2012 COMMUNITY TREE MANAGEMENT PLAN

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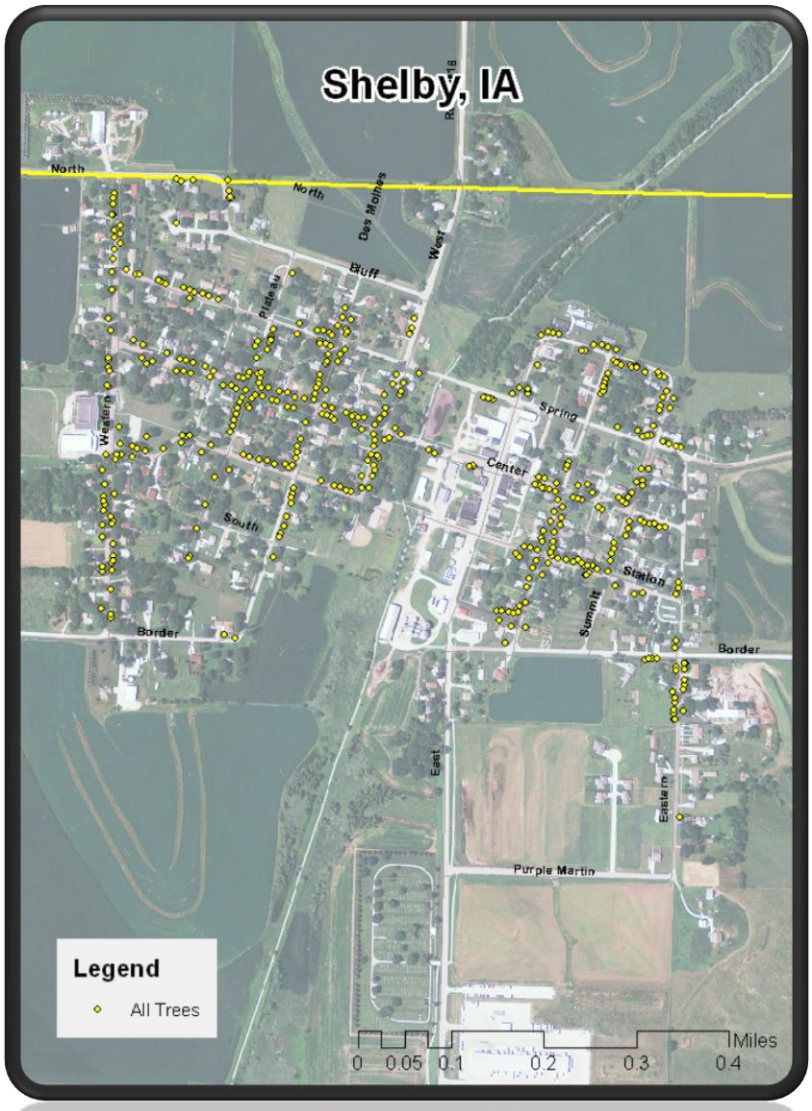

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Executive Summary

Overview

This plan was developed to assist the City of Shelby 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 15% of Shelby'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 440 trees inventoried.

- Shelby's trees provide $122,253 of benefits annually, an average of $150 a tree
- There are over 38 species of trees
- The top three genus are: Maple 41%, Ash 15%, and Oak 10%
- 54% of trees are in need of some type of management
- 28 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 28 trees needing removal, 18 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*
- 4 of the 68 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*HIqC08KqOZlIyknTyIMIfSpJ1cU3EKH*F7hmZYMBaDhDCj0jivi-px1jKSL8TEKs7YPG9gU*Y9EA/CHECKYOURYARDFORFUGITIVES.pdf.

- Check ash trees with a visual survey yearly
- With the current budget it could take 15 years to remove all ash and pay for replacements if they became infested with Emerald Ash Borer – Suggestion: request a budget increase to $11,000 annually and apply for grants to plant replacement trees.

Introduction

This plan was developed to assist Shelby 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 Shelby, these costs can be extended over years and public safety issues from dead and dying ash trees mitigated.

Trees are an important component of Shelby'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 Shelby 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 Shelby's urban forestry goals.

Inventory

In 2012, a tree inventory was conducted that included 100% of the city owned trees in street right of ways (ROWs). 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 440 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. Shelby's trees reduce energy related costs by approximately $24,480 annually (Appendix A, Table 1). These savings are both in Electricity (115.8 MWh) and in Natural Gas (16,009.7 Therms).

Annual Stormwater Benefits

Shelby's trees intercept about 1,351,841 gallons of rainfall or snow melt a year (Appendix A, Table 2). This interception provides $36,637 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 Shelby, it is estimated that trees remove 1,518.3 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 $4,287 (Appendix A, Table 3).

Annual Carbon Benefits

Carbon sequestration and storage reduce the amount of carbon in the atmosphere, mitigating climate change. In Shelby, trees sequester about 311,681 lbs of carbon a year with an associated value of $4,337 (Appendix A, Table 4). In addition, the trees store 5,153,897 lbs of carbon, with a yearly benefit of $38,654 (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. Shelby receives $27,154 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, Shelby's trees provide $96,167 of benefits annually. Benefits of individual trees vary based on size, species, health and location, but on average each of the 440 trees in Shelby provide approximately $219 annually (Appendix A, Table 7).

Forest Structure

Species Distribution

Shelby has over 38 different tree species along city streets and parks (Appendix A, Figure 1). The distribution of trees by genus is as follows:

Maple	179	41%
Ash	68	15%
Oak	42	10%
Linden/basswood	36	8%
Hackberry	28	6%
Walnut	20	5%
Apple	13	3%
Pine	10	2%
Elm	8	2%
Spruce	6	1%
Honeylocust	5	1%
Mulberry	5	1%
Cedar	2	<1%
Pear	2	<1%
Willow	1	<1%
Mimosa	1	<1%
Broadleaf Deciduous other	1	<1%
Birch	1	<1%
Redbud	1	<1%
Evergreen conifer	1	<1%
Ginkgo	1	<1%
Kentucky coffee tree	1	<1%
Juniper	1	<1%
Tulip tree	1	<1%
S. Magnolia	1	<1%
Sycamore	1	<1%

Age Class

Most of Shelby's trees (60.5%) are between 12 and 30 inches in diameter at 4.5 ft (Appendix A, Figure 2). For age, a Bell Curve is preferred and shows the highest amount of trees around 18

inches in diameter at 4.5 ft. Shelby's size curve is nearly perfect, with the highest age class of trees in the 18-24" and 24-30" categories.

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 Shelby indicate that 44% of the trees are in good health, with only 4% of the foliage in poor health, dead or dying (Appendix A, Figure 3 & Appendix B, Figure 3). Similarly, 49% of Shelby'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 15% of the population. This 15% is an estimate of trees that need management follow up.

Management Needs

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

Crown Cleaning	175	40%
Crown Raising	14	3%
Tree Staking	11	2.5%
Tree Removal	28	6%
Treat Pest/Disease	8	2%

Canopy Cover

The canopy cover of Shelby is approximately 14 acres (Appendix A, Figure 4). According to the 2010 census, Shelby occupies 1,050 acres. Thus the canopy cover on city land is about 1.3%.

Land Use and Location

The majority of Shelby'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	90.2%
Park/vacant/other	8%
Industrial/Large commercial	1.8%
Small commercial	0%
Multifamily residential	0%

Location	
Planting strip	53.4%
Other maintained locations	0%
Cutout (surrounded by pavement)	0.9%
Front yard	45.9%

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

Shelby has 21 critical concern trees that need immediate removal. These trees can be seen on the Location of Trees with Recommended Maintenance map (Appendix B, Figure 4). It is recommended to start with the large diameter critical concern trees first. There are 18 trees over 18 inches in diameter at 4.5 ft that should be addressed immediately. Please refer to the seven year maintenance plan at the end of this section. After all of the critical concern removal 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 28 trees with these needs (critical or mature tree immediate: pest/disease follow-up, follow-up by arborist, and mature immediate removals). Critical and immediate trimming activities (clean, raise, and reduce) should follow the preceding activities, and include 20 trees.

PRIORITY TASK	# BY TASK UNDER CRITICAL CONCERN	# BY TASK UNDER MATURE TREE IMMEDIATE	# BY TASK UNDER MATURE TREE ROUTINE	# BY TASK UNDER YOUNG TREE IMMEDIATE	# BY TASK UNDER YOUNG TREE ROUTINE
NONE: For immediate and critical concern activities, this means the tree needs follow-up by an arborist, for routine activities this means to treat the trees via routine maintenance	16	4	160	2	22
STAKE/TRAIN			3	1	7
CLEAN	5	14	152		4
RAISE		1	3		
REDUCE					
REMOVE	21	1	6		
TREAT PEST/DISEASE (For most this means address carpenter ant activity)	6	1	1		
TOTAL	48	21	335	3	33

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 28 removals, 4 are ash trees. There are a total of 68 ash trees, and 4 of those have signs and symptoms that have been associated with EAB. In addition, there are 9 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 5 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 Shelby.

