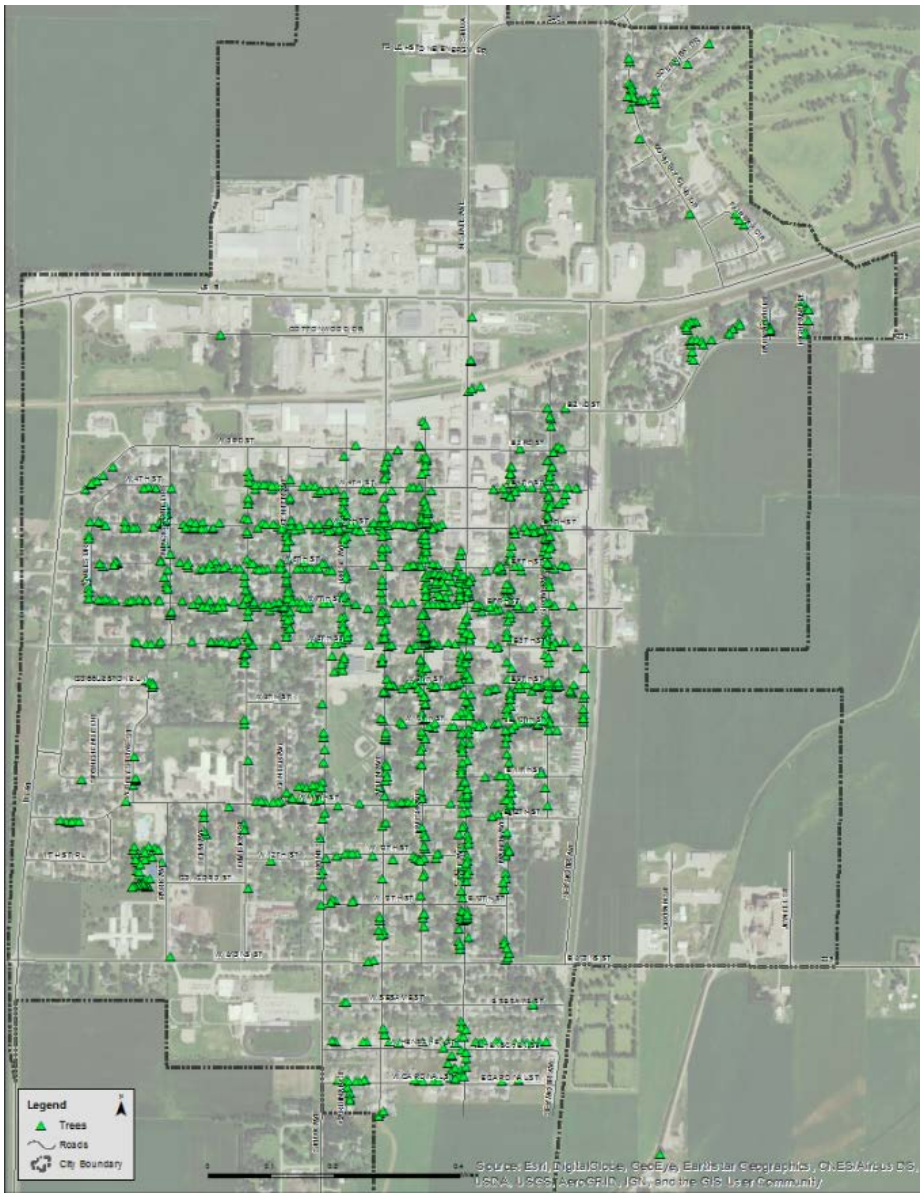
Garner, IA



2016 Urban Forest Management Plan
Prepared by Kittelson Consulting Arborist, LLC
In Partnership with the Iowa DNR

Table of Contents

Executive Summary **4**

Overview 4
Inventory and Results 4
Recommendations 4

Introduction **5**

Inventory **5**

Inventory Results **6**

Annual Benefits *6*
Annual Energy Benefits 6
Annual Stormwater Benefits 6
Annual Air Quality Benefits 6
Annual Carbon Benefits 6
Annual Aesthetics Benefits 6
Financial Summary of all Benefits 6

Forest Structure *7*
Species Distribution 7
Age Class 7
Condition: Wood and Foliage 7
Management Needs 7
Canopy Cover 8
Land Use and Location 8

Recommendations **8**

Risk Management 8
Pruning Cycle 9
Planting 9
Continual Monitoring 10
Six Year Maintenance Plan with No Additional Funding 10

Emerald Ash Borer **11**

Ash Tree Removal 11
EAB Quarantines 11
Wood Disposal 12
Canopy Replacement 12
Postponed Work 12
Monitoring 12
Private Ash Trees 12

Budget **14**

Works Cited **15**

Appendix A: i-Tree Data **16**

Appendix B: ArcGIS Mapping **27**

Appendix C: Garner Tree Ordinances **34**

Executive Summary

Overview

This plan was developed to assist the City of Garner 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 27% of Garner's city owned trees (ash) will die once EAB becomes established in the community, unless preventative treatment is used. 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 2016, 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 1,266 trees inventoried.

- Garner's trees provide $240,131 of benefits annually, an average of $190 a tree
- There are over 45 species of trees
- The top three genera are: Maple 39%, Ash 27%, and Lindens/Basswood 6%
- 57% of trees are in need of some type of management
- 258 trees (233 are ash) 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 258 trees needing removal, 166 trees (149 ash) are over 24 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*
- 301 of the 339 ash trees should be carefully examined, as they have one or more symptoms that could be related to an EAB infestation
- 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: fruiting trees, ash, maple, cottonwood, poplar, box elder, Chinese elm, evergreen, willow or black walnut
- Check ash trees with a visual survey yearly
- With the current budget it could take 10 years to remove ash – Suggestion: apply for grants to plant replacement trees.

Introduction

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

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

Inventory

In 2016, 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 associated with 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 1,266 city trees was entered into the USDA Forest service program STREETS, part of the i-Tree suite. The following are results from the i-Tree STREETS analysis.

Annual Benefits

Annual Energy Benefits

Trees conserve energy by shading buildings and blocking winds. Garner's trees reduce energy related costs by approximately $61,466 annually (Appendix A, Table 1). These savings are both in Electricity (292.2 MWh) and in Natural Gas (40,089.5 Therms).

Annual Stormwater Benefits

Garner's trees intercept about 3,530,696 gallons of rainfall or snow melt a year (Appendix A, Table 2). This interception provides $95,682 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 matter (ozone). In Garner it is estimated that trees remove 977 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 $11,052 (Appendix A, Table 3).

Annual Carbon Benefits

Carbon sequestration and storage reduce the amount of carbon in the atmosphere, mitigating climate change. In Garner, trees sequester about 734,764 lbs. of carbon a year with an associated value of $5,511 (Appendix A, Table 4). In addition, the trees store 15,083,724 lbs. of carbon, with a yearly benefit of $113,128 (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. Garner receives $63,342 in annual social benefits from trees (Appendix A, Table 6).

Financial Summary of all Benefits

According to the USDA Forest Service i-Tree analysis, Garner's trees provide $240,161 of benefits annually. Benefits of individual trees vary based on size, species, health and location,

but on average each of the 1,266 trees in Garner provide approximately $190 annually (Appendix A, Table 7).

Forest Structure

Species Distribution

Garner has over 45 different tree species along city streets and parks (Appendix A, Figure 1). The distribution of the top 12 trees by genera is as follows:

Maple	496	39%
Ash	339	27%
Linden/Basswood	72	6%
Apple (Crab)	46	4%
Walnut	40	3.2%
Hackberry	37	2.9%
Oak	36	2.8%
Japanese Tree Lilac	33	2.6%
Spruce	31	2.4%
Honeylocust	31	2.4%
Northern White Cedar	30	2.4%
Birch	21	1.7%

Age Class

Most of Garner's trees (40%) are between 12 and 30 inches in diameter at 4.5 ft. (Appendix A, Figure 2). For age, it is preferred that the highest amounts of trees are in the smallest size category (a downward slope) to prepare for natural mortality and to maintain canopy cover. Garner's size curve is on the smaller side, indicating a younger than average stand.

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 Garner indicate that 98% of the trees are in good health, with only 2% of the foliage in poor health, dead or dying (Appendix A, Figure 3 & Appendix B, Figure 3). Similarly, 87% of Garner'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 13% of the population. This 13% is an estimate of trees that need management follow up.

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	224	18%
Crown Raising	14	1%

Tree Staking	63	5%
Tree Removal	258	20%
Crown Reduction	50	4%
Treatable	106	8%

Canopy Cover

The total canopy with both private and public trees is 9%, 120 acres. The canopy cover included in the Garner inventory includes approximately 35 acres (Appendix A, Figure 5).

Land Use and Location

The majority of Garner'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	81%
Park/vacant/other	14%
Industrial/Large commercial	<1%
Small commercial	3.4%
Multifamily residential	<1%

Location	
Planting strip	84%
Other maintained locations	14%
Cutout (surrounded by pavement)	0.08%
Front yard	0.00%
Median	1.82%

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

Garner has 6 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. All 6 trees are over 24 inches in diameter at 4.5 ft. should be addressed immediately. Please refer to the six 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 immediate maintenance. There are a total of 42 trees with these needs.

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 6 removals, 1 is an ash trees. There are a total of 339 ash trees, and 22 of those have signs and symptoms that have been associated with EAB. In addition, there are 53 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 Garner.

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 (39%) (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).

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 decline and for the following signs and symptoms: canopy dieback, epicormic shoots, bark splitting, D-shaped borer exit holes, and wood pecker damage.

