.1	0.6	46.25
Other street trees	151,871	2,511	(N/A)	10.5	7.5	62.78
Citywide total	4,491,009	33,683	(N/A)	100.0	100.0	88.17

Table 5: Annual Carbon Sequestered

Walnut

Annual CO_2 Benefits of Public Trees by Species

11/10/2012

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
Silver maple	111,705	838	-7,684	-14	-58	41,770	313	145,777	1,093	(N/A)	18.9	40.3	15.19
Green ash	29,731	223	-2,907	-10	-22	21,677	163	48,492	364	(N/A)	12.8	13.4	7.42
Norway maple	10,893	82	-1,563	-7	-12	15,641	117	24,965	187	(N/A)	8.9	6.9	5.51
Northern hackberry	12,984	97	-1,419	-5	-11	16,323	122	27,883	209	(N/A)	6.8	7.7	8.04
Sugar maple	14,092	106	-1,382	-4	-10	10,006	75	22,712	170	(N/A)	5.8	6.3	7.74
Apple	2,548	19	-113	-4	-1	2,821	21	5,251	39	(N/A)	5.8	1.5	1.79
Northern pin oak	1,334	10	-1,033	-3	-8	8,255	62	8,552	64	(N/A)	4.2	2.4	4.01
Japanese tree lilac	1,215	9	-45	-2	0	1,316	10	2,483	19	(N/A)	3.1	0.7	1.55
Pear	1,392	10	-78	-2	-1	1,115	8	2,427	18	(N/A)	2.9	0.7	1.65
Northern red oak	1,520	11	-260	-2	-2	2,211	17	3,468	26	(N/A)	2.6	1.0	2.60
Red maple	1,740	13	-142	-1	-1	2,240	17	3,836	29	(N/A)	1.8	1.1	4.11
Black walnut	5,453	41	-612	-1	-5	3,862	29	8,702	65	(N/A)	1.8	2.4	9.32
American basswood	8,233	62	-699	-1	-5	3,893	29	11,426	86	(N/A)	1.8	3.2	12.24
Broadleaf Deciduous	321	2	-11	-1	0	334	3	643	5	(N/A)	1.6	0.2	0.80
Plum	169	1	-4	-1	0	160	1	324	2	(N/A)	1.6	0.1	0.41
American sycamore	3,639	27	-990	-1	-7	3,647	27	6,295	47	(N/A)	1.3	1.7	9.44
Willow	1,126	8	-292	-1	-2	2,549	19	3,383	25	(N/A)	1.3	0.9	5.07
Siberian elm	3,690	28	-522	-1	-4	3,068	23	6,235	47	(N/A)	1.3	1.7	9.35
Ohio buckeye	896	7	-21	-1	0	703	5	1,577	12	(N/A)	1.1	0.4	2.96
Eastern red cedar	45	0	-5	-1	0	205	2	244	2	(N/A)	1.1	0.1	0.46
Blue spruce	315	2	-21	-1	0	658	5	951	7	(N/A)	1.1	0.3	1.78
Common chokecherry	582	4	-30	-1	0	660	5	1,211	9	(N/A)	1.1	0.3	2.27
Littleleaf linden	2,190	16	-118	-1	-1	1,035	8	3,106	23	(N/A)	1.1	0.9	5.82
Other street trees	11,177	84	-1,607	-8	-12	11,997	90	21,559	162	(N/A)	10.5	6.0	4.04
Citywide total	226,988	1,702	-21,557	-74	-162	156,145	1,171	361,502	2,711	(N/A)	100.0	100.0	7.10

Table 6: Annual Social and Aesthetic Benefits

Walnut

Annual Aesthetic/Other Benefits of Public Trees by Species

11/10/2012

Species	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Silver maple	8,390	(N/A)	18.9	43.4	116.53
Green ash	2,468	(N/A)	12.8	12.8	50.37
Norway maple	1,013	(N/A)	8.9	5.2	29.78
Northern hackberry	1,621	(N/A)	6.8	8.4	62.36
Sugar maple	1,443	(N/A)	5.8	7.5	65.58
Apple	143	(N/A)	5.8	0.7	6.50
Northern pin oak	121	(N/A)	4.2	0.6	7.54
Japanese tree lilac	68	(N/A)	3.1	0.4	5.68
Pear	81	(N/A)	2.9	0.4	7.34
Northern red oak	124	(N/A)	2.6	0.6	12.39
Red maple	235	(N/A)	1.8	1.2	33.53
Black walnut	418	(N/A)	1.8	2.2	59.77
American basswood	586	(N/A)	1.8	3.0	83.67
Broadleaf Deciduous	17	(N/A)	1.6	0.1	2.83
Plum	8	(N/A)	1.6	0.0	1.38
American sycamore	239	(N/A)	1.3	1.2	47.88
Willow	102	(N/A)	1.3	0.5	20.42
Siberian elm	233	(N/A)	1.3	1.2	46.65
Ohio buckeye	105	(N/A)	1.1	0.5	26.22
Eastern red cedar	26	(N/A)	1.1	0.1	6.62
Blue spruce	87	(N/A)	1.1	0.5	21.84
Common chokecherry	33	(N/A)	1.1	0.2	8.26
Littleleaf linden	229	(N/A)	1.1	1.2	57.31
Other street trees	1,554	(N/A)	10.5	8.0	38.85
Citywide total	19,345	(N/A)	100.0	100.0	50.64