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 (41%) (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 additional species to avoid, listed under 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 7 years (With no additional funding)

YEAR	MAINTENANCE TASK	PRICE PER UNIT	SUBTOTAL	YEARLY EXPENDITURE
2013	CRTICIAL REMOVALS – START WITH C.R.'S >18" DIA (18 TOTAL). 18 WILL BE DONE EACH OF NEXT 2 YEARS.	$500/TREE X 18 TREES	$9,000	**Assuming a necessary budget increase to $11,000 for current critical hazard trees, and to budget for future ash removals and planting replacement trees.
	CRITICAL OTHER TASKS (cleaning, pest treatments, trees needing further arborist investigation)	$75/TREE X 27 TREES	$2,025	
	VISUAL SURVEY FOR EAB SIGNS AND SYMPTOMS			
2014	REMAINING REMOVAL TREES	$500/TREE X 10 TREES	$5,000	$11,000
	REMAINING OTHER IMMEDIATE TREATMENTS	$75/TREE X 20 TREES	$1,500	
	BUDGET FOR POTENTIAL ASH REMOVALS AND REPLACEMENTS** SEE INFO BELOW**		$4,500	
	VISUAL SURVEY FOR EAB SIGNS AND SYMPTOMS			
2015 AND 2016	START PLANTING TREES TO REPLACE REMOVED TREES (28 REMOVALS X 1.2 = 34). $100/TREE FOR REPLACEMENT, $50/TREE FOR WATERING AND MAINTENANCE COSTS.	$150/TREE X 17 TREES	$2,550	$11,000
	START ROUTINE TRIMMING	38 TREES X $6.50/TREE (ON CITY WIDE CONTRACT)	$247	
	BUDGET FOR EAB REMOVALS AND REPLACEMENTS		$8,200	
	VISUAL SURVEY FOR EAB SIGNS AND SYMPTOMS			
2017	FINISH ROUTINE TRIMMING (440 TOTAL TREES – (38 TREES X 2)) = 364 TREES LEFT	364 TREES X $6.50/TREE UNDER CITY WIDE CONTRACT	$2,366	$11,000
	BUDGET FOR EAB REMOVALS AND REPLACEMENTS		$8,600	

	VISUAL SURVEY FOR EAB SIGNS AND SYMPTOMS	
2018	REMAINING BUDGET FOR EAB REMOVALS AND REPLACEMENTS	$11,000
2019	REMAINING BUDGET FOR EAB REMOVALS AND REPLACEMENTS	$3,050

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

**Critical removals and trimmings are immediate safety hazards and must be addressed within one year if possible. To get all of the critical concern trees addressed within one year, the 2013 budget was increased to $11,000 to accommodate this. Using this same budget (though not currently realistic without real budget increase), I was able to achieve all of your current tree maintenance issues, while also factoring in all 64 ash tree removals and replacements (4 ash trees are already removed under normal maintenance activities) should EAB come to Shelby. 64 removals cost $32,000. 64 removals x 1.2 tree replacement factor = 77 replacement trees, or $11,500 ($150/tree). Total for EAB related removals and replacements equates to $43,550, which was allocated out over all years in this budget/maintenance schedule, as remaining funds were available up to $11,000. 2019 represents the final year, and final payment for EAB removal/replacement costs. At a very minimum, the existing maintenance issues should be completed and budgeted for now. It would be extremely wise to anticipate ash issues, and budget for those expenses also.

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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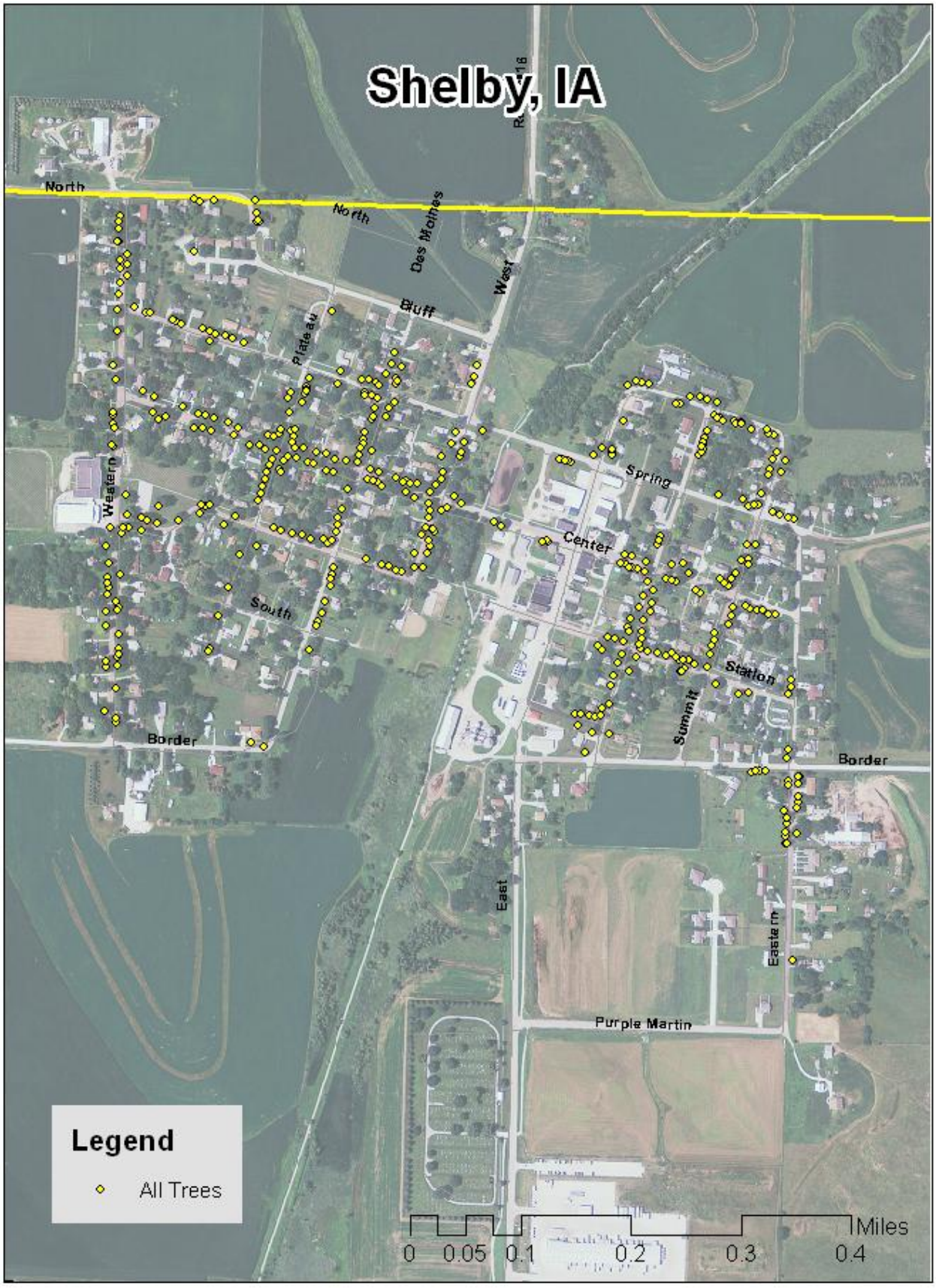
Appendix A: i-Tree Data


Shelby, IA
North
North
Des Moines
West
Bluff
Plateau
Western
Spring
Center
South
Station
Summit
Border
Border
East
Eastern
Purple Martin
Legend
All Trees
0 0.05 0.1 0.2 0.3 0.4
Miles

Appendix A: i-Tree Data

Table 1: Annual Energy Benefits

Shelby

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	31.4	2,383	4,127.6	4,045	6,428	(N/A)	21.4	26.3	68.39
Green ash	18.5	1,401	2,545.9	2,495	3,896	(N/A)	14.3	15.9	61.84
Norway maple	13.1	998	1,881.3	1,844	2,841	(N/A)	12.3	11.6	52.62
American basswood	10.0	757	1,455.2	1,426	2,183	(N/A)	7.1	8.9	70.41
Northern hackberry	9.5	724	1,362.1	1,335	2,059	(N/A)	6.4	8.4	73.54
Northern pin oak	6.4	484	940.2	921	1,405	(N/A)	5.2	5.7	61.09
Sugar maple	5.9	450	801.3	785	1,235	(N/A)	4.6	5.1	61.77
Black walnut	5.8	439	788.2	772	1,211	(N/A)	4.6	5.0	60.55
Apple	1.1	85	174.7	171	256	(N/A)	3.0	1.1	19.69
Northern red oak	1.6	119	215.6	211	331	(N/A)	2.3	1.4	33.06
Maple	1.5	111	183.3	180	291	(N/A)	2.1	1.2	32.33
Bur oak	1.1	81	153.3	150	232	(N/A)	2.1	1.0	25.72
Blue spruce	0.6	49	94.3	92	141	(N/A)	1.8	0.6	17.61
Spruce	0.6	45	82.6	81	126	(N/A)	1.4	0.5	20.97
White ash	1.3	101	185.4	182	283	(N/A)	1.1	1.2	56.50
Honeylocust	1.6	123	212.8	209	332	(N/A)	1.1	1.4	66.38
Mulberry	0.5	41	78.8	77	118	(N/A)	1.1	0.5	23.61
Littleleaf linden	0.6	46	86.6	85	131	(N/A)	1.1	0.5	26.27
Other street trees	4.7	354	640.6	628	982	(N/A)	7.3	4.0	30.69
Citywide total	115.8	8,791	16,009.7	15,689	24,480	(N/A)	100.0	100.0	55.64

