Sloan, IA

Sloan, IA

USDA, Iowa State University GIS Facility

2020 Urban Forest Management Plan
Prepared by Vince Grube
Iowa Department of Natural Resources

DNR

Table of Contents

Executive Summary

Overview

This plan was developed to assist the City of Sloan 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 17% of Sloan'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 2020, 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 390 trees inventoried.

- Sloan's trees provide $71,380 of benefits annually, an average of $183.03 a tree
- There are over 39 species of trees from 25 different genera
- The top three genera are: Maple 45%, Ash 17%, and Oak 15%
- 21% of trees are in need of some type of management
- 41 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 41 trees needing removal, 13 trees 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*
- 5 of the 65 ash trees should be carefully examined, as they have two 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: 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 14 years to remove ash – Suggestion: request a budget increase to $10,000 annually and apply for grants to plant replacement trees

Introduction

This plan was developed to assist Sloan 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 or treatment and replacement planting. With proper planning and management of the current canopy in Sloan, these costs can be extended over years and public safety issues from dead and dying ash trees mitigated.

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

Inventory

In 2020, 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 390 city trees was entered into the USDA Forest service program Street Tree Resource Analysis Tool for Urban forestry Management as 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. Sloan's trees reduce energy related costs by approximately $17,338 annually (Appendix A, Table 1). These savings are both in Electricity (83.2 MWh) and in Natural Gas (11,246.7 Therms).

Annual Stormwater Benefits
Sloan's trees intercept about 1,005,495 gallons of rainfall or snow melt a year (Appendix A, Table 2). This interception provides $27,249 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 Sloan, it is estimated that trees remove 1,093.5 lbs of air pollution (ozone (O_3), particulate matter less than 10 microns (PM10), carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2)) per year with a net value of $3,084 (Appendix A, Table 3).

Annual Carbon Benefits
Carbon sequestration and storage reduce the amount of carbon in the atmosphere, mitigating climate change. In Sloan, trees sequester about 239,676 lbs of carbon a year with an associated value of $1,798 (Appendix A, Table 5). In addition, the trees store 3,855,958 lbs of carbon, with a yearly benefit of $28,920 (Appendix A, Table 4).

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. Sloan receives $21,011 in annual social benefits from trees (Appendix A, Table 6).

Financial Summary of all Benefits
According to the USDA Forest Service i-Tree STREETS analysis, Sloan's trees provide $71,380 of benefits annually. Benefits of individual trees vary based on size, species, health and location, but on average each of the 390 trees in Sloan provide approximately $183.03 annually (Appendix A, Table 7).

Forest Structure

Species Distribution
Sloan has over 39 different tree species along city streets and parks (Appendix A, Figure 1).

The distribution of trees by genera is as follows:

Genus	Count	Percent
Maple	142	36%
Ash	65	17%
Spruce	49	13%
Basswood	20	5%
Apple	17	4%
Pine	15	4%
Conifer Evergreen S/M/L	10	3%
Pear	10	3%
Elm	9	2%
Hackberry	9	2%
Locust	8	2%
Lilac	8	2%
Buckeye	6	2%
Broadleaf Deciduous S/M/L	4	1%
Poplar	3	1%
Walnut	3	1%
Sycamore	2	1%
Oak	2	1%
Ginkgo	2	1%
Dogwood	1	0%
Kentucky Coffeetree	1	0%
Mulberry	1	0%
Birch	1	0%
Plum	1	0%
Aspen	1	0%

Age Class
Most of Sloan's trees (31%) are between 6 and 18 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. Sloan'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 Sloan indicate that 81% of the trees are in good health, with only 7% of the foliage in poor health, dead or dying (Appendix A, Figure 3 & Appendix B, Figure 3). Similarly, 33% of Sloan'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 16% of the population. This 16% 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	36	9%
Crown Raising	3	1%
Tree Staking	1	<1%
Tree Removal	41	11%

Canopy Cover

The total canopy with both private and public trees is 11%, 45.2 acres. The canopy cover included in the Sloan inventory includes approximately 9.93 acres (Appendix A, Figure 4). The City's Canopy goal is to increase canopy by 3%, in 30 years. To achieve this goal it is estimated that 29 trees need to be planted annually on public and private lands.