Table 7: Summary of Benefits in Dollars

Walnut

Total Annual Benefits of Public Trees by Species ($)

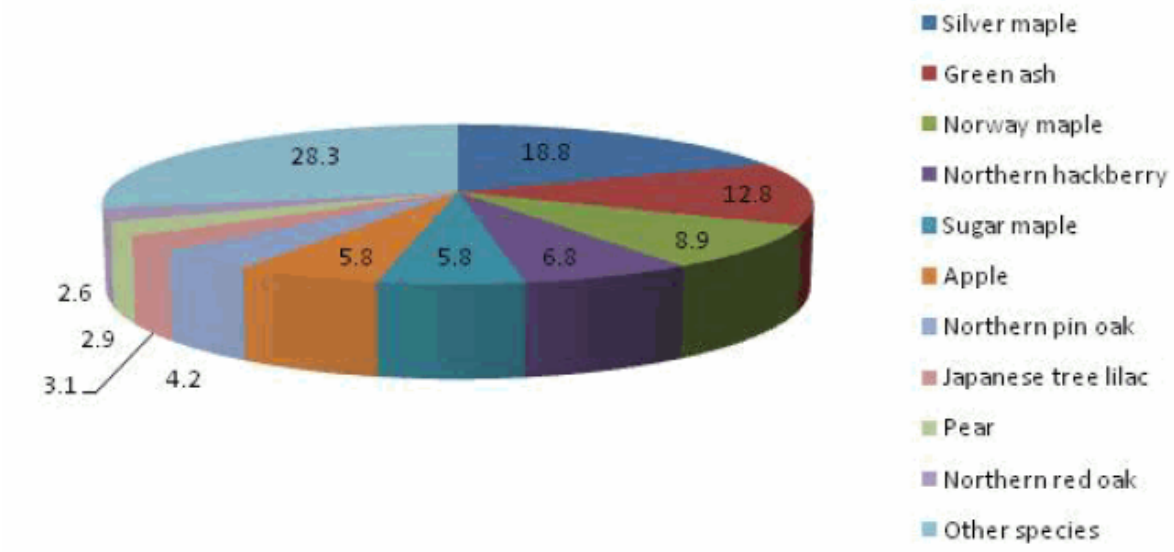
11/10/20

Species	Energy	CO_2	Air Quality	Stormwater	Aesthetic/Other	Total ($)	Standard Error	% of Total $
Silver maple	5,122	1,093	972	10,369	8,390	25,947	(±0)	34.3
Green ash	2,691	364	481	3,899	2,468	9,903	(±0)	13.1
Norway maple	2,038	187	370	2,530	1,013	6,138	(±0)	8.1
Northern hackberry	2,078	209	392	2,848	1,621	7,149	(±0)	9.5
Sugar maple	1,245	170	201	1,891	1,443	4,951	(±0)	6.5
Apple	385	39	59	163	143	789	(±0)	1.0
Northern pin oak	1,087	64	207	1,546	121	3,025	(±0)	4.0
Japanese tree lilac	193	19	27	75	68	382	(±0)	0.5
Pear	157	18	26	88	81	370	(±0)	0.5
Northern red oak	275	26	39	331	124	796	(±0)	1.1
Red maple	281	29	51	311	235	906	(±0)	1.2
Black walnut	485	65	89	781	418	1,838	(±0)	2.4
American basswood	509	86	79	767	586	2,026	(±0)	2.7
Broadleaf Deciduous	49	5	7	18	17	96	(±0)	0.1
Plum	23	2	3	8	8	45	(±0)	0.1
American sycamore	450	47	96	892	239	1,724	(±0)	2.3
Willow	330	25	62	446	102	966	(±0)	1.3
Siberian elm	376	47	78	621	233	1,354	(±0)	1.8
Ohio buckeye	98	12	14	64	105	292	(±0)	0.4
Eastern red cedar	27	2	2	46	26	104	(±0)	0.1
Blue spruce	84	7	9	145	87	333	(±0)	0.4
Common	83	9	14	38	33	177	(±0)	0.2
Littleleaf linden	137	23	23	181	229	593	(±0)	0.8
Other street trees	1,487	162	259	2,221	1,554	5,683	(±0)	7.5
Citywide Total	19,692	2,711	3,559	30,279	19,345	75,586	(±0)	100.0

Walnut

Species Distribution of Public Trees (%)