Table 2: Annual Stormwater Benefits

Shelby

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	466,992	12,656	(N/A)	21.4	34.5	134.64
Green ash	212,892	5,770	(N/A)	14.3	15.8	91.58
Norway maple	121,391	3,290	(N/A)	12.3	9.0	60.92
American basswood	123,388	3,344	(N/A)	7.1	9.1	107.87
Northern hackberry	88,828	2,407	(N/A)	6.4	6.6	85.98
Northern pin oak	70,290	1,905	(N/A)	5.2	5.2	82.83
Sugar maple	68,055	1,844	(N/A)	4.6	5.0	92.22
Black walnut	62,562	1,696	(N/A)	4.6	4.6	84.78
Apple	5,801	157	(N/A)	3.0	0.4	12.09
Northern red oak	13,768	373	(N/A)	2.3	1.0	37.31
Maple	10,068	273	(N/A)	2.1	0.7	30.32
Bur oak	10,524	285	(N/A)	2.1	0.8	31.69
Blue spruce	8,502	230	(N/A)	1.8	0.6	28.80
Spruce	9,263	251	(N/A)	1.4	0.7	41.84
White ash	13,513	366	(N/A)	1.1	1.0	73.25
Honeylocust	16,736	454	(N/A)	1.1	1.2	90.71
Mulberry	1,931	52	(N/A)	1.1	0.1	10.46
Littleleaf linden	4,641	126	(N/A)	1.1	0.3	25.15
Other street trees	42,697	1,157	(N/A)	7.3	3.2	36.16
Citywide total	1,351,841	36,637	(N/A)	100.0	100.0	83.27

Table 3: Annual Air Quality Benefits

Shelby

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	81.6	13.8	39.9	3.6	440	148.0	21.7	20.7	142.0	926	-42.2	-158	429.2	1,207	(N/A)	21.4	12.84
Green ash	26.8	4.3	12.7	1.2	143	88.3	12.8	12.2	83.6	550	0.0	0	242.1	692	(N/A)	14.3	10.99
Norway maple	24.7	4.3	12.2	1.1	134	63.6	9.2	8.8	59.6	394	-5.8	-22	177.6	506	(N/A)	12.3	9.37
American basswood	17.7	3.0	8.5	0.8	95	48.5	7.0	6.7	45.2	300	-14.8	-56	122.6	339	(N/A)	7.0	10.95
Northern hackberry	13.4	2.3	6.9	0.6	73	46.1	6.7	6.4	43.3	286	0.0	0	125.6	359	(N/A)	6.4	12.83
Northern pin oak	15.6	2.7	7.5	0.7	84	31.1	4.5	4.3	28.9	192	-3.6	-13	91.7	263	(N/A)	5.2	11.42
Sugar maple	9.1	1.6	4.5	0.4	49	28.2	4.1	3.9	26.9	176	-7.1	-27	71.5	198	(N/A)	4.5	9.92
Black walnut	7.5	1.2	3.6	0.3	40	27.6	4.0	3.8	26.2	172	0.0	0	74.3	212	(N/A)	4.5	10.60
Apple	2.0	0.3	0.9	0.1	11	5.5	0.8	0.8	5.1	34	0.0	0	15.4	44	(N/A)	3.0	3.42
Northern red oak	2.7	0.5	1.4	0.1	15	7.5	1.1	1.0	7.1	47	-3.9	-15	17.6	47	(N/A)	2.3	4.70
Maple	2.1	0.4	1.0	0.1	11	6.8	1.0	1.0	6.6	43	-0.8	-3	18.3	52	(N/A)	2.0	5.73
Bur oak	1.1	0.2	0.6	0.0	6	5.2	0.7	0.7	4.9	32	0.0	0	13.4	38	(N/A)	2.0	4.22
Blue spruce	1.1	0.2	0.9	0.1	7	3.1	0.4	0.4	2.9	19	-2.9	-11	6.3	15	(N/A)	1.8	1.93
Spruce	1.0	0.2	0.9	0.1	7	2.8	0.4	0.4	2.7	18	-3.8	-14	4.7	10	(N/A)	1.4	1.69
White ash	1.5	0.2	0.8	0.1	8	6.4	0.9	0.9	6.0	40	0.0	0	16.7	48	(N/A)	1.1	9.53
Honeylocust	3.2	0.5	1.5	0.1	17	7.7	1.1	1.1	7.4	48	-2.4	-9	20.2	56	(N/A)	1.1	11.17
Mulberry	0.5	0.1	0.3	0.0	3	2.6	0.4	0.4	2.4	16	0.0	0	6.7	19	(N/A)	1.1	3.78
Littleleaf linden	0.6	0.1	0.3	0.0	3	3.0	0.4	0.4	2.8	18	-0.3	-1	7.3	21	(N/A)	1.1	4.11
Other street trees	6.0	1.0	3.3	0.3	33	22.3	3.2	3.1	21.1	139	-3.3	-12	57.1	160	(N/A)	7.3	4.99
Citywide total	218.4	36.9	107.7	9.9	1,179	554.2	80.6	76.8	524.8	3,449	-91.0	-341	1,518.3	4,287	(N/A)	100.0	9.74

Table 4: Annual Carbon Stored

Shelby

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	1,866,084	13,996	(N/A)	21.4	36.2	148.89
Green ash	872,746	6,546	(N/A)	14.3	16.9	103.90
Norway maple	407,099	3,053	(N/A)	12.3	7.9	56.54
American	660,399	4,953	(N/A)	7.1	12.8	159.77
Northern	195,743	1,468	(N/A)	6.4	3.8	52.43
Northern pin oak	257,586	1,932	(N/A)	5.2	5.0	84.00
Sugar maple	263,329	1,975	(N/A)	4.6	5.1	98.75
Black walnut	244,319	1,832	(N/A)	4.6	4.7	91.62
Apple	31,340	235	(N/A)	3.0	0.6	18.08
Northern red oak	56,352	423	(N/A)	2.3	1.1	42.26
Maple	23,795	178	(N/A)	2.1	0.5	19.83
Bur oak	35,893	269	(N/A)	2.1	0.7	29.91
Blue spruce	7,475	56	(N/A)	1.8	0.2	7.01
Spruce	8,626	65	(N/A)	1.4	0.2	10.78
White ash	34,865	261	(N/A)	1.1	0.7	52.30
Honeylocust	41,012	308	(N/A)	1.1	0.8	61.52
Mulberry	8,068	61	(N/A)	1.1	0.2	12.10
Littleleaf linden	14,049	105	(N/A)	1.1	0.3	21.07
Other street trees	56,750	938	(N/A)	7.3	2.4	29.32
Citywide total	5,153,897	38,654	(N/A)	100.0	100.0	87.85

Table 5: Annual Carbon Sequestered

Shelby

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	134,716	1,010	-8,957	-18	-67	52,674	395	178,415	1,338	(N/A)	21.4	37.1	14.24
Green ash	44,601	335	-4,189	-12	-32	30,956	232	71,356	535	(N/A)	14.3	14.8	8.49
Norway maple	19,207	144	-1,954	-11	-15	22,047	165	39,289	295	(N/A)	12.3	8.2	5.46
American basswood	36,870	277	-3,170	-6	-24	16,719	125	50,412	378	(N/A)	7.1	10.5	12.20
Northern hackberry	12,021	90	-940	-5	-7	16,005	120	27,080	203	(N/A)	6.4	5.6	7.25
Northern pin oak	7,557	57	-1,236	-4	-9	10,688	80	17,004	128	(N/A)	5.2	3.5	5.54
Sugar maple	13,535	102	-1,264	-4	-10	9,948	75	22,215	167	(N/A)	4.6	4.6	8.33
Black walnut	13,857	104	-1,173	-4	-9	9,691	73	22,371	168	(N/A)	4.6	4.7	8.39
Apple	1,936	15	-150	-3	-1	1,874	14	3,657	27	(N/A)	3.0	0.8	2.11
Northern red oak	2,051	15	-270	-2	-2	2,637	20	4,415	33	(N/A)	2.3	0.9	3.31
Maple	2,142	16	-114	-2	-1	2,460	18	4,486	34	(N/A)	2.1	0.9	3.74
Bur oak	2,628	20	-172	-2	-1	1,797	13	4,251	32	(N/A)	2.1	0.9	3.54
Blue spruce	484	4	-36	-2	0	1,072	8	1,519	11	(N/A)	1.8	0.3	1.42
Spruce	648	5	-41	-1	0	992	7	1,598	12	(N/A)	1.4	0.3	2.00
White ash	3,562	27	-167	-1	-1	2,229	17	5,623	42	(N/A)	1.1	1.2	8.43
Honeylocust	5,319	40	-197	-1	-1	2,726	20	7,847	59	(N/A)	1.1	1.6	11.77
Mulberry	801	6	-39	-1	0	902	7	1,664	12	(N/A)	1.1	0.4	2.50
Littleleaf linden	1,810	14	-67	-1	-1	1,027	8	2,769	21	(N/A)	1.1	0.6	4.15
Other street trees	7,936	60	-601	-6	-5	7,828	59	15,157	114	(N/A)	7.3	3.2	3.55
Citywide total	311,681	2,338	-24,739	-86	-186	194,273	1,457	481,130	3,608	(N/A)	100.0	100.0	8.20