Land Use and Location

The majority of Sloan'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	67%
Park/vacant/other	30%
Small commercial	1%
Multifamily residential	2%

Location	
Planting strip	58%
Front yard	42%

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

Sloan has 4 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 3 trees over 24 inches in diameter at 4.5 ft that should be addressed immediately. Please refer to the budget and 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 maintenance. There are a total of 14 trees with these needs.

<u>Poor tree species</u>
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 41 removals, 6 are ash trees. There are a total of 65 ash trees, and 5 of those have signs and symptoms that have been associated with EAB. In addition, there are 39 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 Sloan.

It is important to plant a diverse mix of species in the urban forest to maintain canopy health, since most insects and diseases target a genus (ash) or species (green ash) of trees. Current diversity recommendations advise that a genus (i.e. maple, oak) not make up more than 20% of the urban forest and a single species (i.e. silver maple, sugar maple, white oak, bur oak) not make up more than 10% of the total urban forest. Presently, the forest is heavily planted with maple (36%) (Appendix A, Figure 1). Maples should not be planted until this percentage can be lowered. Also, ash trees have not been recommended since 2002, due to the threat of EAB. Other species to avoid because they are public nuisances include: cottonwood, poplar, box elder, Chinese elm, evergreen, willow, or black walnut, as outlined in section 150.02 of the city ordinance (Appendix C). All trees planted must meet the restrictions in city ordinance 150.02 (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.

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 150.02 (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.

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 if preventative treatments are not being used. City Code 150.06 states "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 14 days of receipt of notice, the Council may cause the condition to be corrected and the cost assessed against the property."

Budget & Six Year Maintenance Plan

<u>Current Budget</u>

FY 2020 Budget
 Removal: 8 tree approximately $5,600
 Planting: 9 tree $900
 Watering & Maintenance: $500

FY 2021 Budget
 Removal: 6 trees $4,200
 Planting: 7 trees $700
 Routine trimming: $1,700
 Watering & Maintenance: $500

FY 2022 Budget
 Removal: 8 tree approximately $5,600
 Planting: 9 tree $900
 Watering & Maintenance: $500

FY 2023 Budget
 Removal: 6 trees $4,200
 Planting: 7 trees $700

Routine trimming: $1,700
Watering & Maintenance: $500

FY 2024 Budget
Removal: 8 tree approximately $5,600
Planting: 9 tree $900
Watering & Maintenance: $500

FY 2025 Budget
Removal: 6 trees $4,200
Planting: 7 trees $700
Routine trimming: $1,700
Watering & Maintenance: $500

*Reduction of ash over 6 years: approximately 7 ash trees removed (approximately 10% of ash). **It will take approximately 14 years to remove all ash with the current budget. If budget is increase to $14,000 annually all as could be removed or treated in 6 years.**

Proposed Budget Increase
EAB could potentially kill all ash trees in Sloan within 4 years of its arrival. To remove all ash trees within 6 years the budget would need to be increased to $14,000 a year. If the budget were increased to $10,000 a year all ash could be removed within 9 years. Additionally, it is recommended that Sloan 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 to meet canopy goals.

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 4 trees could be treated per year (every other year treatment) for $1,200. This would be 8 trees selected for treatment, and Sloan would still need to find $39,900 for removal. Alternatively, if there are 25 treatable trees, it would cost approximately $7,500 a year for treatment and leave $28,000 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 if EAB is found in Sloan. 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, DJ and JF 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