11/10/2012



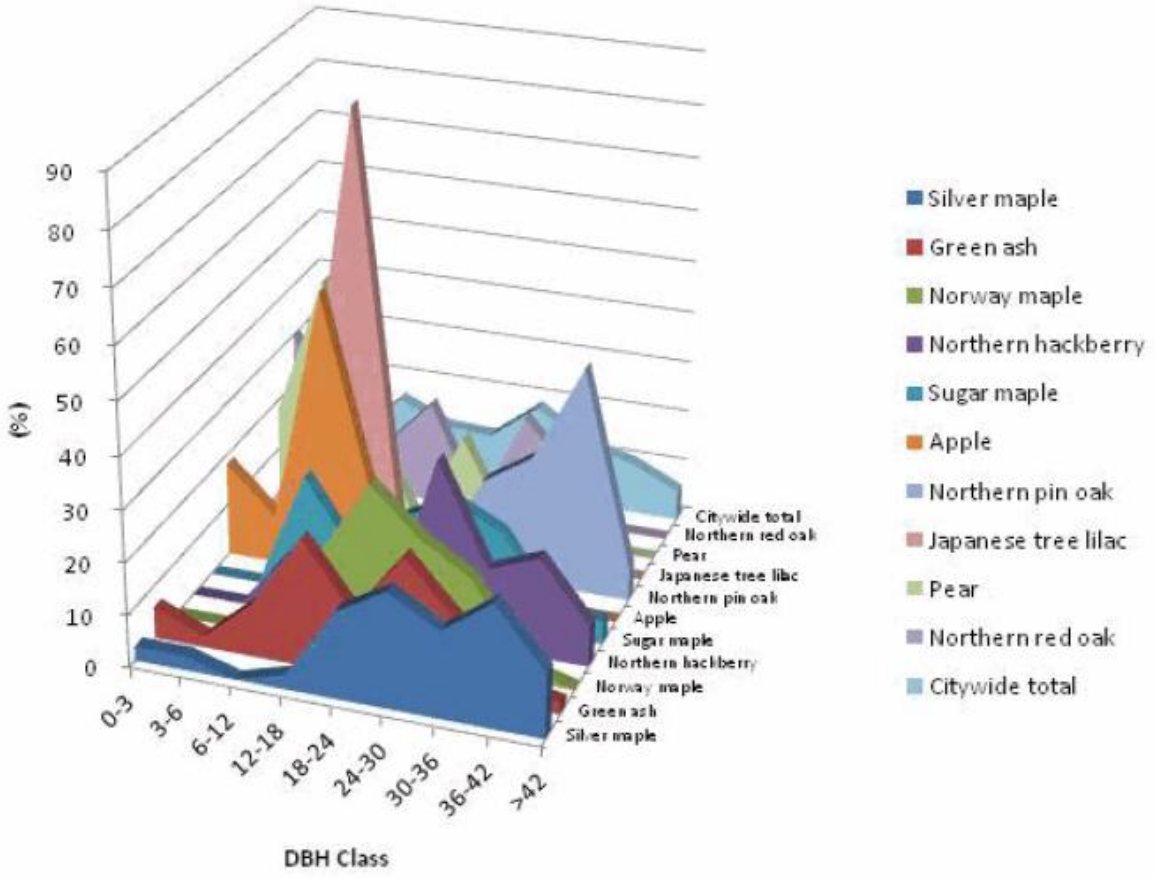
Species	Percent
Silver maple	18.8
Green ash	12.8
Norway maple	8.9
Northern hackberry	6.8
Sugar maple	5.8
Apple	5.8
Northern pin oak	4.2
Japanese tree lilac	3.1
Pear	2.9
Northern red oak	2.6
Other species	28.3
Total	100.0

Figure 1: Species Distribution

Walnut

Relative Age Distribution of Top 10 Public Tree Species (%)

11/10/2012



	DBH class (in)								
Species	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42
Silver maple	2.8	2.8	0.0	2.8	16.7	22.2	16.7	23.6	12.5
Green ash	6.1	2.0	10.2	24.5	12.2	24.5	14.3	4.1	2.0
Norway maple	0.0	0.0	5.9	17.6	32.4	23.5	17.6	2.9	0.0
Northern hackberry	0.0	0.0	11.5	7.7	3.8	34.6	15.4	19.2	7.7
Sugar maple	0.0	0.0	22.7	9.1	18.2	22.7	18.2	4.5	4.5
Apple	18.2	9.1	54.5	18.2	0.0	0.0	0.0	0.0	0.0
Northern pin oak	0.0	0.0	6.3	0.0	0.0	18.8	25.0	43.8	6.3
Japanese tree lilac	0.0	16.7	83.3	0.0	0.0	0.0	0.0	0.0	0.0
Pear	18.2	45.5	18.2	0.0	18.2	0.0	0.0	0.0	0.0
Northern red oak	30.0	10.0	10.0	20.0	0.0	20.0	10.0	0.0	0.0
Citywide total	7.6	6.5	16.0	11.8	11.3	18.6	12.3	10.2	5.8

Figure 2: Relative Age Class

Walnut

Functional (Foliage) Condition of Public Trees by Species (%)