Table 6: Annual Social and Aesthetic Benefits

Shelby

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	10,320	(N/A)	21.4	38.0	109.79
Green ash	3,586	(N/A)	14.3	13.2	56.92
Norway maple	1,820	(N/A)	12.3	6.7	33.70
American basswood	2,551	(N/A)	7.1	9.4	82.30
Northern hackberry	1,609	(N/A)	6.4	5.9	57.46
Northern pin oak	669	(N/A)	5.2	2.5	29.08
Sugar maple	1,398	(N/A)	4.6	5.2	69.88
Black walnut	1,141	(N/A)	4.6	4.2	57.03
Apple	113	(N/A)	3.0	0.4	8.66
Northern red oak	168	(N/A)	2.3	0.6	16.82
Maple	301	(N/A)	2.1	1.1	33.42
Bur oak	271	(N/A)	2.1	1.0	30.07
Blue spruce	156	(N/A)	1.8	0.6	19.47
Spruce	173	(N/A)	1.4	0.6	28.79
White ash	439	(N/A)	1.1	1.6	87.77
Honeylocust	1,270	(N/A)	1.1	4.7	253.94
Mulberry	46	(N/A)	1.1	0.2	9.17
Littleleaf linden	210	(N/A)	1.1	0.8	41.90
Other street trees	916	(N/A)	7.3	3.4	28.64
Citywide total	27,154	(N/A)	100.0	100.0	61.71

Table 7: Summary of Benefits in Dollars

Shelby

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	6,428	1,338	1,207	12,656	10,320	31,951	(±0)	33.2
Green ash	3,896	535	692	5,770	3,586	14,479	(±0)	15.1
Norway maple	2,841	295	506	3,290	1,820	8,752	(±0)	9.1
American basswood	2,183	378	339	3,344	2,551	8,795	(±0)	9.1
Northern hackberry	2,059	203	359	2,407	1,609	6,638	(±0)	6.9
Northern pin oak	1,405	128	263	1,905	669	4,369	(±0)	4.5
Sugar maple	1,235	167	198	1,844	1,398	4,842	(±0)	5.0
Black walnut	1,211	168	212	1,696	1,141	4,427	(±0)	4.6
Apple	256	27	44	157	113	598	(±0)	0.6
Northern red oak	331	33	47	373	168	952	(±0)	1.0
Maple	291	34	52	273	301	950	(±0)	1.0
Bur oak	231	32	38	285	271	857	(±0)	0.9
Blue spruce	141	11	15	230	156	554	(±0)	0.6
Spruce	126	12	10	251	173	572	(±0)	0.6
White ash	283	42	48	366	439	1,177	(±0)	1.2
Honeylocust	332	59	56	454	1,270	2,170	(±0)	2.3
Mulberry	118	12	19	52	46	248	(±0)	0.3
Littleleaf linden	131	21	21	126	209	508	(±0)	0.5
Other street trees	982	114	160	1,157	916	3,329	(±0)	3.5
Citywide Total	24,480	3,608	4,287	36,637	27,154	96,167	(±0)	100.0

Table 8: Summary of Shelby Maintenance Recommendations

Shelby

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)	17	14	1	0	0	1	0	0	0	33	7.50
Young tree (immediate)	0	1	0	1	0	0	0	0	1	3	0.68
Mature tree (routine)	2	3	41	59	83	80	39	22	6	335	76.14
Mature tree (immediate)	0	0	0	2	5	9	3	2	0	21	4.77
Critical concern (public safety)	0	0	1	4	6	16	13	5	3	48	10.91
Citywide total	19	18	43	66	94	106	55	29	10	440	100.00

Table 9: Summary of tasks associated with recommended maintenance activity levels (from Table 8)

Shelby

Priority Task Summary for Public Trees (None)

11/10/2012

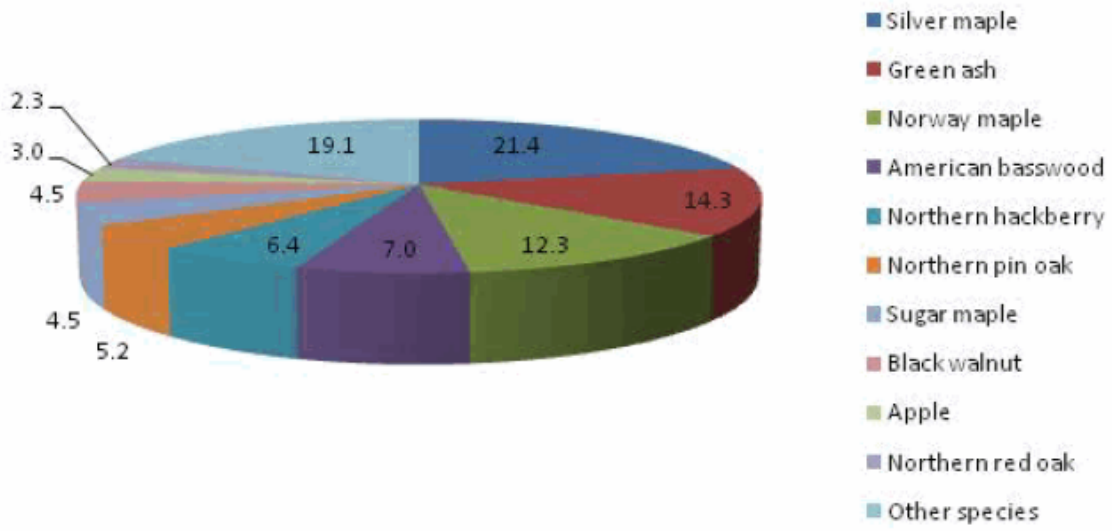
	DBH Class (in)									
Zone	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42	Total
1	12	13	29	32	41	39	21	13	4	204
Citywide total	12	13	29	32	41	39	21	13	4	204

	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	29	32	41	39	21	13	4	204	46.36
Stake/Train	6	3	1	1	0	0	0	0	0	11	2.50
Clean	1	2	10	25	47	50	26	10	4	175	39.77
Raise	0	0	0	1	2	5	2	3	1	14	3.18
Reduce	0	0	0	0	0	0	0	0	0	0	0.00
Remove	0	0	3	6	3	9	6	1	0	28	6.36
Treat pest/disease	0	0	0	1	1	3	0	2	1	8	1.82
Citywide total	19	18	43	66	94	106	55	29	10	440	100.00

Shelby

Species Distribution of Public Trees (%)

11/10/2012



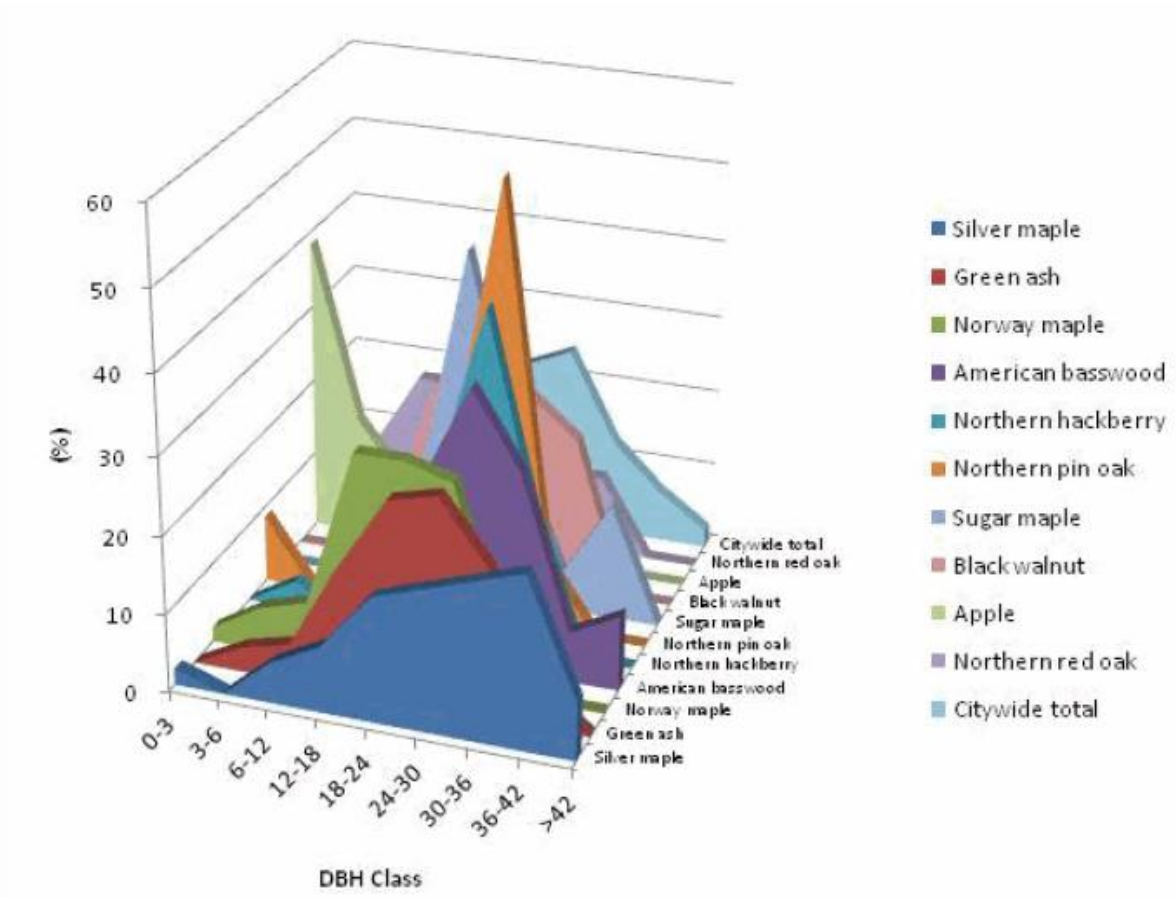
Species	Percent
Silver maple	21.4
Green ash	14.3
Norway maple	12.3
American basswood	7.0
Northern hackberry	6.4
Northern pin oak	5.2
Sugar maple	4.5
Black walnut	4.5
Apple	3.0
Northern red oak	2.3
Other species	19.1
Total	100.0