Six Year Maintenance Plan with <u>No Additional Funding</u>

Year 1

Removal: 6 critical concern trees and 31 ash trees in poor health
Planting and Replacement: 0
Young Tree Pruning & Maintenance:
Visual Survey for signs and symptoms of EAB

Year 2

Removal: 37 ash trees with poor health
*Or saving for ash tree treatment and/or future ash removal
Planting and Replacement: 0
Young Tree Pruning & Maintenance:
Routine trimming: Contract to trim 1/3 of the city trees
Visual Survey for signs and symptoms of EAB

Year 3

Removal: 37 ash in poor health
*Or saving for ash tree treatment and/or future ash removal
Planting and Replacement: 0
Young Tree Pruning & Maintenance:
Visual Survey for signs and symptoms of EAB

Year 4

Removal: 37 ash in poor health
*Or saving for ash tree treatment and/or future ash removal
Planting and Replacement: 0
Routine trimming: Contract to trim 1/3 of the city trees
Young Tree Pruning & Maintenance:
Visual Survey for signs and symptoms of EAB

Year 5

Removal: 37 trees - removal of any new critical concern trees and ash in poor health
*Or saving for ash tree treatment and/or future ash removal
Planting and Replacement: 0
Young Tree Pruning & Maintenance:
Visual Survey for signs and symptoms of EAB

Year 6

Removal: 37 trees - removal of any new critical concern trees and ash in poor health
*Or saving for ash tree treatment and/or future ash removal
Planting and Replacement: 0
Routine trimming: Contract to trim 1/3 of the city trees

Young Tree Pruning & Maintenance:
Visual Survey for signs and symptoms of EAB

*Reduction of ash over 6 years: Approximately 222 ash trees removed (approximately 65% of ash). It will take approximately 9 years to remove all ash with the current budget. EAB could potentially kill all ash within 4 to 15 years of its arrival.
** To remove all ash trees within 6 years, the budget would need to be increased to $39,550 a year.

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*

Treatment of Ash Trees

Chemical treatment can be effective tool for communities to spread removal costs out over several years while allowing trees to continue to provide benefits. However, treatment is not recommended if EAB is more than 15 miles away from the community. For more information on the cost of treatment strategies visit http://extension.entm.purdue.edu/treecomputer/

EAB Quarantines

EAB is an extremely destructive plant pest and it is responsible for the death and decline of millions of 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 trees will be replaced. All trees will meet the restrictions in city ordinance 151.03 (Appendix C). 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.

Postponed Work

While finances, staffing and equipment are focused on the management of ash, usual services may be delayed. Tree removal requests on genera 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 Codes 151.06 & 151.06 state:

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 dead, diseased or damaged, and such trees and shrubs shall be subject to the following:

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 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 fourteen (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])

Budget

Current Budget
Total $163,200 over 6 years ($27,200/year)

FY 2017 Budget
Removal: $26,200
*Or saving for ash tree treatment and/or future ash removal
Planting: $0
Other Maintenance: $1000

FY 2018 Budget
Removal: $26,200
*Or saving for ash tree treatment and/or future ash removal
Planting: $0
Other Maintenance: $1000

FY 2019 Budget
Removal: $26,200
*Or saving for ash tree treatment and/or future ash removal
Planting: $0
Other Maintenance: $1000

FY 2020 Budget
Removal: $26,200
*Or saving for ash tree treatment and/or future ash removal
Planting: $0
Other Maintenance: $1000

FY 2021 Budget
Removal: $26,200
*Or saving for ash tree treatment and/or future ash removal
Planting: $0
Other Maintenance: $1000

FY 2022 Budget
Removal: $26,200
*Or saving for ash tree treatment and/or future ash removal
Planting: $0
Other Maintenance: $1000

*Reduction of ash over 6 years: approximately 222 ash trees removed (approximately 65% of ash). **It will take approximately 10 years to remove all ash with the current budget.**

Purposed Budget Increase

EAB could potentially kill all ash trees in Garner within 4 years of its arrival. To remove all ash trees within 6 years the budget would need to be increased to $39,550 a year. Additionally, it is recommended that Garner apply for grants to fund replacement trees. 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.

Another option being considered by many communities is treating a number of selected trees, either to maintain those trees in the landscape or to delay their removal – to spread out the costs and number of trees needing removed all at once. Trunk injection is administered every two years for the life of the tree. If treatment is discontinued, the tree dies. For instance, in this treatment scenario, the average ash diameter is 20 inches and at $15 per inch, about 53 trees could be treated per year (every other year treatment) at $15,900 and 53 more treated the next year. This would be 106 trees selected for treatment, and Garner would still need to find $11,000 for removal. Alternatively, if there are 106 treatable trees treated all together every 2 years, it would cost approximately $31,800 a year for treatment and leave nothing for removal. These are alternatives to straight removal of ash trees. However, whether or not the treatment option is selected, there will be an increased cost of dealing with ash trees when EAB is found in Garner. It is suggested to consider increasing the budget to plan for this.

Works Cited

Census Bureau. 2010. http://censtats.census.gov/data/IA/1601964290.pdf (April, 2013)

USDA Forest Service, et al. 2006. i-Tree Software Suite v1.0 User's Manual. Pp. 27-40.

McPherson EG, Simpson JR, Peper PJ, Gardner SL, Vargas KE, Ho J, Maco S, Xiao Q. 2005b. City of Charleston, South Carolina, municipal forest resource analysis. Internal Tech Rep. Davis, CA: U.S. Department of Agriculture, Center for Urban Forest Research. p. 57

Nowak, D.J. and J.F. Dwyer. 2007. Understanding the benefits and costs of urban forest ecosystems. In: Kuser, J. (ed.) Urban and Community Forestry in the Northeast. New York: Springer. Pp. 25-46.

Peper, Paula J.; McPherson, E. Gregory; Simpson, James R.; Vargas, Kelaine E.; Xiao, Qingfu 2009. Lower Midwest community tree guide: benefits, costs, and strategic planting. Gen. Tech. Rep. PSW-GTR-219. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. p.115

Appendix A: i-Tree Data

Table 1: Annual Energy Benefits

Annual Energy Benefits of Public Trees by Species									
Species	Electricity (MWh)	Electricity ($)	Total Natural Gas (Therms)	Natural Gas ($)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	100.59	7,634.55	13,685.83	13,412.11	21,046.66	(N/A)	26.30	34.24	63.20
Silver maple	57.78	4,385.72	7,601.57	7,449.54	11,835.26	(N/A)	17.61	19.26	53.07
Norway maple	38.82	2,946.59	5,572.47	5,461.02	8,407.61	(N/A)	14.53	13.68	45.69
American basswood	13.46	1,021.35	1,936.36	1,897.63	2,918.98	(N/A)	3.71	4.75	62.11
Sugar maple	11.46	869.73	1,544.43	1,513.54	2,383.27	(N/A)	3.71	3.88	50.71
Apple	5.79	439.37	862.41	845.16	1,284.53	(N/A)	3.63	2.09	27.92
Black walnut	13.93	1,057.59	1,930.69	1,892.07	2,949.67	(N/A)	3.16	4.80	73.74
Northern hackberry	13.97	1,060.05	1,936.35	1,897.63	2,957.68	(N/A)	2.92	4.81	79.94
Japanese tree lilac	0.49	37.10	78.59	77.02	114.12	(N/A)	2.61	0.19	3.46
Honeylocust	7.51	569.84	987.41	967.66	1,537.50	(N/A)	2.45	2.50	49.60
Northern white cedar	1.02	77.23	139.59	136.80	214.03	(N/A)	2.37	0.35	7.13
Littleleaf linden	3.35	254.28	479.21	469.62	723.90	(N/A)	1.97	1.18	28.96
Red maple	1.99	151.31	270.21	264.81	416.12	(N/A)	1.58	0.68	20.81
Broadleaf Deciduous Sm.	0.06	4.83	11.87	11.63	16.46	(N/A)	1.50	0.03	0.87
Blue spruce	1.28	97.19	181.63	178.00	275.18	(N/A)	1.18	0.45	18.35
Bur oak	2.20	166.75	308.33	302.16	468.91	(N/A)	0.95	0.76	39.08
Paper birch	2.07	156.92	284.74	279.05	435.97	(N/A)	0.79	0.71	43.60
Spruce	0.34	25.51	42.75	41.89	67.41	(N/A)	0.71	0.11	7.49
Amur maple	0.83	63.31	130.12	127.52	190.82	(N/A)	0.71	0.31	21.20
Northern red oak	0.95	72.35	132.27	129.63	201.97	(N/A)	0.63	0.33	25.25
Other Street Trees	14.31	1,086.27	1,972.63	1,933.18	3,019.45		6.95	4.91	865.87
Total	292.20	22,177.84	40,089.46	39,287.67	61,465.51	(N/A)	100.00	100.00	48.55

Table 2: Annual Stormwater Benefits

Annual Stormwater Benefits of Public Trees by Species						
Species	Total Rainfall Interception (Gal)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	1,236,854.21	33,518.75	(N/A)	26.30	35.03	100.66
Silver maple	846,678.76	22,944.99	(N/A)	17.61	23.98	102.89
Norway maple	354,819.45	9,615.61	(N/A)	14.53	10.05	52.26
American basswood	165,069.96	4,473.40	(N/A)	3.71	4.68	95.18
Sugar maple	142,225.08	3,854.30	(N/A)	3.71	4.03	82.01
Apple	25,803.16	699.27	(N/A)	3.63	0.73	15.20
Black walnut	191,515.77	5,190.08	(N/A)	3.16	5.42	129.75
Northern hackberry	157,541.77	4,269.38	(N/A)	2.92	4.46	115.39
Japanese tree lilac	1,602.63	43.43	(N/A)	2.61	0.05	1.32
Honeylocust	87,032.88	2,358.59	(N/A)	2.45	2.47	76.08
Northern white cedar	24,241.75	656.95	(N/A)	2.37	0.69	21.90
Littleleaf linden	30,163.27	817.42	(N/A)	1.97	0.85	32.70
Red maple	12,663.09	343.17	(N/A)	1.58	0.36	17.16
Broadleaf Deciduous Sma	141.54	3.84	(N/A)	1.50	0.00	0.20
Blue spruce	17,546.47	475.51	(N/A)	1.18	0.50	31.70
Bur oak	26,955.25	730.49	(N/A)	0.95	0.76	60.87
Paper birch	23,130.88	626.85	(N/A)	0.79	0.66	62.68
Spruce	3,965.20	107.46	(N/A)	0.71	0.11	11.94
Amur maple	2,988.66	80.99	(N/A)	0.71	0.08	9.00
Northern red oak	8,516.70	230.80	(N/A)	0.63	0.24	28.85
Other Street Trees	171,239.56	4,640.59		6.95	4.85	1,128.24
Citywide total	3,530,696.01	95,681.86	(N/A)	100.00	100.00	75.58