11/10/2012

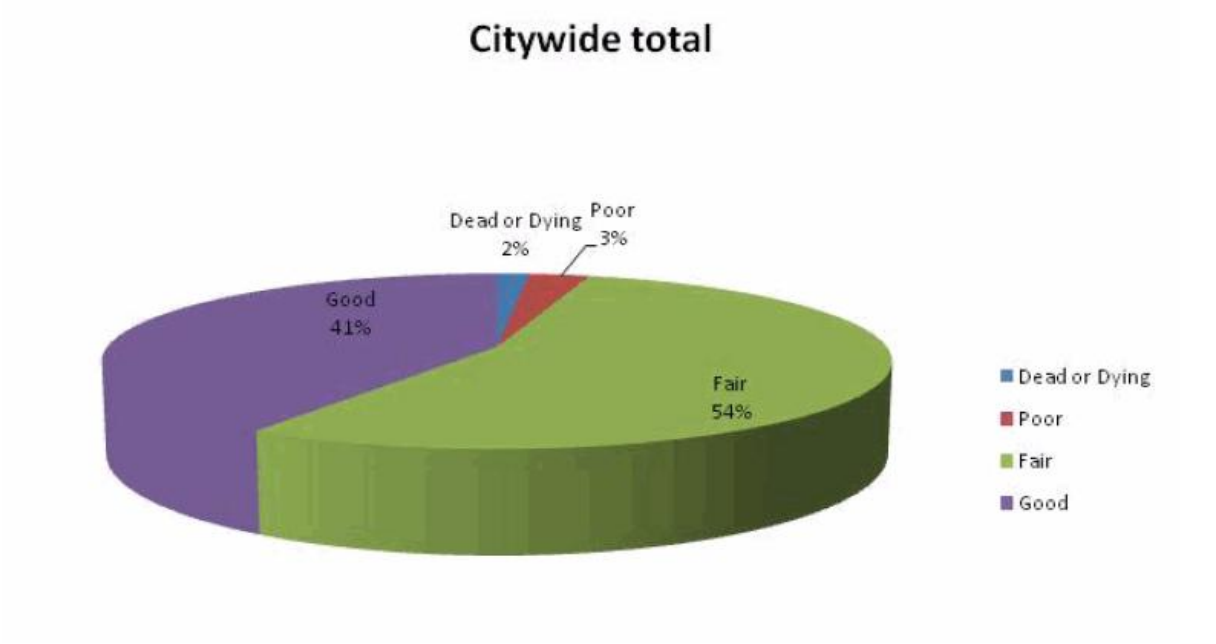


Figure 3: Foliage Condition

Walnut

Structural (Woody) Condition of Public Trees by Species (%)

11/10/2012

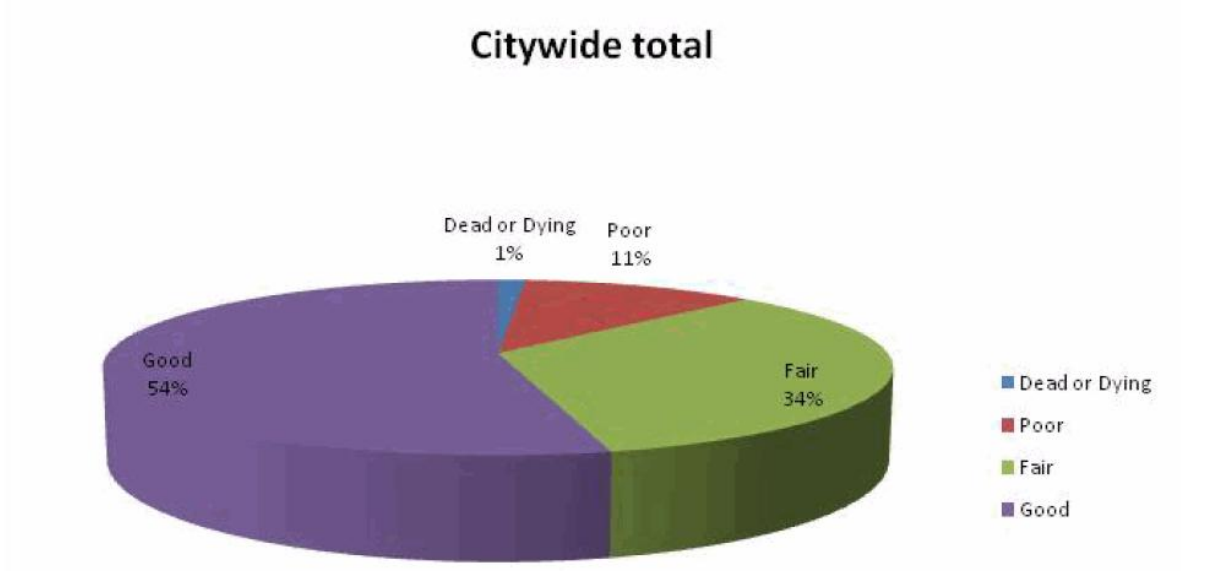
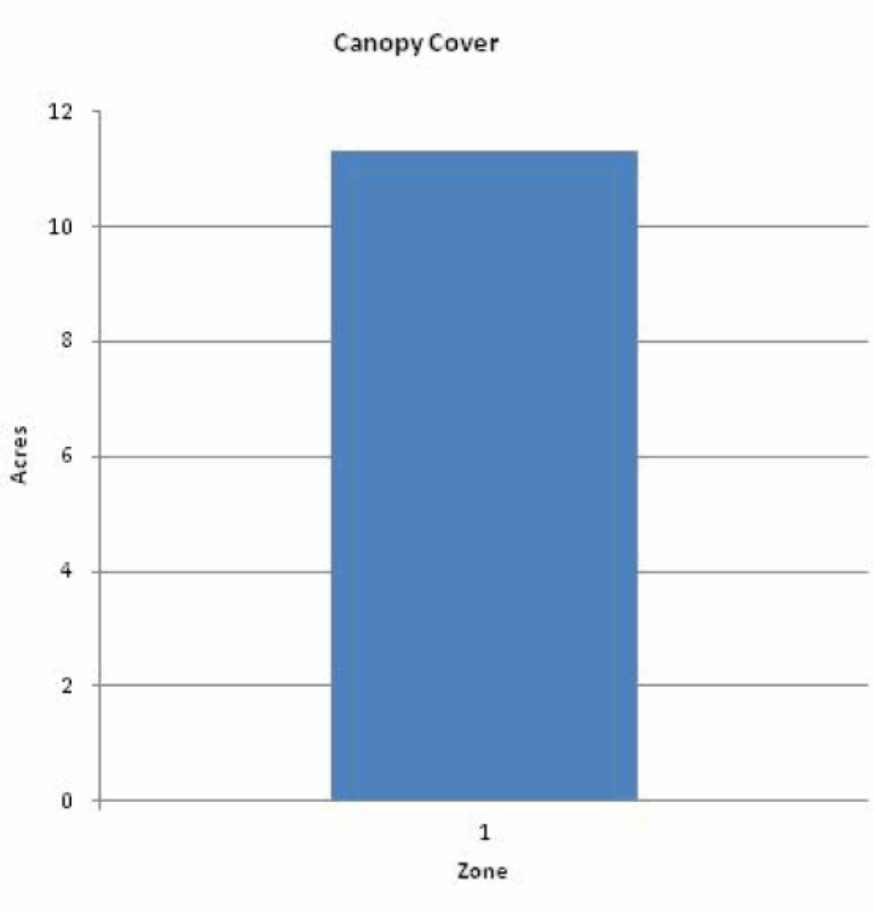