Figure 1: Species Distribution

Shelby

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	2.1	0.0	5.3	8.5	16.0	18.1	20.2	22.3	7.4
Green ash	0.0	3.2	4.8	15.9	25.4	27.0	19.0	4.8	0.0
Norway maple	1.9	5.6	7.4	27.8	27.8	25.9	3.7	0.0	0.0
American basswood	0.0	0.0	0.0	0.0	22.6	35.5	25.8	6.5	9.7
Northern hackberry	0.0	3.6	0.0	14.3	21.4	42.9	17.9	0.0	0.0
Northern pin oak	8.7	0.0	0.0	4.3	21.7	56.5	8.7	0.0	0.0
Sugar maple	0.0	0.0	0.0	15.0	45.0	20.0	5.0	15.0	0.0
Black walnut	0.0	0.0	5.0	25.0	25.0	25.0	20.0	0.0	0.0
Apple	38.5	15.4	7.7	7.7	23.1	7.7	0.0	0.0	0.0
Northern red oak	10.0	10.0	20.0	20.0	20.0	10.0	10.0	0.0	0.0
Citywide total	4.3	4.1	9.8	15.0	21.4	24.1	12.5	6.6	2.3

Figure 2: Relative Age Class

Shelby

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

11/10/2012

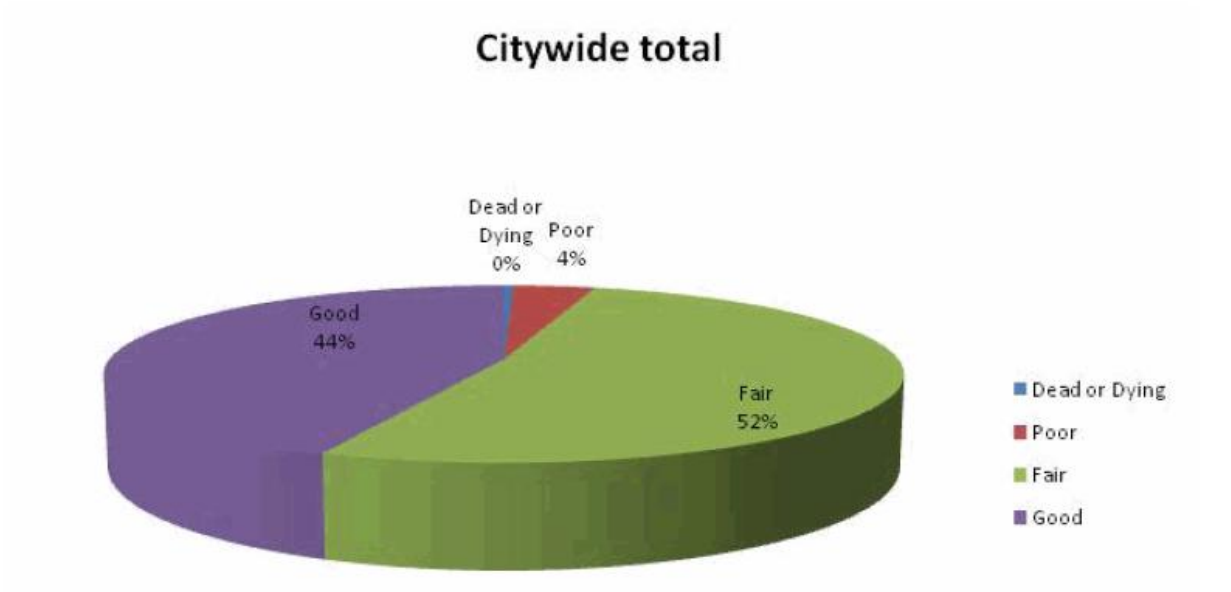


Figure 3: Foliage Condition

Shelby

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

11/10/2012

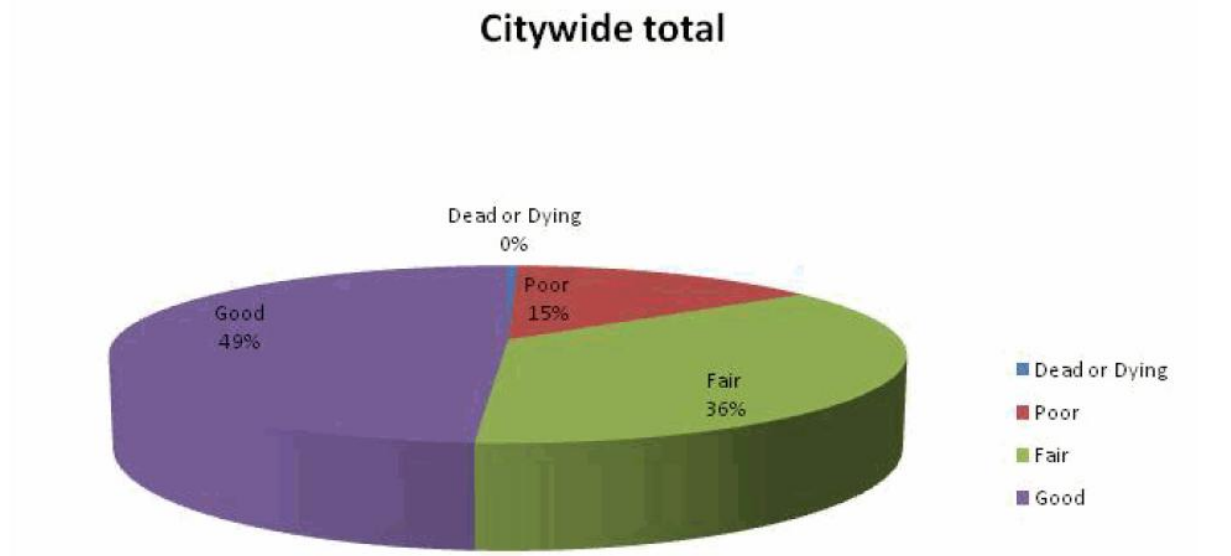
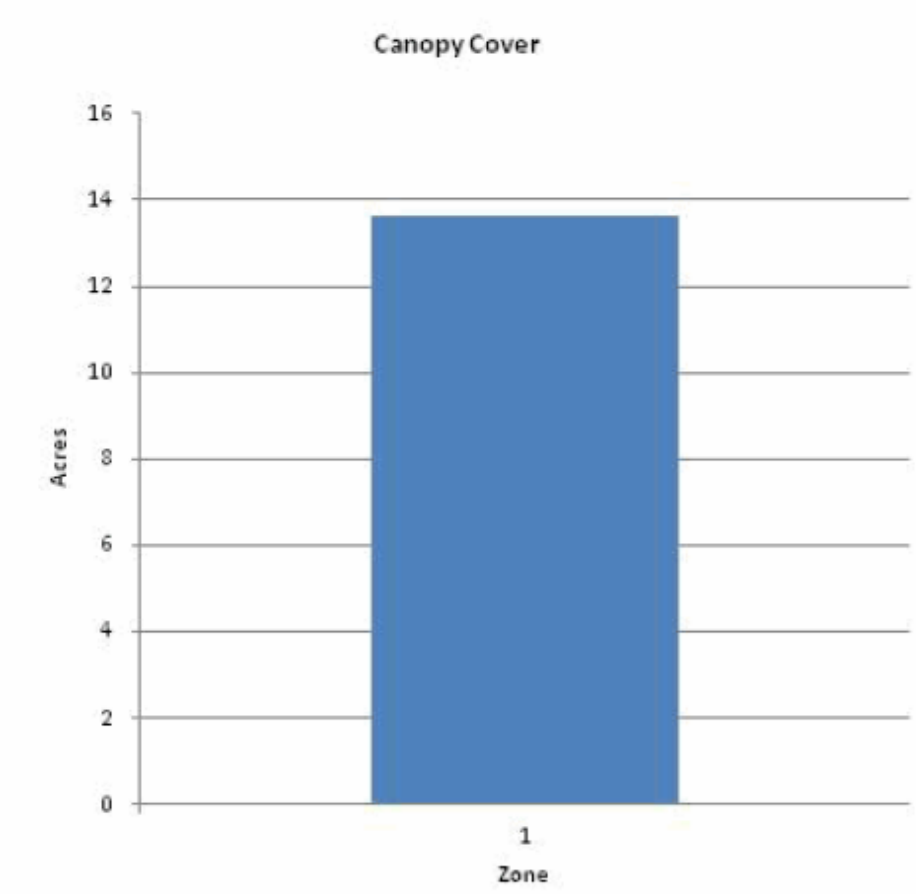