Table 3: Annual Air Quality Benefits

Annual Air Quality Benefits of Public Trees by Species																	
Species	Deposition O3 (lb)	Deposition NO2 (lb)	Deposition PM10 (lb)	Deposition SO2 (lb)	Total Deposition ($)	Avoided NO2 (lb)	Avoided PM10 (lb)	Avoided VOC (lb)	Avoided SO2 (lb)	Total Avoided ($)	BVOC Emissions (lb)	BVOC Emissions ($)	Total (lb)	Total ($)	Standard Error	% of Total Trees	Avg. $/tree
Green ash	177.01	28.31	81.67	7.93	934.04	479.54	69.87	66.63	455.84	2,988.98	0.00	0.00	1,366.80	3,923.02	(N/A)	26.30	11.78
Silver maple	150.61	25.52	73.65	6.68	811.20	272.39	39.88	38.07	261.39	1,704.25	- 80.80	- 302.98	787.39	2,212.46	(N/A)	17.61	9.92
Norway maple	71.78	12.38	35.41	3.18	388.23	188.00	27.20	25.89	176.15	1,165.09	- 16.90	- 63.38	523.08	1,489.94	(N/A)	14.53	8.10
American basswood	23.80	4.06	11.46	1.05	127.75	65.20	9.43	8.97	61.05	403.97	- 19.87	- 74.51	165.15	457.21	(N/A)	3.71	9.73
Sugar maple	20.18	3.44	9.82	0.89	108.62	54.43	7.94	7.58	51.90	339.67	- 15.69	- 58.83	140.49	389.46	(N/A)	3.71	8.29
Apple	8.32	1.37	3.88	0.38	44.16	28.25	4.07	3.87	26.23	174.46	- 0.04	- 0.17	76.32	218.46	(N/A)	3.63	4.75
Black walnut	27.22	4.36	12.38	1.22	143.15	66.74	9.70	9.25	63.14	415.23	0.00	0.00	194.02	558.38	(N/A)	3.16	13.96
Northern hackberry	29.66	5.13	14.49	1.33	160.08	67.01	9.74	9.28	63.33	416.73	0.00	0.00	199.96	576.80	(N/A)	2.92	15.59
Japanese tree lilac	0.31	0.05	0.17	0.01	1.73	2.44	0.35	0.33	2.22	14.93	0.00	- 0.01	5.88	16.66	(N/A)	2.61	0.50
Honeylocust	17.11	2.82	7.77	0.78	90.26	35.40	5.18	4.95	33.98	221.50	- 13.48	- 50.55	94.51	261.20	(N/A)	2.45	8.43
Northern white cedar	2.84	0.56	2.27	0.35	18.54	4.85	0.71	0.67	4.61	30.24	- 14.78	- 55.41	2.09	- 6.63	(N/A)	2.37	- 0.22
Littleleaf linden	4.67	0.81	2.38	0.21	25.49	16.21	2.35	2.23	15.21	100.50	- 2.34	- 8.78	41.72	117.20	(N/A)	1.97	4.69
Red maple	2.29	0.39	1.17	0.10	12.49	9.48	1.38	1.32	9.03	59.13	- 0.86	- 3.22	24.31	68.41	(N/A)	1.58	3.42
Broadleaf Deciduous Sma	0.00	0.00	0.01	0.00	0.02	0.33	0.05	0.04	0.29	2.01	0.00	0.00	0.72	2.03	(N/A)	1.50	0.11
Blue spruce	2.30	0.45	1.96	0.28	15.33	6.15	0.89	0.85	5.80	38.21	- 6.24	- 23.41	12.44	30.12	(N/A)	1.18	2.01
Bur oak	3.50	0.56	1.65	0.16	18.57	10.55	1.53	1.46	9.96	65.58	0.00	0.00	29.37	84.15	(N/A)	0.95	7.01
Paper birch	2.86	0.46	1.37	0.13	15.21	9.88	1.44	1.37	9.37	61.54	0.00	0.00	26.87	76.74	(N/A)	0.79	7.67
Spruce	0.39	0.08	0.35	0.05	2.66	1.57	0.23	0.22	1.52	9.88	- 1.37	- 5.12	3.05	7.42	(N/A)	0.71	0.82
Amur maple	0.69	0.11	0.36	0.03	3.77	4.12	0.59	0.56	3.78	25.34	0.00	- 0.01	10.25	29.10	(N/A)	0.71	3.23
Northern red oak	1.70	0.29	0.85	0.08	9.23	4.56	0.66	0.63	4.32	28.38	- 2.45	- 9.18	10.64	28.43	(N/A)	0.63	3.55
Other street trees	29.34	4.94	14.83	1.60	159.90	68.42	9.95	9.49	64.85	425.99	- 19.76	- 74.10	183.67	511.79	(N/A)	6.95	145.11
Citywide Total	576.60	96.09	277.88	26.43	3,090.42	1,395.55	203.13	193.66	1,323.96	8,691.59	- 194.57	- 729.65	3,898.72	11,052.36	(N/A)	100.00	8.73

Table 4: Annual Carbon Stored

Stored CO2 Benefits of Public Trees by Species						
Species	Total stored CO2 (lbs)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	5,913,740.15	44,353.05	(N/A)	26.30	39.21	133.19
Silver maple	3,637,526.64	27,281.45	(N/A)	17.61	24.12	122.34
Norway maple	1,187,947.86	8,909.61	(N/A)	14.53	7.88	48.42
American basswood	890,213.16	6,676.60	(N/A)	3.71	5.90	142.06
Sugar maple	588,854.55	4,416.41	(N/A)	3.71	3.90	93.97
Apple	129,198.05	968.99	(N/A)	3.63	0.86	21.06
Black walnut	895,498.29	6,716.24	(N/A)	3.16	5.94	167.91
Northern hackberry	482,267.11	3,617.00	(N/A)	2.92	3.20	97.76
Japanese tree lilac	5,758.52	43.19	(N/A)	2.61	0.04	1.31
Honeylocust	221,053.21	1,657.90	(N/A)	2.45	1.47	53.48
Northern white cedar	37,513.30	281.35	(N/A)	2.37	0.25	9.38
Littleleaf linden	101,761.64	763.21	(N/A)	1.97	0.67	30.53
Red maple	27,480.50	206.10	(N/A)	1.58	0.18	10.31
Broadleaf Deciduous Sma	261.90	1.96	(N/A)	1.50	0.00	0.10
Blue spruce	15,564.38	116.73	(N/A)	1.18	0.10	7.78
Bur oak	115,277.79	864.58	(N/A)	0.95	0.76	72.05
Paper birch	94,282.55	707.12	(N/A)	0.79	0.63	70.71
Spruce	2,611.99	19.59	(N/A)	0.71	0.02	2.18
Amur maple	11,699.55	87.75	(N/A)	0.71	0.08	9.75
Northern red oak	36,333.86	272.50	(N/A)	0.63	0.24	34.06
Other Street Trees	688,878.83	5,166.59		6.95	4.57	1,208.71
Citywide total	15,083,723.82	113,127.93	(N/A)	100.00	100.00	89.36