Figure 4: Wood Condition

Walnut

Canopy Cover of Public Trees (Acres)

11/10/2012



Zone	Acres	% of Total Canopy Cover
1	11	100.0
Citywide total	11	100.0

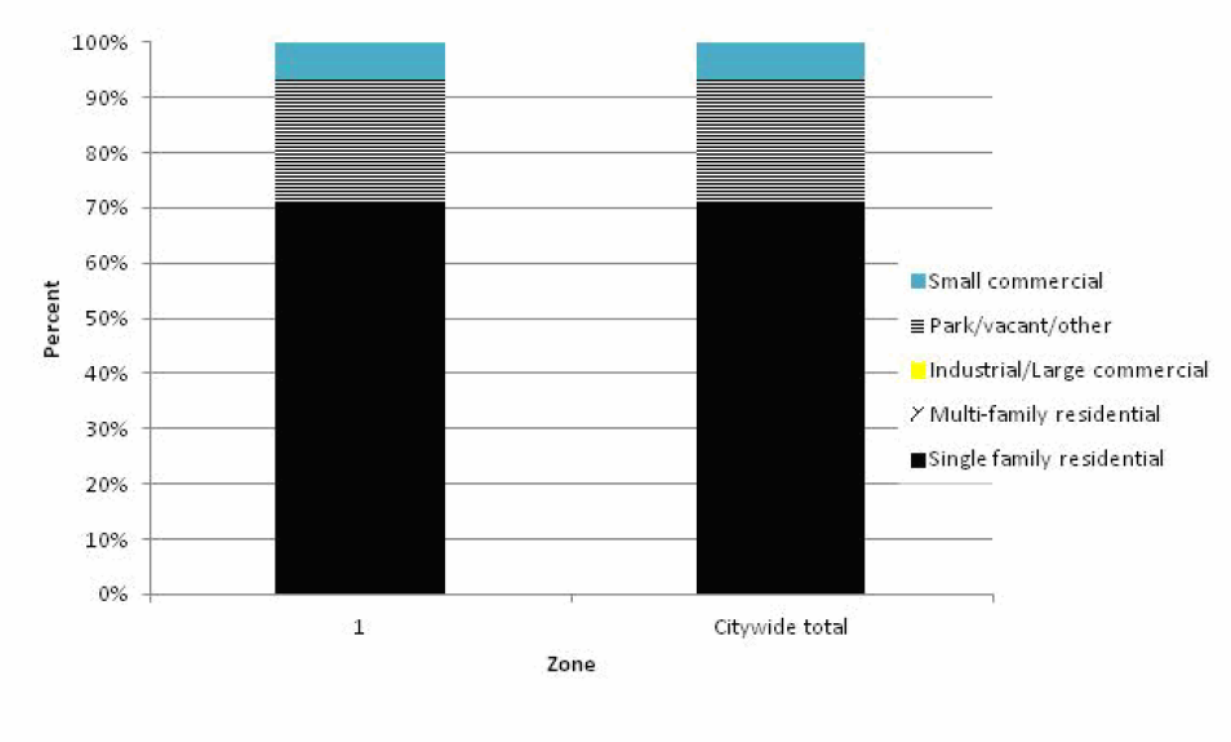
	Total Land Area	Total Street and Sidewalk Area	Total Canopy Cover	Canopy Cover as % of Total Land Area	Canopy Cover as % of Total Streets and Sidewalks
Citywide	0	0	11		