Sloan

Annual Energy Benefits of Public Trees

8/31/2020

Species	Total Electricity (MWh)	Electricity ($)	Total Natural Gas (Therms)	Natural Gas ($)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Silver maple	29.2	2,216	3,808.2	3,732	5,948	(N/A)	20.8	34.3	73.44
Green ash	18.2	1,385	2,506.8	2,457	3,842	(N/A)	16.2	22.2	60.98
Norway maple	7.7	581	1,073.7	1,052	1,633	(N/A)	9.5	9.4	44.15
Spruce	0.6	44	83.9	82	126	(N/A)	7.9	0.7	4.06
Apple	0.6	45	96.2	94	139	(N/A)	4.4	0.8	8.20
Blue spruce	1.3	95	185.0	181	276	(N/A)	3.6	1.6	19.74
Red pine	1.6	122	185.1	181	303	(N/A)	3.3	1.7	23.32
Maple	1.0	77	145.6	143	220	(N/A)	3.1	1.3	18.31
Conifer Evergreen Large	0.2	17	39.7	39	56	(N/A)	2.6	0.3	5.61
Pear	0.6	49	104.0	102	151	(N/A)	2.6	0.9	15.07
Northern hackberry	3.2	241	446.7	438	679	(N/A)	2.3	3.9	75.46
American basswood	2.6	200	377.2	370	570	(N/A)	2.3	3.3	63.34
Honeylocust	2.3	176	301.2	295	471	(N/A)	2.1	2.7	58.91
Siberian elm	3.0	231	402.9	395	626	(N/A)	2.1	3.6	78.23
Lilac	0.2	13	30.4	30	43	(N/A)	2.1	0.2	5.40
Littleleaf linden	1.1	80	153.4	150	231	(N/A)	2.1	1.3	28.82
Red maple	1.0	79	122.4	120	199	(N/A)	1.8	1.1	28.41
Ohio buckeye	1.0	72	128.4	126	198	(N/A)	1.5	1.1	33.04
Norway spruce	0.3	20	37.6	37	57	(N/A)	1.0	0.3	14.22
Broadleaf Deciduous Small	0.1	5	12.0	12	17	(N/A)	1.0	0.1	4.27
Black walnut	1.0	75	140.6	138	213	(N/A)	0.8	1.2	70.91
Basswood	0.7	52	97.4	95	148	(N/A)	0.8	0.9	49.21
Black poplar	1.4	103	179.9	176	279	(N/A)	0.8	1.6	93.09
Sugar maple	0.5	40	68.2	67	107	(N/A)	0.8	0.6	35.63
Amur maple	0.1	7	16.6	16	24	(N/A)	0.5	0.1	11.80
White ash	0.5	41	56.8	56	96	(N/A)	0.5	0.6	48.12
Ginkgo	0.2	13	19.3	19	32	(N/A)	0.5	0.2	16.01
American sycamore	0.7	54	100.5	99	153	(N/A)	0.5	0.9	76.46
Mulberry	0.2	14	24.7	24	38	(N/A)	0.3	0.2	38.13
Scotch pine	0.1	10	14.6	14	24	(N/A)	0.3	0.1	24.14
Quaking aspen	0.1	7	13.7	13	21	(N/A)	0.3	0.1	20.64
Paper birch	0.4	29	53.7	53	82	(N/A)	0.3	0.5	82.02
Bur oak	0.3	20	38.1	37	57	(N/A)	0.3	0.3	57.32
Kentucky coffeetree	0.3	25	46.9	46	71	(N/A)	0.3	0.4	70.91
Austrian pine	0.1	10	15.2	15	25	(N/A)	0.3	0.1	24.51
Plum	0.1	6	12.8	13	18	(N/A)	0.3	0.1	18.19
American elm	0.5	40	67.0	66	106	(N/A)	0.3	0.6	105.59
Swamp white oak	0.3	20	39.6	39	59	(N/A)	0.3	0.3	58.69
Flowering dogwood	0.0	0	0.6	1	1	(N/A)	0.3	0.0	0.87
Total	83.2	6,316	11,246.7	11,022	17,338	(N/A)	100.0	100.0	44.46