Table 5: Annual Carbon Sequestered

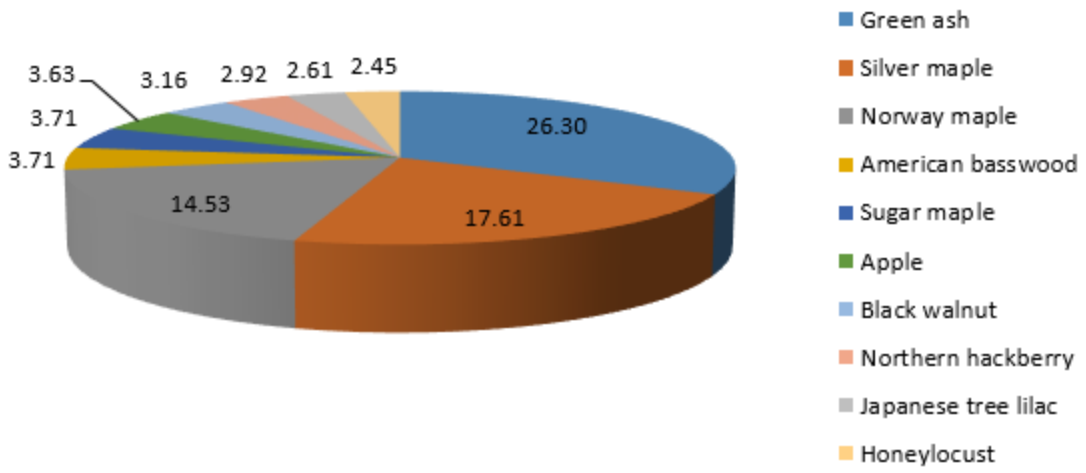
Annual CO2 Benefits of Public Trees by Species													
Species	Sequestered (lb)	Sequestered ($)	Decomposition Release(lb)	Maintenance Release (lb)	Total Release ($)	Avoided (lb)	Avoided ($)	Net Total (lb)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	220,675.98	1,655.07	- 28,385.95	- 1,087.72	- 221.05	168,721.51	1,265.41	359,923.82	2,699.43	(N/A)	26.30	31.32	8.11
Silver maple	254,857.98	1,911.43	- 17,476.53	- 667.88	- 136.08	96,923.20	726.92	333,636.76	2,502.28	(N/A)	17.61	29.03	11.22
Norway maple	51,250.65	384.38	- 5,715.43	- 413.60	- 45.97	65,118.91	488.39	110,240.53	826.80	(N/A)	14.53	9.59	4.49
American basswood	49,643.53	372.33	- 4,273.22	- 160.88	- 33.26	22,571.58	169.29	67,781.01	508.36	(N/A)	3.71	5.90	10.82
Sugar maple	28,133.55	211.00	- 2,827.74	- 128.90	- 22.17	19,220.75	144.16	44,397.66	332.98	(N/A)	3.71	3.86	7.08
Apple	9,167.39	68.76	- 620.33	- 77.03	- 5.23	9,710.04	72.83	18,180.08	136.35	(N/A)	3.63	1.58	2.96
Black walnut	33,570.60	251.78	- 4,298.43	- 153.66	- 33.39	23,372.54	175.29	52,491.05	393.68	(N/A)	3.16	4.57	9.84
Northern hackberry	18,901.32	141.76	- 2,315.13	- 140.60	- 18.42	23,426.88	175.70	39,872.47	299.04	(N/A)	2.92	3.47	8.08
Japanese tree lilac	843.65	6.33	- 28.83	- 11.31	- 0.30	819.92	6.15	1,623.43	12.18	(N/A)	2.61	0.14	0.37
Honeylocust	17,251.77	129.39	- 1,063.07	- 59.67	- 8.42	12,593.25	94.45	28,722.28	215.42	(N/A)	2.45	2.50	6.95
Northern white cedar	88.36	0.66	- 180.26	- 27.11	- 1.56	1,706.65	12.80	1,587.65	11.91	(N/A)	2.37	0.14	0.40
Littleleaf linden	10,783.83	80.88	- 489.81	- 41.34	- 3.98	5,619.52	42.15	15,872.20	119.04	(N/A)	1.97	1.38	4.76
Red maple	2,775.46	20.82	- 132.18	- 20.09	- 1.14	3,343.96	25.08	5,967.16	44.75	(N/A)	1.58	0.52	2.24
Broadleaf Deciduous Sma	164.98	1.24	- 2.10	- 3.71	- 0.04	106.65	0.80	265.83	1.99	(N/A)	1.50	0.02	0.10
Blue spruce	1,028.46	7.71	- 74.72	- 23.40	- 0.74	2,147.81	16.11	3,078.15	23.09	(N/A)	1.18	0.27	1.54
Bur oak	5,341.36	40.06	- 553.41	- 25.16	- 4.34	3,685.11	27.64	8,447.91	63.36	(N/A)	0.95	0.74	5.28
Paper birch	4,893.16	36.70	- 452.56	- 22.82	- 3.57	3,467.98	26.01	7,885.76	59.14	(N/A)	0.79	0.69	5.91
Spruce	304.92	2.29	- 12.59	- 6.24	- 0.14	563.84	4.23	849.94	6.37	(N/A)	0.71	0.07	0.71
Amur maple	1,256.46	9.42	- 56.16	- 11.51	- 0.51	1,399.09	10.49	2,587.89	19.41	(N/A)	0.71	0.23	2.16
Northern red oak	1,010.84	7.58	- 174.48	- 12.29	- 1.40	1,598.88	11.99	2,422.96	18.17	(N/A)	0.63	0.21	2.27
Other Street Trees	22,820.00	171.15	- 3,311.55	- 175.89	- 26.16	24,006.25	180.05	43,338.80	325.04		6.95	3.77	93.96
Citywide Total	734,764.27	5,510.73	- 72,444.49	- 3,270.76	- 567.86	490,124.32	3,675.93	1,149,173.33	8,618.80	(N/A)	100.00	100.00	6.81

Table 6: Annual Social and Aesthetic Benefits

Annual Aesthetic/Other Benefit of Public Trees by Species					
Species	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	17,453.65	(N/A)	26.30	27.55	52.41
Silver maple	19,907.33	(N/A)	17.61	31.43	89.27
Norway maple	5,030.49	(N/A)	14.53	7.94	27.34
American basswood	3,403.07	(N/A)	3.71	5.37	72.41
Sugar maple	2,801.07	(N/A)	3.71	4.42	59.60
Apple	534.80	(N/A)	3.63	0.84	11.63
Black walnut	2,427.48	(N/A)	3.16	3.83	60.69
Northern hackberry	2,297.39	(N/A)	2.92	3.63	62.09
Japanese tree lilac	35.37	(N/A)	2.61	0.06	1.07
Honeylocust	4,212.47	(N/A)	2.45	6.65	135.89
Northern white cedar	144.01	(N/A)	2.37	0.23	4.80
Littleleaf linden	1,171.70	(N/A)	1.97	1.85	46.87
Red maple	435.84	(N/A)	1.58	0.69	21.79
Broadleaf Deciduous Sma	0.64	(N/A)	1.50	0.00	0.03
Blue spruce	286.08	(N/A)	1.18	0.45	19.07
Bur oak	454.78	(N/A)	0.95	0.72	37.90
Paper birch	432.30	(N/A)	0.79	0.68	43.23
Spruce	114.61	(N/A)	0.71	0.18	12.73
Amur maple	71.44	(N/A)	0.71	0.11	7.94
Northern red oak	90.70	(N/A)	0.63	0.14	11.34
Other Street Trees	2,037.27		6.95	3.22	615.78
Citywide Total	63,342.48	(N/A)	100.00	100.00	50.03

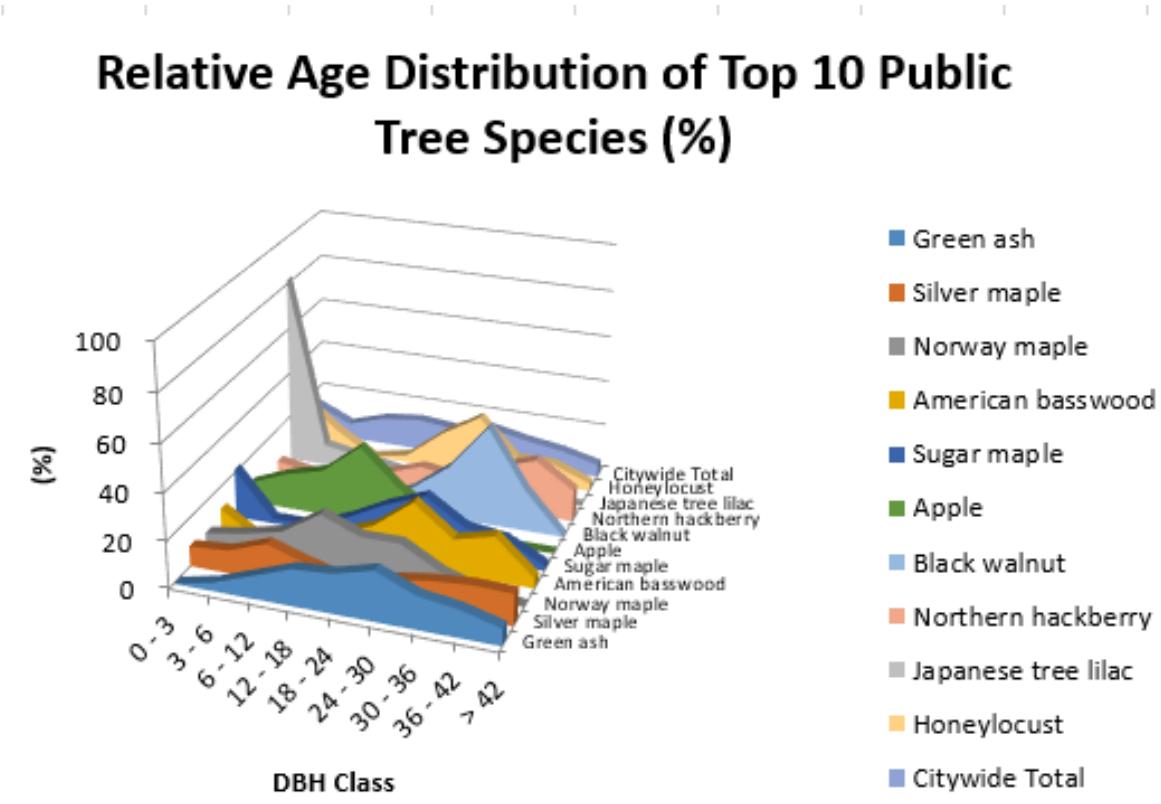
Table 7: Summary of Benefits in Dollars

Average Annual Benefits of Public Trees by Species ($/tree)							
Species	Energy	CO2	Air Quality	Stormwater	Aesthetic/Other	Total	Standard Error
Green ash	63.20	8.11	11.78	100.66	52.41	236.16	(N/A)
Silver maple	53.07	11.22	9.92	102.89	89.27	266.38	(N/A)
Norway maple	45.69	4.49	8.10	52.26	27.34	137.88	(N/A)
American basswood	62.11	10.82	9.73	95.18	72.41	250.23	(N/A)
Sugar maple	50.71	7.08	8.29	82.01	59.60	207.68	(N/A)
Apple	27.92	2.96	4.75	15.20	11.63	62.47	(N/A)
Black walnut	73.74	9.84	13.96	129.75	60.69	287.98	(N/A)
Northern hackberry	79.94	8.08	15.59	115.39	62.09	281.09	(N/A)
Japanese tree lilac	3.46	0.37	0.50	1.32	1.07	6.72	(N/A)
Honeylocust	49.60	6.95	8.43	76.08	135.89	276.94	(N/A)
Northern white cedar	7.13	0.40	- 0.22	21.90	4.80	34.01	(N/A)
Littleleaf linden	28.96	4.76	4.69	32.70	46.87	117.97	(N/A)
Red maple	20.81	2.24	3.42	17.16	21.79	65.41	(N/A)
Broadleaf Deciduous Sma	0.87	0.10	0.11	0.20	0.03	1.31	(N/A)
Blue spruce	18.35	1.54	2.01	31.70	19.07	72.67	(N/A)
Bur oak	39.08	5.28	7.01	60.87	37.90	150.14	(N/A)
Paper birch	43.60	5.91	7.67	62.68	43.23	163.10	(N/A)
Spruce	7.49	0.71	0.82	11.94	12.73	33.70	(N/A)
Amur maple	21.20	2.16	3.23	9.00	7.94	43.53	(N/A)
Northern red oak	25.25	2.27	3.55	28.85	11.34	71.26	(N/A)
Other Street Trees	819.09	88.25	137.19	1,090.05	576.62	2,848.95	(N/A)
Citywide Total	48.55	6.81	8.73	75.58	50.03	189.70	(N/A)