Figure 5: Canopy Cover in Acres

Walnut

Land Use of Public Trees by Zone (%)

11/10/2012



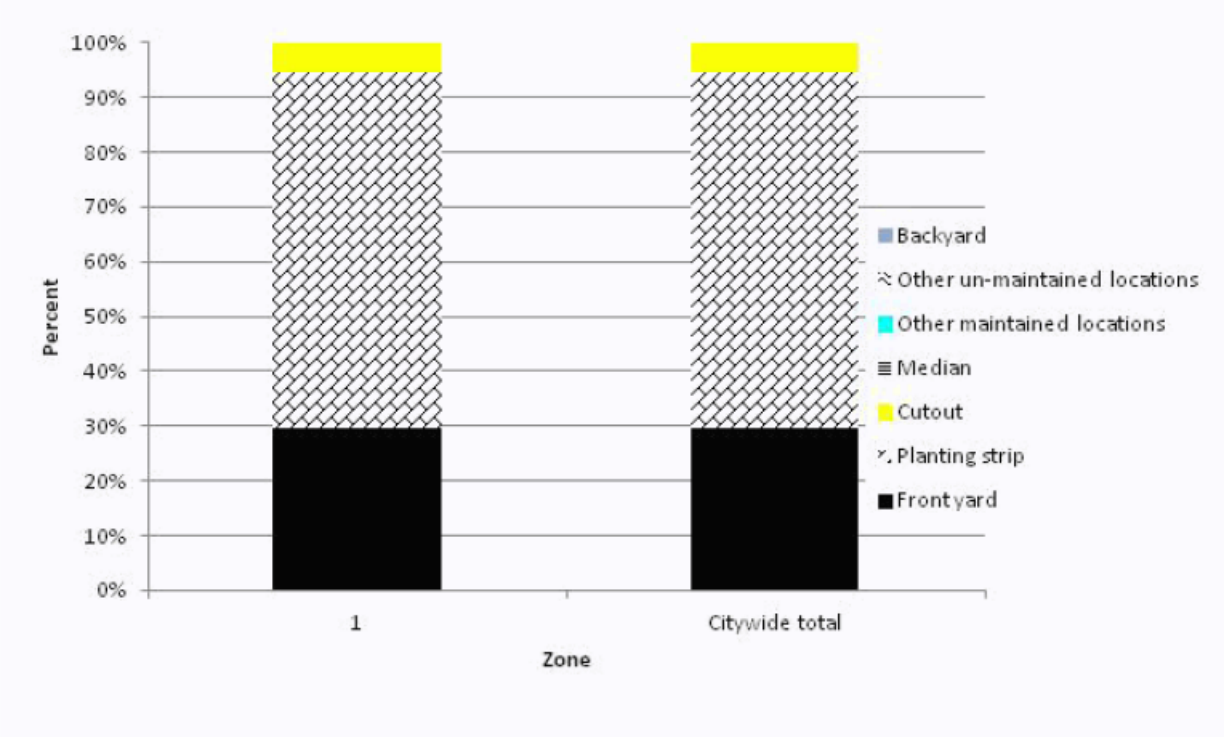
Zone	Single family residential	Multi-family residential	Industrial/ Large commercial	Park/vacant/ other	Small commercial
1	70.9	0.0	0.0	22.5	6.5
Citywide total	70.9	0.0	0.0	22.5	6.5

Figure 6: Land Use of city/park trees

Walnut

Location of Public Trees by Zone (%)

11/10/2012



Zone	Front yard	Planting strip	Cutout	Median	Other maintained locations	Other un-maintained locations	Backyard
1	29.6	64.9	5.5	0.0	0.0	0.0	0.0
Citywide total	29.6	64.9	5.5	0.0	0.0	0.0	0.0

Figure 7: Location of city/park trees

Table 8: Recommended maintenance for Walnut trees

Walnut

Recommended Maintenance for Public Trees (None)

12/11/2012

DBH Class (in)

Zone	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42	Total
1	0	0	0	0	0	0	0	0	0	0
Citywide total	0	0	0	0	0	0	0	0	0	0

DBH Class (in)

Maintenance Type	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42	Total	% of Total Population
None	0	0	0	0	0	0	0	0	0	0	0.00
Young tree (routine)	19	7	1	0	0	0	0	0	0	27	7.07
Young tree (immediate)	3	0	0	0	0	0	0	0	0	3	0.79
Mature tree (routine)	6	16	54	40	36	53	34	27	14	280	73.30
Mature tree (immediate)	0	1	3	1	2	5	5	8	2	27	7.07
Critical concern (public safety)	1	1	3	4	5	13	8	4	6	45	11.78
Citywide total	29	25	61	45	43	71	47	39	22	382	100.00

Table 9: Priority tasks for specified recommended maintenance actions.