Figure 4: Wood Condition

Shelby

Canopy Cover of Public Trees (Acres)

11/10/2012



Zone	Acres	% of Total Canopy Cover
1	14	100.0
Citywide total	14	100.0

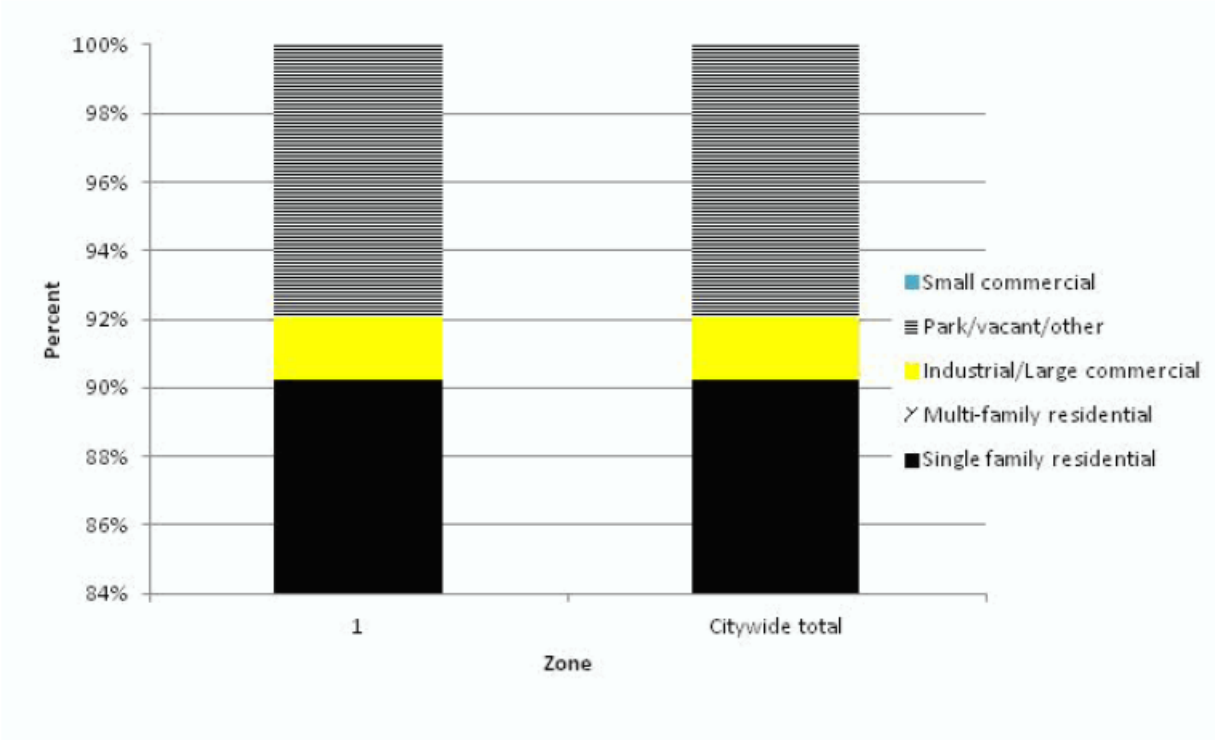
	Total Land Area	Total Street and Sidewalk Area	Total Canopy Cover	Canopy Cover as % of Total Land Area	Canopy Cover as % of Total Streets and Sidewalks
Citywide	0	0	14		

Figure 5: Canopy Cover in Acres

Shelby

Land Use of Public Trees by Zone (%)

11/10/2012



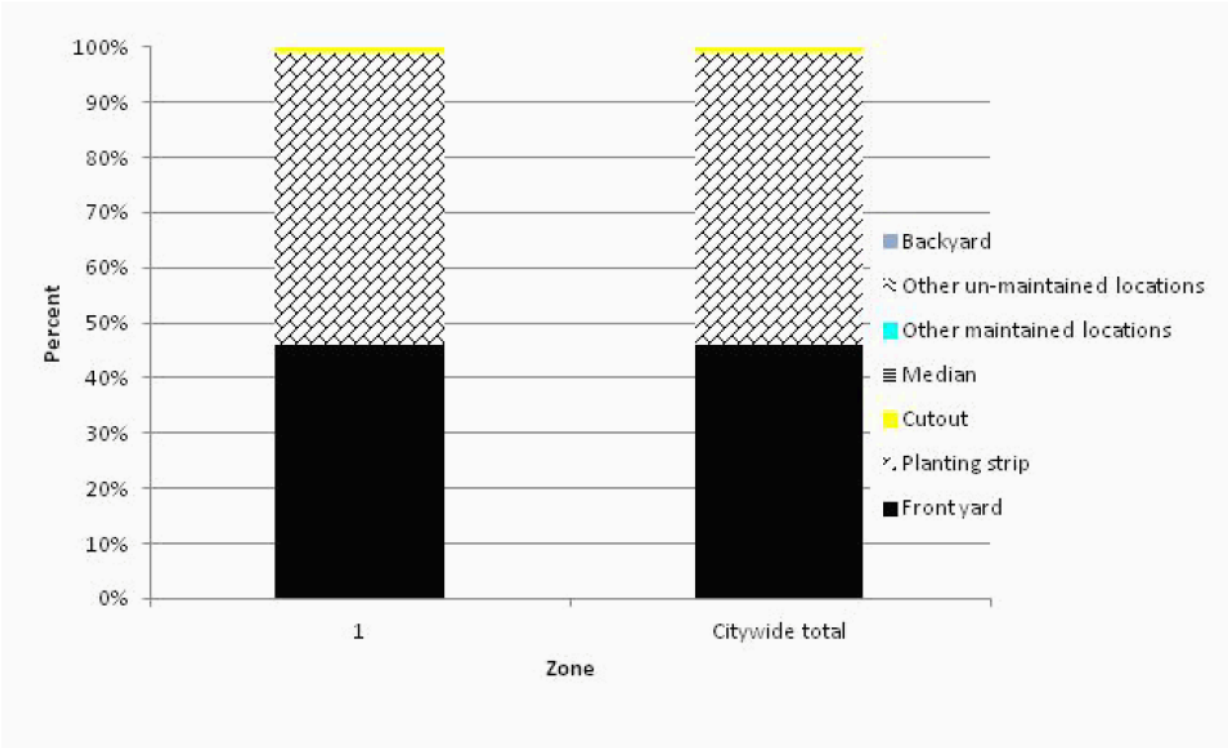
Zone	Single family residential	Multi-family residential	Industrial/ Large commercial	Park/vacant/ other	Small commercial
1	90.2	0.0	1.8	8.0	0.0
Citywide total	90.2	0.0	1.8	8.0	0.0

Figure 6: Land Use of city/park trees

Shelby

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	45.9	53.2	0.9	0.0	0.0	0.0	0.0
Citywide total	45.9	53.2	0.9	0.0	0.0	0.0	0.0