Table 2: Annual Stormwater Benefits

Sloan

Annual Stormwater Benefits of Public Trees

8/31/2020

Species	Total rainfall interception (Gal)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Silver maple	444,250	12,039	(N/A)	20.8	44.2	148.63
Green ash	211,039	5,719	(N/A)	16.2	21.0	90.78
Norway maple	60,964	1,652	(N/A)	9.5	6.1	44.65
Spruce	6,678	181	(N/A)	7.9	0.7	5.84
Apple	2,059	56	(N/A)	4.4	0.2	3.28
Blue spruce	17,593	477	(N/A)	3.6	1.7	34.05
Red pine	19,059	516	(N/A)	3.3	1.9	39.73
Maple	7,831	212	(N/A)	3.1	0.8	17.69
Conifer Evergreen Large	2,128	58	(N/A)	2.6	0.2	5.77
Pear	2,264	61	(N/A)	2.6	0.2	6.13
Northern hackberry	34,234	928	(N/A)	2.3	3.4	103.08
American basswood	33,080	896	(N/A)	2.3	3.3	99.61
Honeylocust	23,159	628	(N/A)	2.1	2.3	78.45
Siberian elm	34,807	943	(N/A)	2.1	3.5	117.91
Lilac	549	15	(N/A)	2.1	0.1	1.86
Littleleaf linden	9,306	252	(N/A)	2.1	0.9	31.52
Red maple	6,451	175	(N/A)	1.8	0.6	24.97
Ohio buckeye	5,562	151	(N/A)	1.5	0.6	25.12
Norway spruce	2,942	80	(N/A)	1.0	0.3	19.93
Broadleaf Deciduous Small	213	6	(N/A)	1.0	0.0	1.45
Black walnut	11,829	321	(N/A)	0.8	1.2	106.85
Basswood	8,058	218	(N/A)	0.8	0.8	72.79
Black poplar	19,968	541	(N/A)	0.8	2.0	180.38
Sugar maple	3,974	108	(N/A)	0.8	0.4	35.90
Amur maple	333	9	(N/A)	0.5	0.0	4.51
White ash	3,325	90	(N/A)	0.5	0.3	45.05
Ginkgo	725	20	(N/A)	0.5	0.1	9.82
American sycamore	9,433	256	(N/A)	0.5	0.9	127.82
Mulberry	667	18	(N/A)	0.3	0.1	18.06
Scotch pine	1,539	42	(N/A)	0.3	0.2	41.70
Quaking aspen	608	16	(N/A)	0.3	0.1	16.47
Paper birch	5,491	149	(N/A)	0.3	0.5	148.79
Bur oak	2,591	70	(N/A)	0.3	0.3	70.21
Kentucky coffeetree	3,943	107	(N/A)	0.3	0.4	106.85
Austrian pine	1,544	42	(N/A)	0.3	0.2	41.85
Plum	264	7	(N/A)	0.3	0.0	7.17
American elm	4,551	123	(N/A)	0.3	0.5	123.33
Swamp white oak	2,479	67	(N/A)	0.3	0.2	67.19
Flowering dogwood	7	0	(N/A)	0.3	0.0	0.20
Citywide total	1,005,495	27,249	(N/A)	100.0	100.0	69.87