Walnut

Priority Task Summary for Public Trees (None)

11/10/2012

DBH Class (in)

Zone	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42	Total
1	12	13	32	23	26	26	8	18	9	167
Citywide total	12	13	32	23	26	26	8	18	9	167

DBH Class (in)

Maintenance Type	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42	Total	% of Total Population
None	12	13	32	23	26	26	8	18	9	167	43.72
Stake/Train	14	8	17	4	1	1	0	0	0	45	11.78
Clean	0	2	8	13	12	32	25	13	7	112	29.32
Raise	0	0	0	1	0	1	5	3	1	11	2.88
Reduce	0	0	0	0	0	0	0	0	0	0	0.00
Remove	3	1	2	2	3	8	8	5	5	37	9.69
Treat pest/disease	0	1	2	2	1	3	1	0	0	10	2.62
Citywide total	29	25	61	45	43	71	47	39	22	382	100.00

Appendix B: ArcGIS Mapping

Figure 1: Location of Ash Trees

Figure 2: Location of EAB symptoms

Figure 3: Location of Poor Condition Trees

Figure 4: Location of Trees with Recommended Maintenance

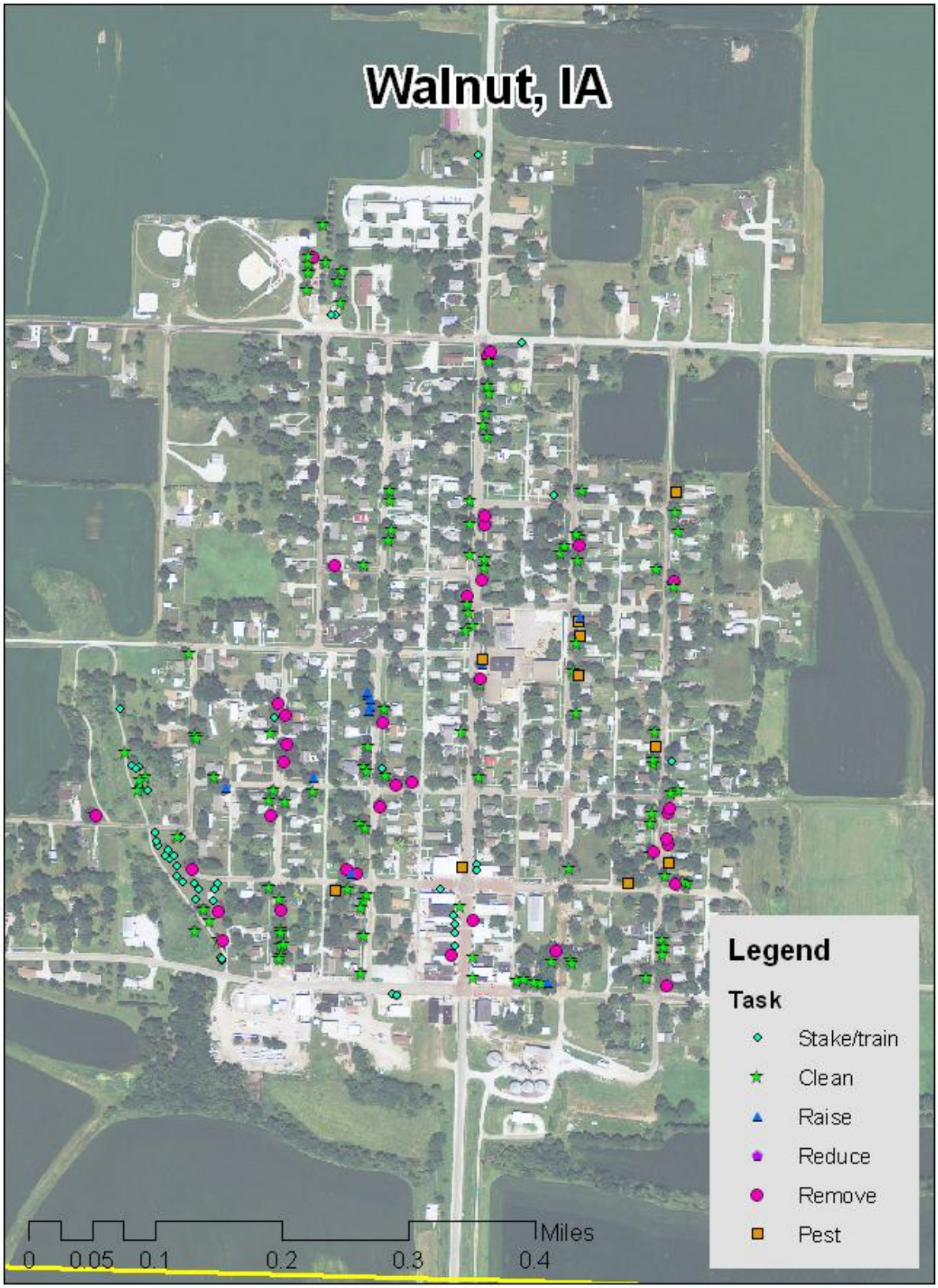


Figure 5: Maintenance Tasks ***City ownership of the trees recommended for removal should be verified prior to any removal***