Figure 7: Location of city/park trees

Appendix B: ArcGIS Mapping

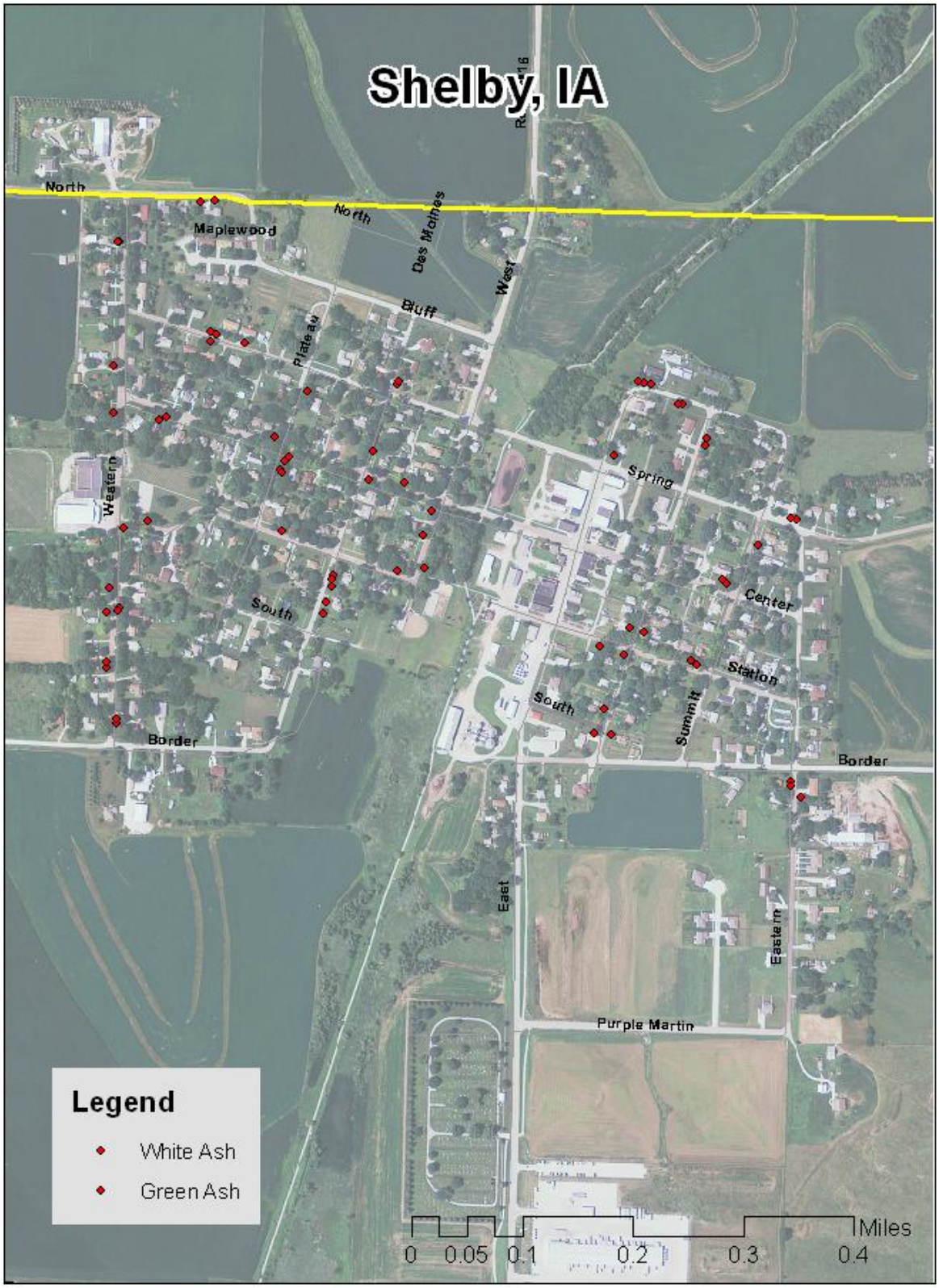


Figure 1: Location of Ash Trees

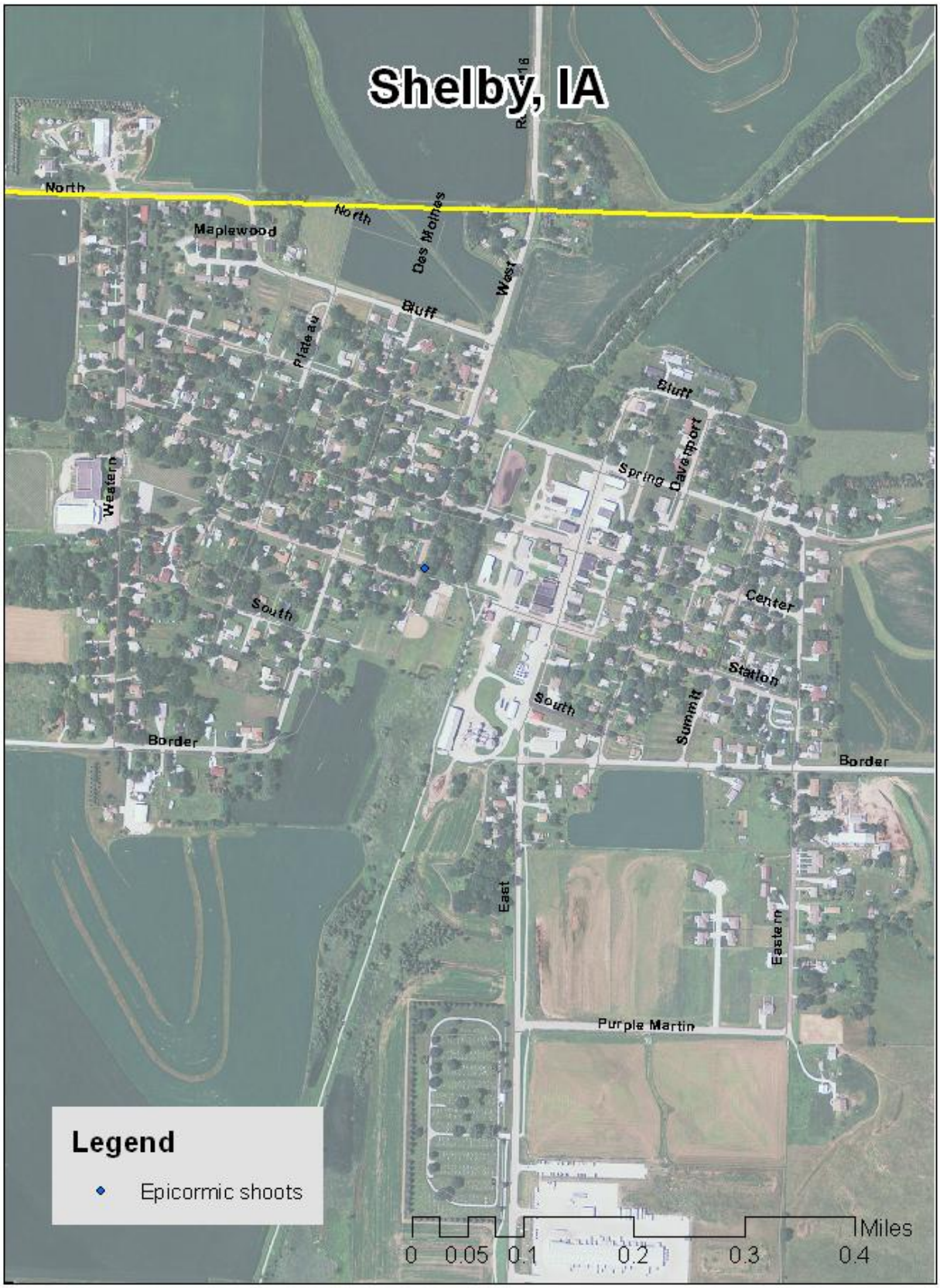


Figure 2: Location of EAB symptoms

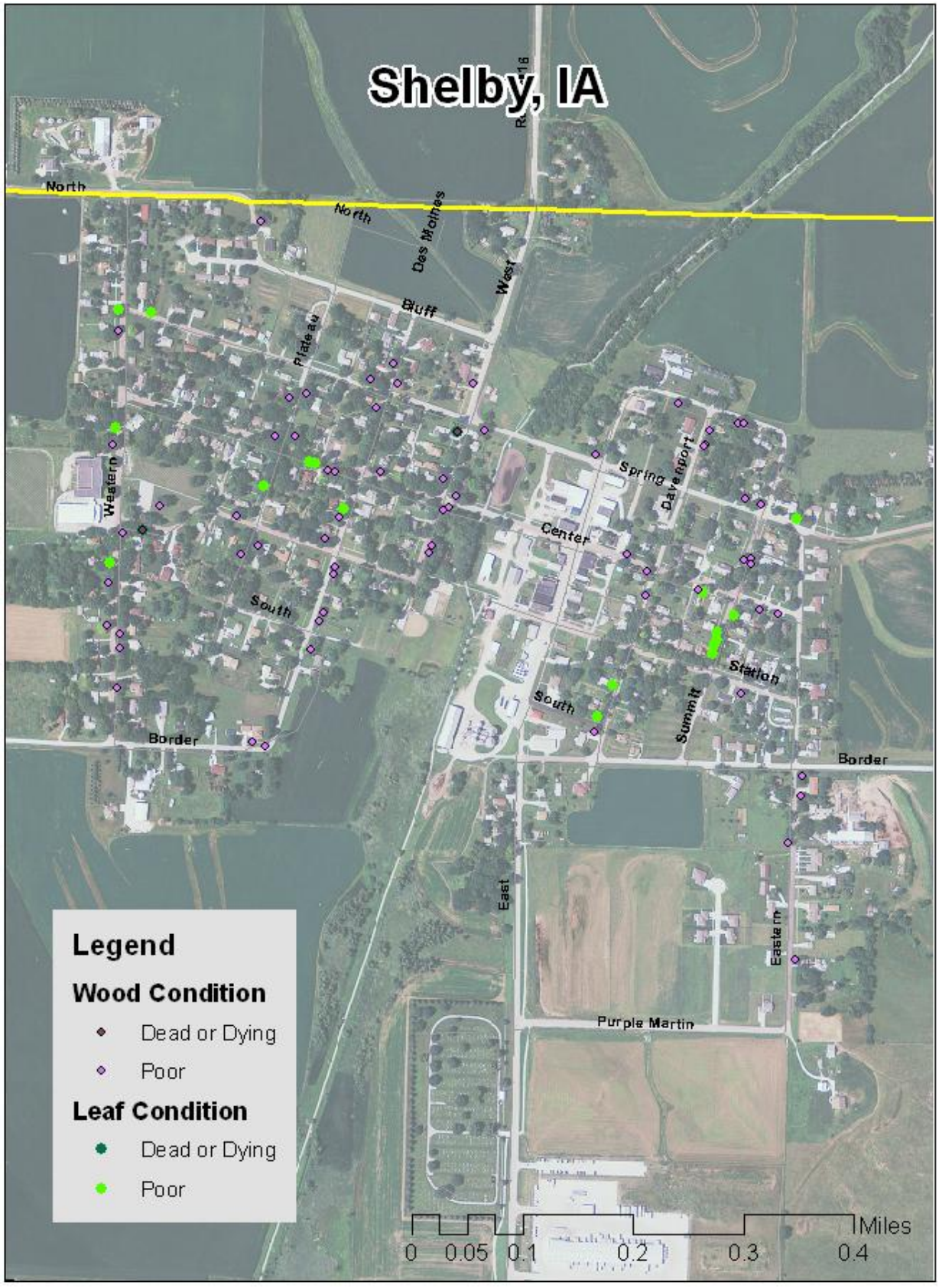


Figure 3: Location of Poor Condition Trees

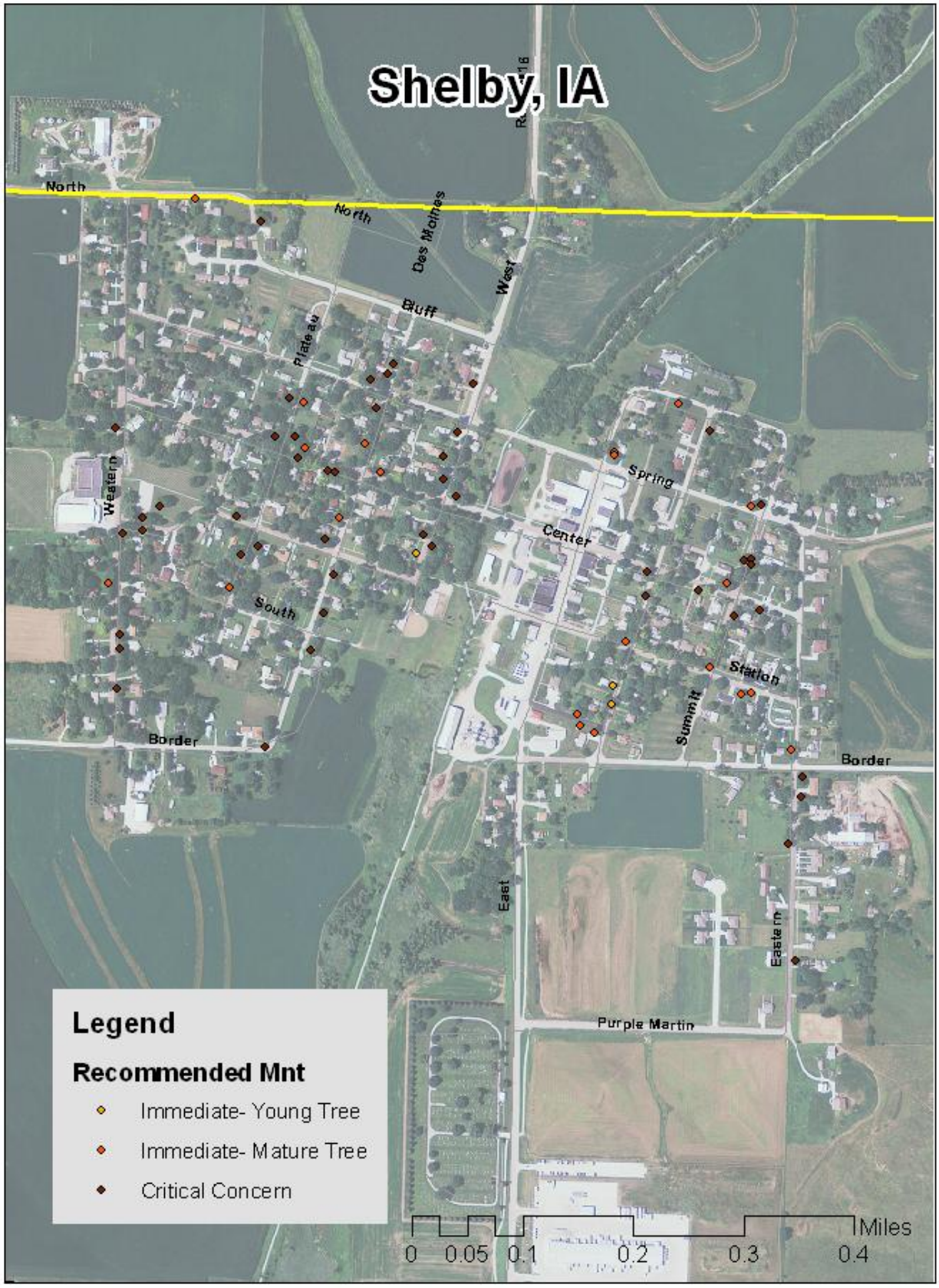