Table 3: Annual Air Quality Benefits

Annual Air Quality Benefits of Public Trees

8/31/2020

Species	Deposition (lb)				Total Depos. ($)	Avoided (lb)				Total Avoided ($)	BVOC Emissions (lb)	BVOC Emissions ($)	Total (lb)	Total ($) Standard Error	% of Total Trees	Avg. $/tree
	O3	NO2	PM10	SO2		NO2	PM10	VOC	SO2							
Silver maple	79.3	13.4	38.6	3.5	426	137.3	20.1	19.2	132.1	860	-40.4	-152	403.1	1,135 (N/A)	20.8	14.01
Green ash	26.8	4.3	12.7	1.2	142	87.2	12.7	12.1	82.7	543	0.0	0	239.7	685 (N/A)	16.2	10.88
Norway maple	11.3	1.9	5.7	0.5	61	36.9	5.3	5.1	34.7	229	-2.7	-10	98.7	280 (N/A)	9.5	7.57
Spruce	0.5	0.1	0.5	0.1	4	2.8	0.4	0.4	2.6	17	-2.2	-8	5.2	13 (N/A)	7.9	0.41
Apple	0.4	0.1	0.2	0.0	2	3.0	0.4	0.4	2.7	18	0.0	0	7.2	20 (N/A)	4.4	1.20
Blue spruce	2.2	0.4	1.9	0.3	15	6.1	0.9	0.8	5.7	38	-6.2	-23	12.1	29 (N/A)	3.6	2.08
Red pine	2.1	0.4	1.8	0.3	14	7.3	1.1	1.0	7.3	47	-6.7	-25	14.6	35 (N/A)	3.3	2.72
Maple	1.7	0.3	0.8	0.1	9	4.9	0.7	0.7	4.6	30	-0.6	-2	13.2	37 (N/A)	3.1	3.11
Conifer Evergreen Large	0.1	0.0	0.1	0.0	1	1.2	0.2	0.2	1.0	7	-0.6	-2	2.2	6 (N/A)	2.6	0.56
Pear	0.5	0.1	0.2	0.0	2	3.2	0.5	0.4	2.9	20	0.0	0	7.8	22 (N/A)	2.6	2.21
Northern hackberry	5.8	1.0	2.9	0.3	31	15.3	2.2	2.1	14.4	95	0.0	0	43.9	126 (N/A)	2.3	14.03
American basswood	4.9	0.8	2.3	0.2	26	12.8	1.8	1.8	12.0	79	-4.0	-15	32.5	90 (N/A)	2.3	10.01
Honeylocust	4.4	0.7	2.0	0.2	23	10.9	1.6	1.5	10.5	68	-3.4	-13	28.6	79 (N/A)	2.1	9.90
Siberian elm	6.3	1.1	3.0	0.3	34	14.4	2.1	2.0	13.8	90	0.0	0	43.0	124 (N/A)	2.1	15.49
Lilac	0.0	0.0	0.0	0.0	0	0.9	0.1	0.1	0.8	5	0.0	0	2.0	6 (N/A)	2.1	0.71
Littleleaf linden	1.4	0.2	0.7	0.1	8	5.1	0.7	0.7	4.8	32	-0.7	-3	13.1	37 (N/A)	2.1	4.61
Red maple	1.3	0.2	0.6	0.1	7	4.8	0.7	0.7	4.7	30	-0.5	-2	12.6	35 (N/A)	1.8	5.06
Ohio buckeye	0.8	0.1	0.4	0.0	4	4.5	0.7	0.6	4.3	28	-0.2	-1	11.3	32 (N/A)	1.5	5.32
Norway spruce	0.3	0.1	0.3	0.0	2	1.3	0.2	0.2	1.2	8	-0.9	-4	2.5	6 (N/A)	1.0	1.58
Broadleaf Deciduous Small	0.0	0.0	0.0	0.0	0	0.4	0.1	0.0	0.3	2	0.0	0	0.8	2 (N/A)	1.0	0.56
Black walnut	1.5	0.2	0.7	0.1	8	4.8	0.7	0.7	4.5	30	0.0	0	13.1	37 (N/A)	0.8	12.48
Basswood	1.0	0.2	0.5	0.0	5	3.3	0.5	0.5	3.1	21	0.0	0	9.0	26 (N/A)	0.8	8.61
Black poplar	4.0	0.6	1.7	0.2	21	6.4	0.9	0.9	6.1	40	0.0	0	20.9	61 (N/A)	0.8	20.27
Sugar maple	0.4	0.1	0.2	0.0	2	2.5	0.4	0.3	2.4	16	-0.3	-1	6.0	17 (N/A)	0.8	5.52
Amur maple	0.0	0.0	0.0	0.0	0	0.5	0.1	0.1	0.4	3	0.0	0	1.1	3 (N/A)	0.5	1.63
White ash	0.2	0.0	0.1	0.0	1	2.4	0.4	0.3	2.4	15	0.0	0	5.9	17 (N/A)	0.5	8.32
Ginkgo	0.1	0.0	0.1	0.0	1	0.8	0.1	0.1	0.8	5	0.0	0	2.0	6 (N/A)	0.5	2.76
American sycamore	1.3	0.2	0.6	0.1	7	3.4	0.5	0.5	3.2	21	0.0	0	9.8	28 (N/A)	0.5	14.09
Mulberry	0.2	0.0	0.1	0.0	1	0.9	0.1	0.1	0.8	5	0.0	0	2.3	7 (N/A)	0.3	6.56
Scotch pine	0.2	0.0	0.1	0.0	1	0.6	0.1	0.1	0.6	4	-0.5	-2	1.2	3 (N/A)	0.3	2.82
Quaking aspen	0.0	0.0	0.0	0.0	0	0.5	0.1	0.1	0.4	3	0.0	0	1.1	3 (N/A)	0.3	2.99
Paper birch	0.8	0.1	0.4	0.0	4	1.9	0.3	0.3	1.8	12	0.0	0	5.5	16 (N/A)	0.3	15.71
Bur oak	0.3	0.0	0.1	0.0	1	1.3	0.2	0.2	1.2	8	0.0	0	3.3	9 (N/A)	0.3	9.34
Kentucky coffeetree	0.5	0.1	0.2	0.0	3	1.6	0.2	0.2	1.5	10	0.0	0	4.4	12 (N/A)	0.3	12.48
Austrian pine	0.2	0.0	0.2	0.0	1	0.6	0.1	0.1	0.6	4	-0.6	-2	1.2	3 (N/A)	0.3	2.89
Plum	0.0	0.0	0.0	0.0	0	0.4	0.1	0.1	0.3	2	0.0	0	0.9	3 (N/A)	0.3	2.55
American elm	1.5	0.3	0.7	0.1	8	2.5	0.4	0.3	2.4	15	0.0	0	8.1	23 (N/A)	0.3	23.47
Swamp white oak	0.5	0.1	0.2	0.0	3	1.3	0.2	0.2	1.2	8	-0.1	0	3.6	10 (N/A)	0.3	10.16
Flowering dogwood	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0	0.0	0 (N/A)	0.3	0.11
Citywide total	162.7	27.4	81.1	7.7	881	395.7	57.7	55.0	376.9	2,468	-70.8	-265	1,093.5	3,084 (N/A)	100.0	7.91