Appendix C: Walnut Tree Ordinances

CHAPTER 151
TREES AND GRASS

151.01 Definition 151.05 Disease Control
151.02 Planting Restrictions 151.06 Inspection and Removal
151.03 Duty to Trim Trees 151.07 Cutting or Mowing of Grass
151.04 Trimming Trees to be Supervised

151.01 DEFINITION. For use in this chapter, "boulevard" means that part of the street, avenue or highway in the City not covered by sidewalk and lying between the lot line and the curb line; or, on unpaved streets, that part of the street, avenue or highway lying between the lot line and that portion of the street usually traveled by vehicular traffic.

151.02 PLANTING RESTRICTIONS. No tree shall be planted in any boulevard or street except in accordance with the following:
1. Alignment. All tress planted in any street shall be planted in the boulevard midway between the outer line of the sidewalk and the curb. In the event a curb line is not established, trees shall be planted on a line ten (10) feet from the property line.
2. Spacing. Trees shall not be planted on any boulevard which is less than nine (9) feet in width, or contains less than eighty-one (81) square feet of exposed soil surface per tree. Trees shall not be planted closer than twenty (20) feet from street intersections (property lines extended) and ten (10) feet from driveways. If it is at all possible trees should be planted inside the property lines and not between the sidewalk and the curb.
3. Prohibited Trees. No person shall plant in any street any fruit-bearing tree or any tree of the kinds commonly known as cottonwood, poplar, box elder, Chinese elm, evergreen, willow or black walnut.

151.03 DUTY TO TRIM TREES. The owner or agent of the abutting property shall keep the trees on, or overhanging the street, trimmed so that all branches will be at least eighteen (18) feet above the surface of a street, twenty (20) feet above the surface of a primary highway, and eight (8) feet above the sidewalks. If the abutting property owner fails to trim the trees, the City may serve notice on the abutting property owner requiring that such action be taken within five (5) days. If such action is not taken within that time, the City may perform the required action and assess the costs against the abutting property for collection in the same manner as a property tax.
(Code of Iowa, Sec. 364.12[2c, d, & e])

151.04 TRIMMING TREES TO BE SUPERVISED. Except as allowed in Section 151.03, it is unlawful for any person to trim or cut any tree in a street or public place unless the work is done under the supervision of the City.

151.05 DISEASE CONTROL. Any dead, diseased or damaged tree or shrub which may harbor serious insect or disease pests or disease injurious to other trees is hereby declared to be a nuisance.

151.06 INSPECTION AND REMOVAL. The Council shall inspect or cause to be inspected any trees or shrubs in the City reported or suspected to be infected with or damaged by any disease or insect or disease pests, and such trees and shrubs shall be subject to removal as follows:
1. City Property. If it is determined that any such condition exists on any public property, including the strip between the curb and the lot line of private property, the Council may cause such condition to be corrected by treatment or removal. The Council may also order the removal of any trees on the streets of the City which interfere with the making of improvements or with travel thereon.
2. Private Property. If it is determined with reasonable certainty that any such condition exists on private property and that the danger to other trees or to adjoining property or passing motorists or pedestrians is imminent, the Council shall notify by certified mail the owner, occupant or person in charge of such property to correct such condition by treatment or removal within fourteen (14) days of said notification. If such owner, occupant or person in charge of said property fails to comply within 14 days of receipt of notice, the Council may cause the condition to be corrected and the cost assessed against the property.
(Code of Iowa, Sec. 364.12[3b & h])

151.07 CUTTING OR MOWING OF GRASS.
1. Duty to Cut and Mow Lawns and Lots. The owner of any property shall cut and mow all lawns and lots so that such growth shall be less than four (4) inches at all times.
2. Cutting and Mowing by City. If a property owner refuses or fails to cut and mow lawns and lots within forty-eight (48) hours after being delivered a notice from the City to perform such action, the Council may require said work to be done and the cost and expenses thereof shall be assessed to the property owner after due notice is given. The amount of such assessment shall be certified to the County Auditor as provided by law and the same shall be collected with and in the same manner as general property taxes.

The State of Iowa is an Equal Opportunity Employer and provider of ADA services.

Federal law prohibits employment discrimination on the basis of race, color, age, religion, national origin, sex or disability. State law prohibits employment discrimination on the basis of race, color, creed, age, sex, sexual orientation, gender identity, national origin, religion, pregnancy, or disability. State law also prohibits public accommodation (such as access to services or physical facilities) discrimination on the basis of race, color, creed, religion, sex, sexual orientation, gender identity, religion, national origin, or disability. If you believe you have been discriminated against in any program, activity or facility as described above, or if you desire further information, please contact the Iowa Civil Rights Commission, 1-800-457-4416, or write to the Iowa Department of Natural Resources, Wallace State Office Bldg., 502 E. 9th St., Des Moines, IA 50319.

If you need accommodations because of disability to access the services of this Agency, please contact Director Chuck Gipp at 515-281-5918.