Species Distribution of Public Trees 12/21/2016	
Species	Percent
Green ash	26.30
Silver maple	17.61
Norway maple	14.53
American basswood	3.71
Sugar maple	3.71
Apple	3.63
Black walnut	3.16
Northern hackberry	2.92
Japanese tree lilac	2.61
Honeylocust	2.45
Other Species	19.35

Figure 1: Species Distribution



Relative Age Distribution of Top 10 Public Tree Species (%)									
	DBH class (in)								
Species	0 - 3	3 - 6	6 - 12	12 - 18	18 - 24	24 - 30	30 - 36	36 - 42	> 42
Green ash	0.00	3.60	9.61	15.62	16.82	21.32	14.11	11.71	7.21
Silver maple	8.52	9.87	15.70	10.31	5.83	9.87	12.56	13.90	13.45
Norway maple	7.07	9.78	13.59	23.91	17.39	17.39	8.15	2.72	0.00
American basswood	10.64	0.00	0.00	8.51	14.89	27.66	14.89	19.15	4.26
Sugar maple	21.28	2.13	2.13	8.51	17.02	23.40	12.77	10.64	2.13
Apple	8.70	15.22	19.57	32.61	17.39	6.52	0.00	0.00	0.00
Black walnut	2.50	2.50	0.00	2.50	10.00	22.50	42.50	17.50	0.00
Northern hackberry	5.41	2.70	2.70	8.11	13.51	10.81	18.92	24.32	13.51
Japanese tree lilac	81.82	9.09	6.06	3.03	0.00	0.00	0.00	0.00	0.00
Honeylocust	22.58	9.68	0.00	3.23	16.13	25.81	9.68	9.68	3.23
Citywide Total	14.06	6.87	11.85	13.74	12.16	15.01	11.69	9.32	5.29

Figure 2: Relative Age Class

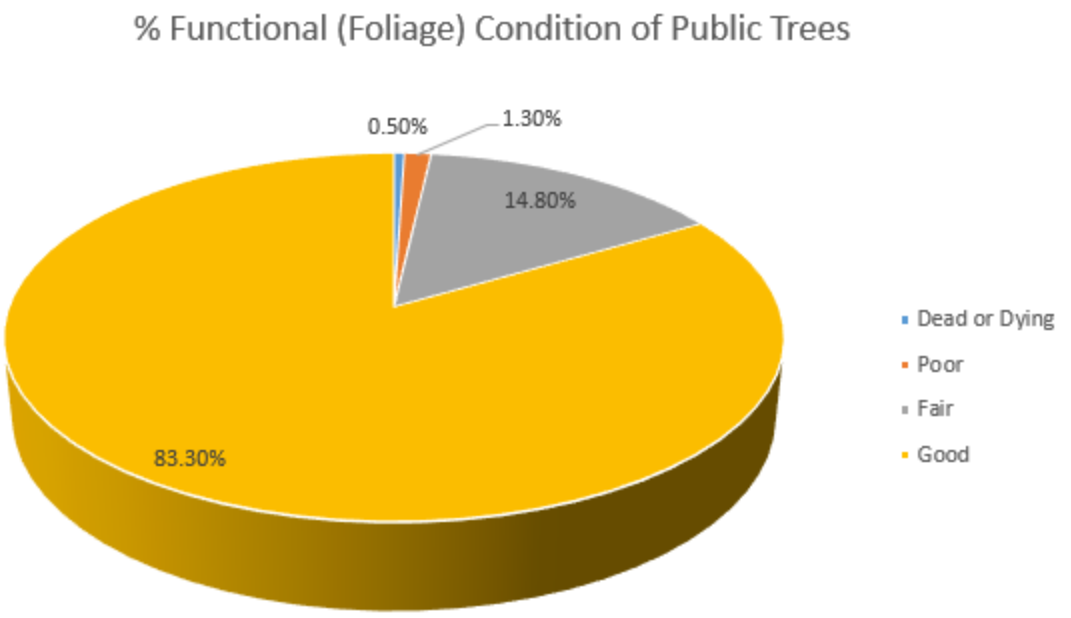


Figure 3: Foliage Condition

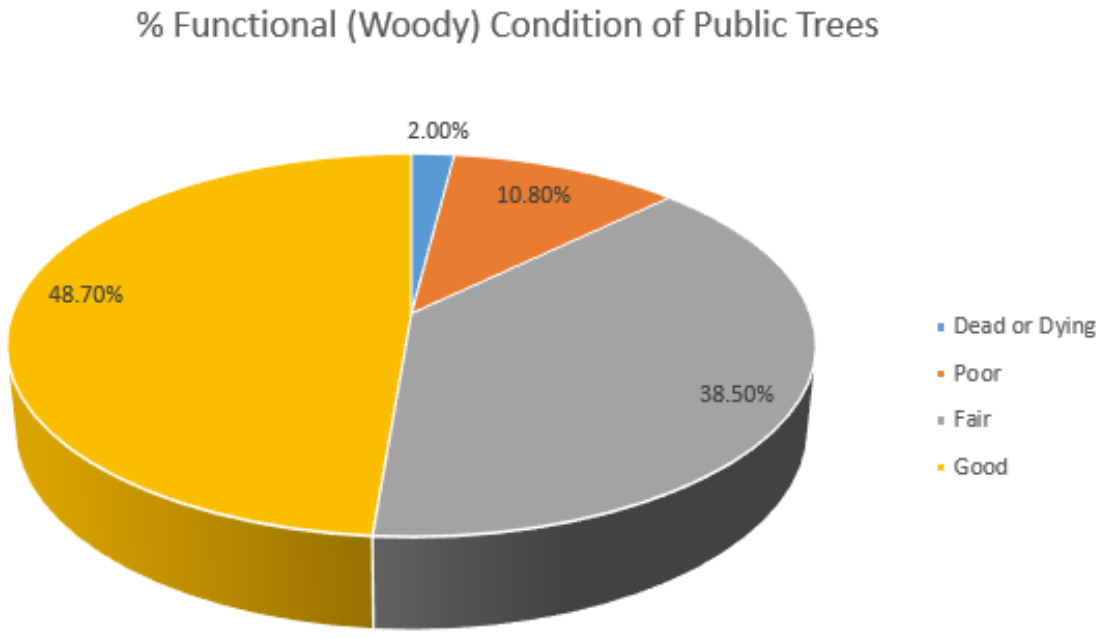
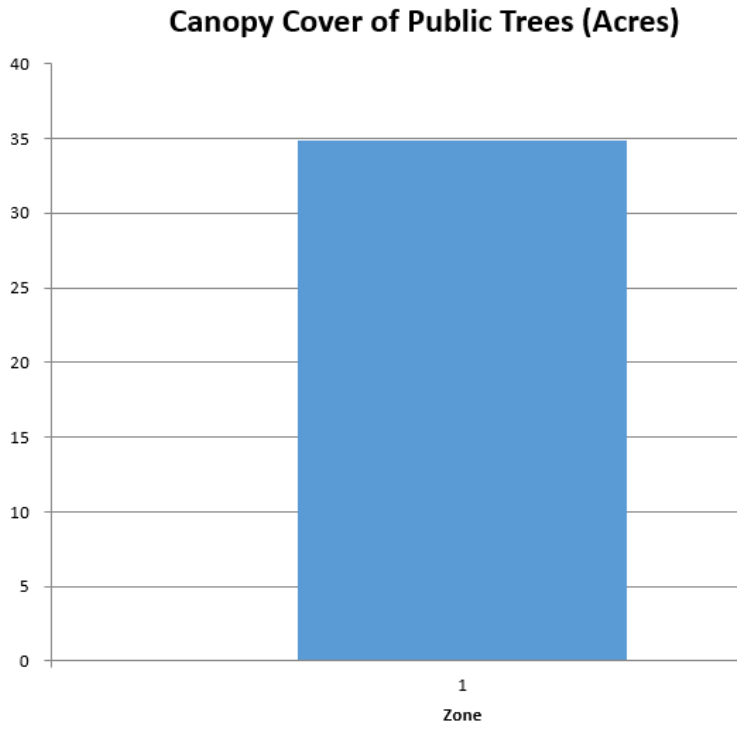
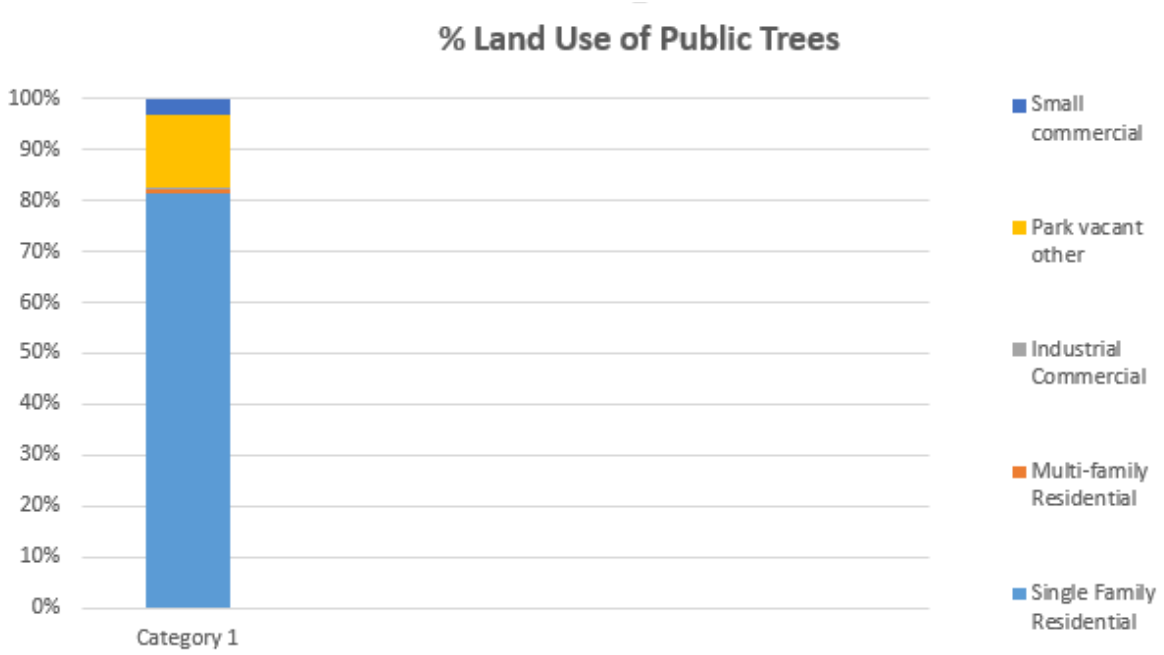