Figure 4: Location of Trees with Recommended Maintenance

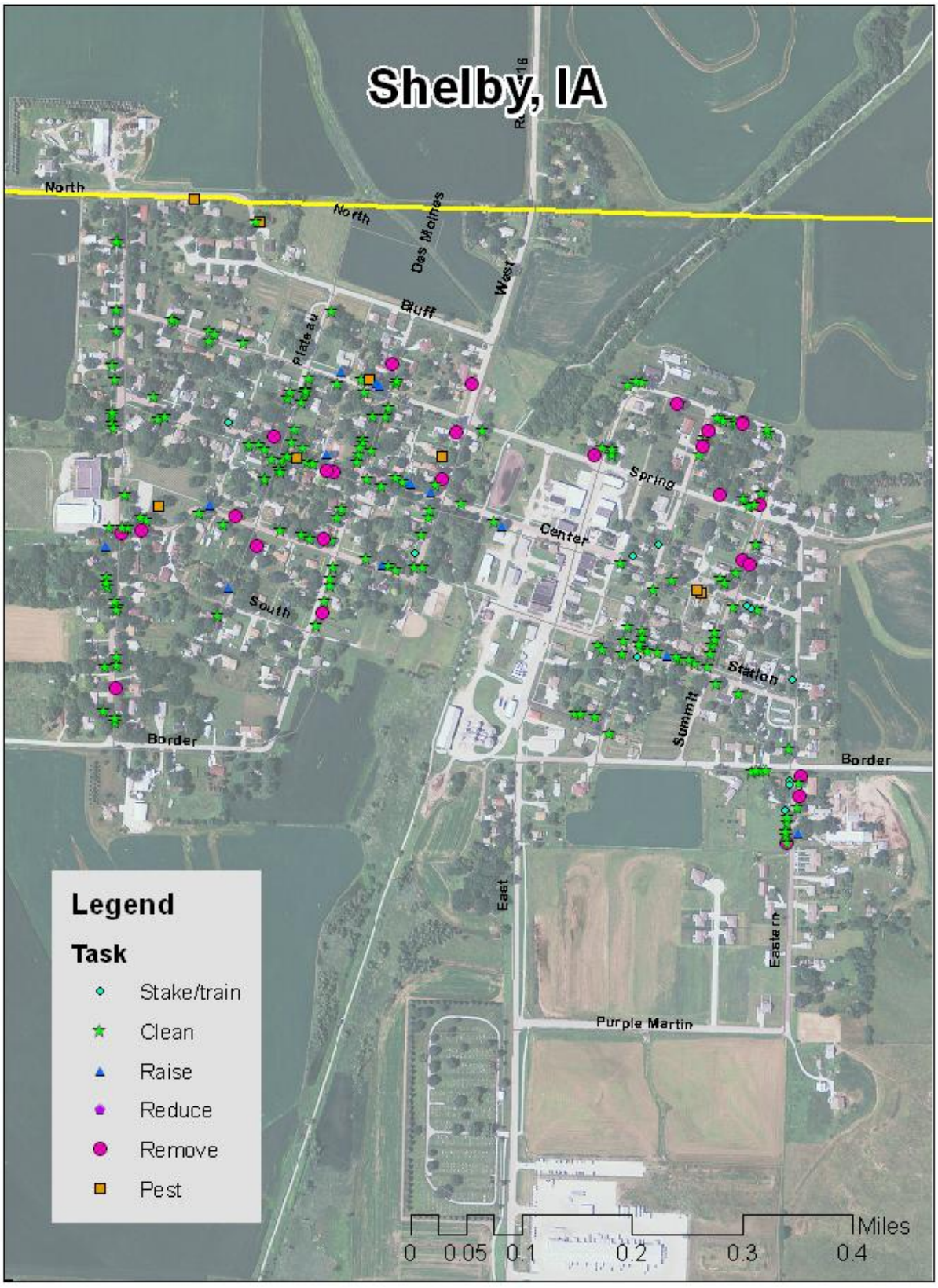


Figure 5: Maintenance Tasks *City ownership of the trees recommended for removal should be verified prior to any removal*

Appendix C: Shelby Tree Ordinances

CHAPTER 151
TREES AND GRASS

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.