Figure 4: Wood Condition



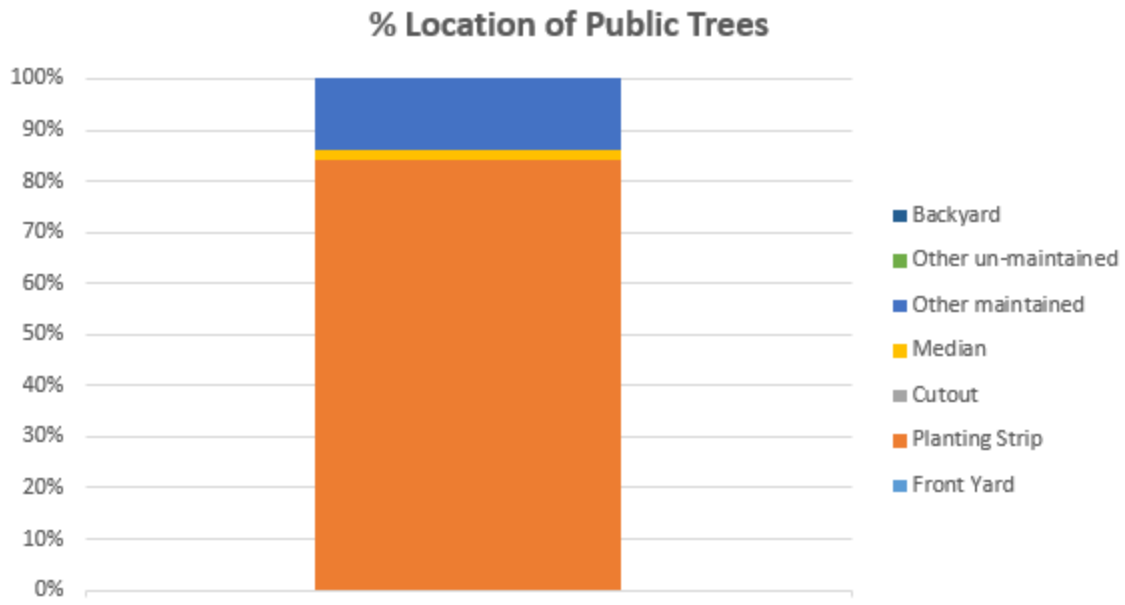
Canopy Cover of Public Trees (Acres)		
Zone	Acres	% of Total Canopy
1	34.89	100.00
Citywide Total	34.89	100.00

Figure 5: Canopy Cover in Acres



Citywide	Single family residential	1030	(N/A)	81.36
	Multi-family residential	10	(N/A)	0.79
	Industrial/Large commercial	6	(N/A)	0.47
	Park/vacant/other	177	(N/A)	13.98
	Small Commercial	43	(N/A)	3.40
	Total	1266	(N/A)	100.00

Figure 6: Land Use of city/park trees



Citywide	Front yard	0	(N/A)	0.00
	Planting strip	1,065	(N/A)	84.00
	Cutout	1	(N/A)	0.08
	Median	23	(N/A)	1.82
	Other maintained locations	177	(N/A)	13.98
	Other un-maintained locations	0	(N/A)	0.00
	Backyard	0	(N/A)	0.00
	Total	1266	(N/A)	100.00

Figure 7: Location of city/park trees

Appendix B: ArcGIS Mapping

Figure 1: Location of Ash Trees

Figure 2: Location of EAB symptoms

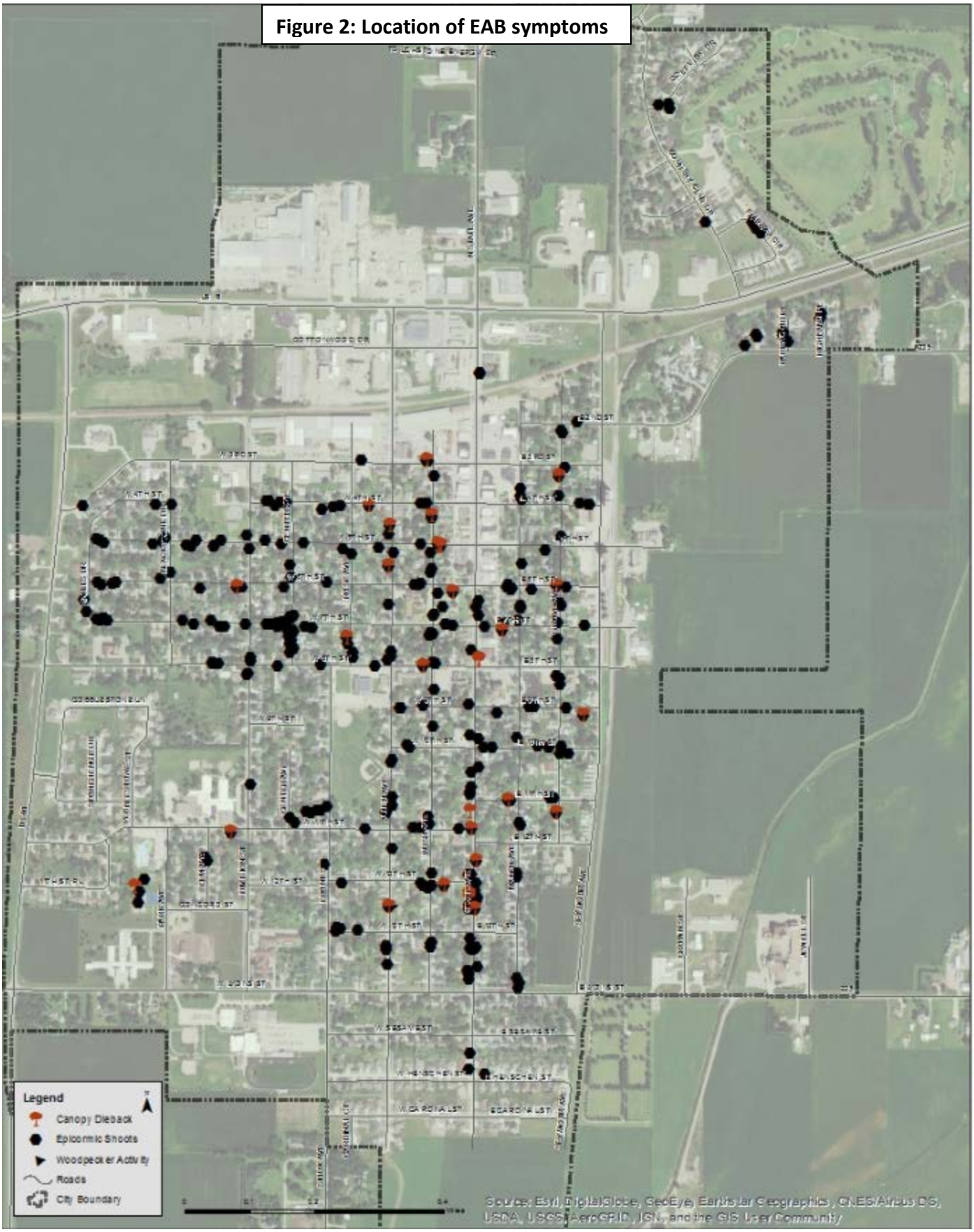


Figure 3: Location of Ash with Canopy Dieback

Figure 4: Location of Ash with Epicormic Shoots

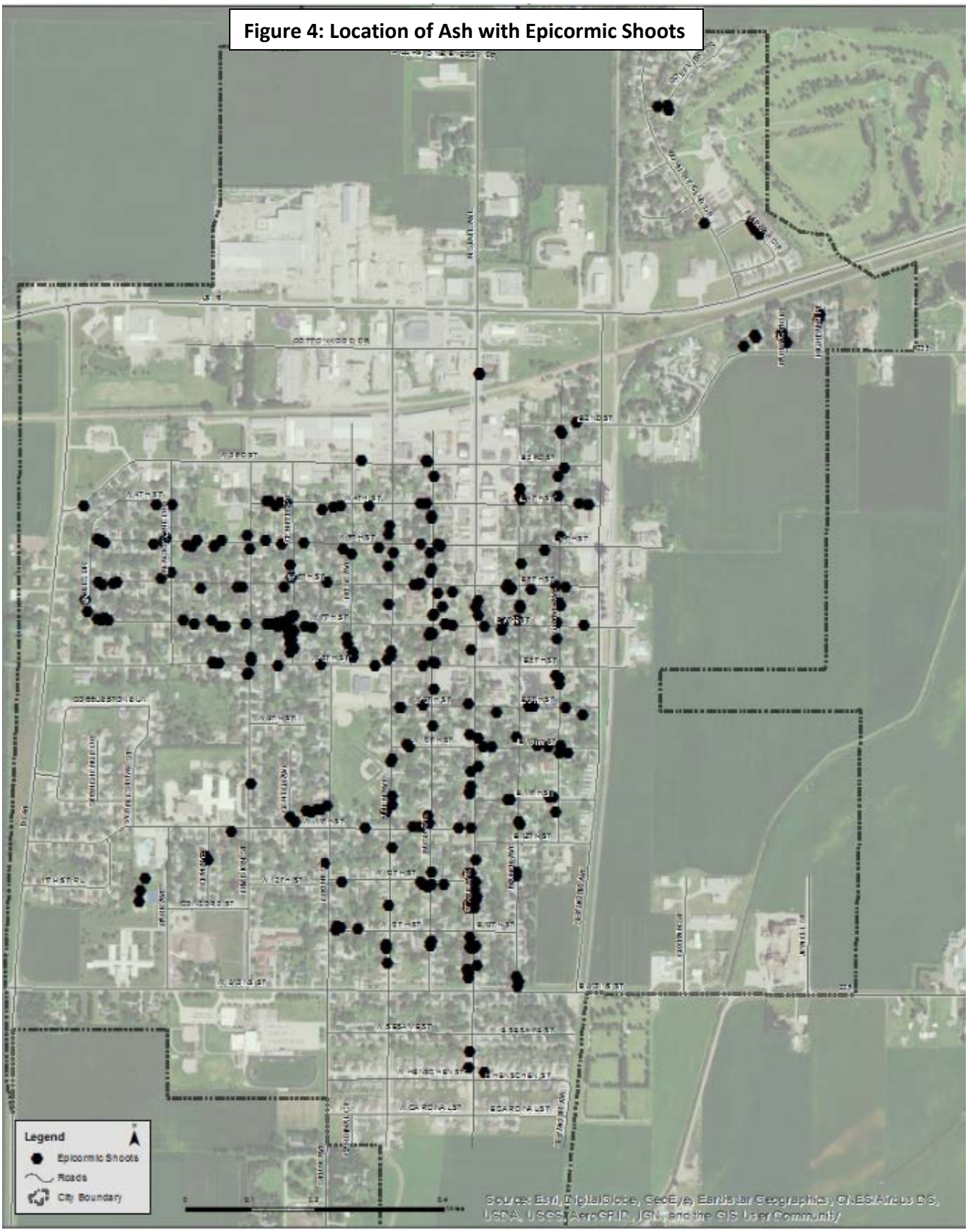


Figure 5: Location of Ash with Woodpecker Activity

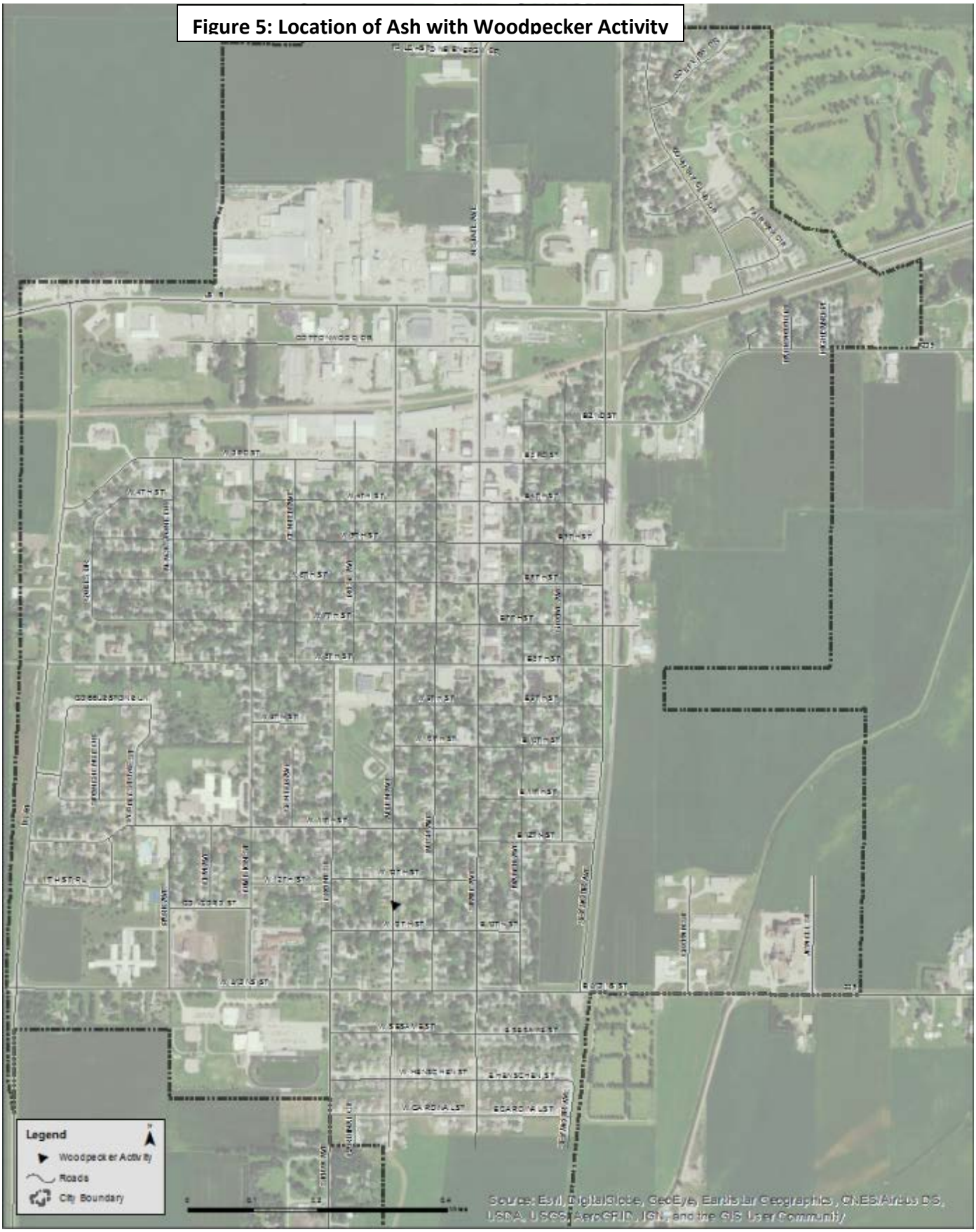


Figure 6: Location of Treatable Ash in Good Condition

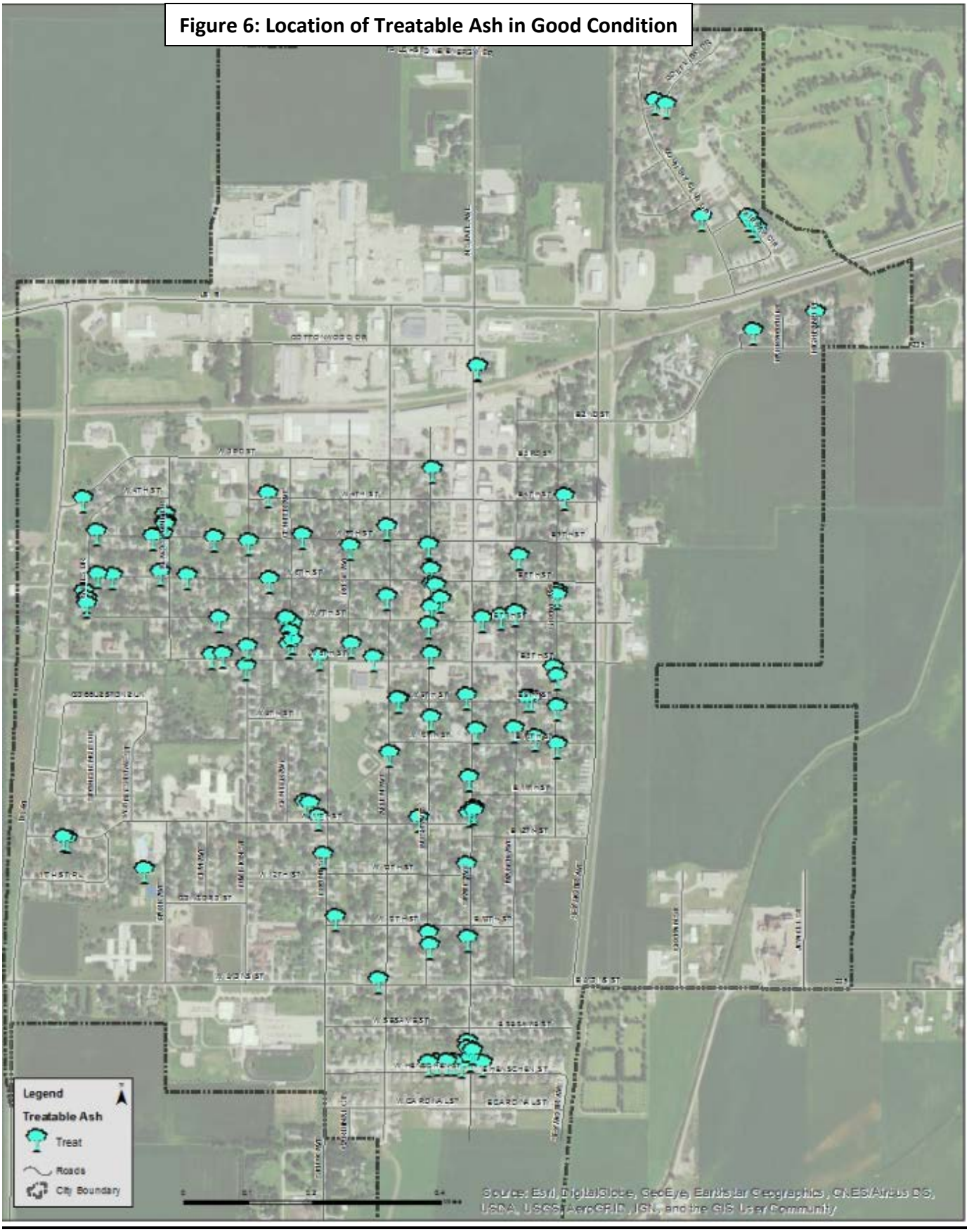


Figure 7: Location of Trees with Recommended Maintenance

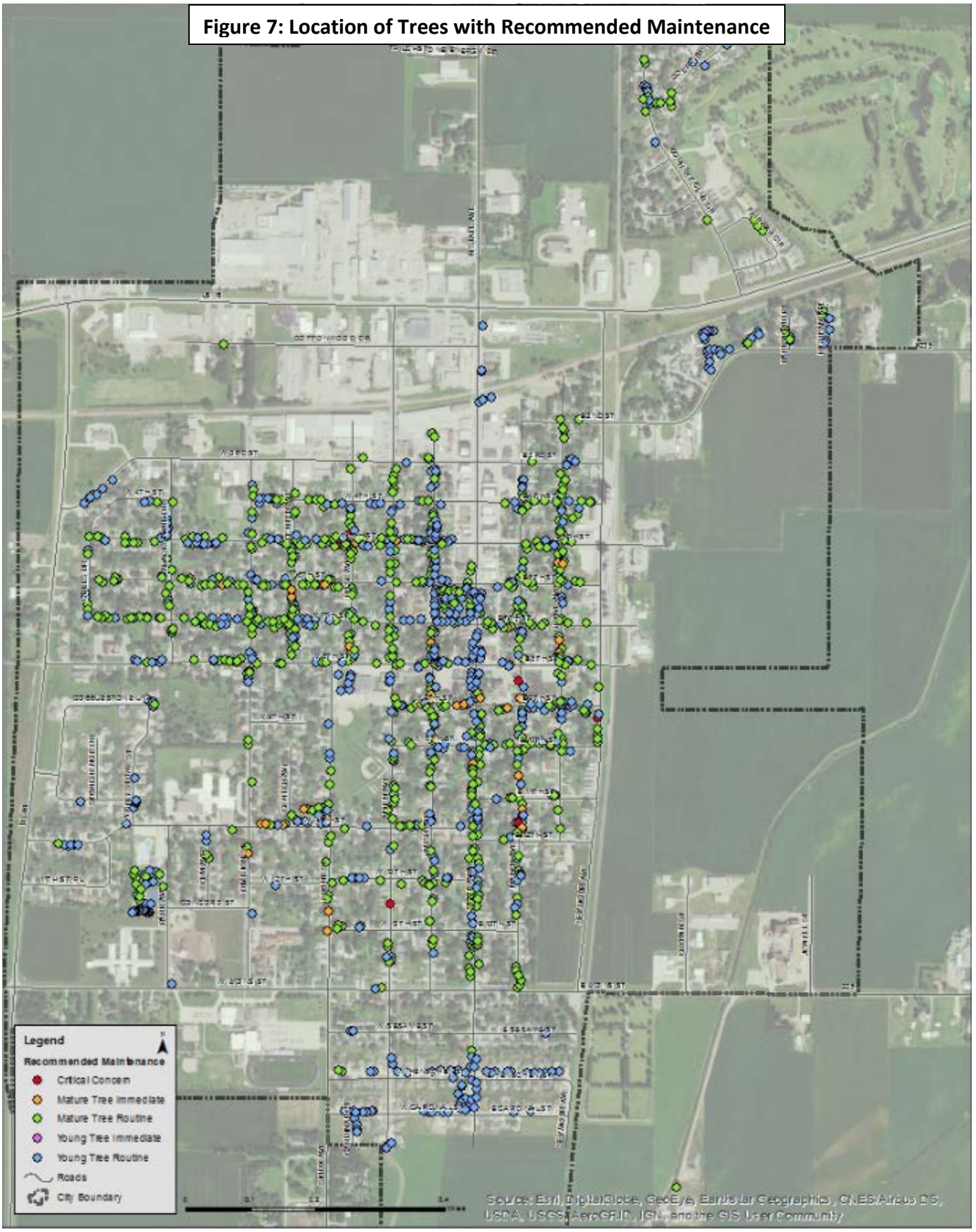
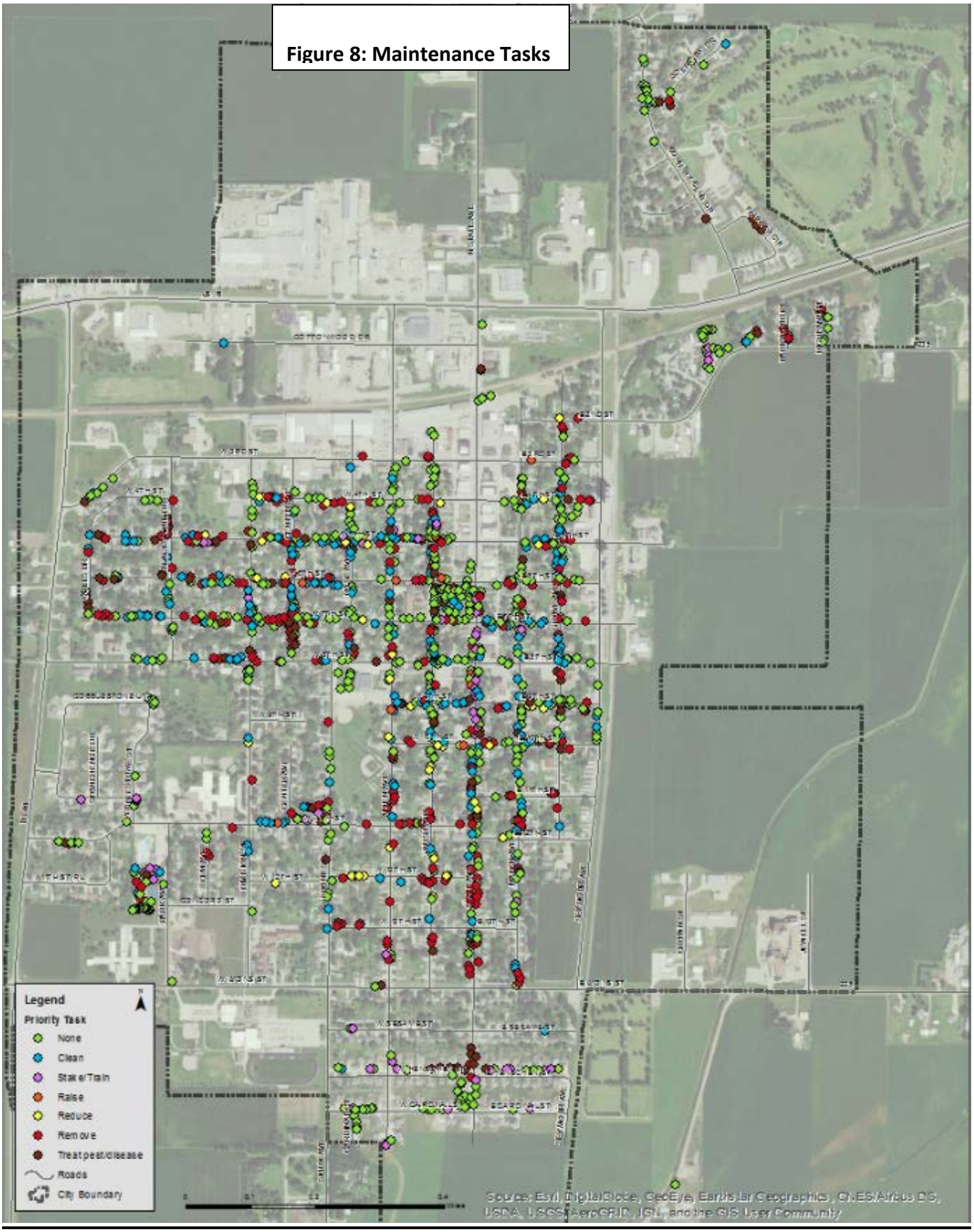


Figure 8: Maintenance Tasks



Appendix C: Garner Tree Ordinances

TREES

151.01 Definition
151.02 Planting Restrictions
151.03 Duty to Trim Trees
151.04 Trimming Trees to be Supervised
151.05 Disease Control
151.06 Inspection and Removal

151.01 DEFINITION. For use in this chapter, "parking" 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 parking or street except in accordance with the following:

1. Alignment. All trees planted in any street shall be planted in the parking 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 parking 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 fifteen (15) feet above the surface of the street 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. No topping or dehorning of trees is permitted except by special written permission

of the Council. Trees becoming stag-headed may have the dead portions removed back to sound green wood with a proper 45° cut only.

(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 dead, diseased or damaged, and such trees and shrubs shall be subject to the following:

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 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 fourteen (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])

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 the Director at 515-725-8200.