Table 4: Annual Carbon Stored

Sloan

Stored CO2 Benefits of Public Trees

8/31/2020

Species	Total Stored CO2 (lbs)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Silver maple	1,803,146	13,524	(N/A)	20.8	46.8	166.96
Green ash	877,562	6,582	(N/A)	16.2	22.8	104.47
Norway maple	186,441	1,398	(N/A)	9.5	4.8	37.79
Spruce	3,429	26	(N/A)	7.9	0.1	0.83
Apple	7,490	56	(N/A)	4.4	0.2	3.30
Blue spruce	14,321	107	(N/A)	3.6	0.4	7.67
Red pine	14,299	107	(N/A)	3.3	0.4	8.25
Maple	19,436	146	(N/A)	3.1	0.5	12.15
Conifer Evergreen La	382	3	(N/A)	2.6	0.0	0.29
Pear	8,288	62	(N/A)	2.6	0.2	6.22
Northern hackberry	90,025	675	(N/A)	2.3	2.3	75.02
American basswood	183,463	1,376	(N/A)	2.3	4.8	152.89
Honeylocust	56,472	424	(N/A)	2.1	1.5	52.94
Siberian elm	152,900	1,147	(N/A)	2.1	4.0	143.34
Lilac	1,422	11	(N/A)	2.1	0.0	1.33
Littleleaf linden	31,337	235	(N/A)	2.1	0.8	29.38
Red maple	14,547	109	(N/A)	1.8	0.4	15.59
Ohio buckeye	13,292	100	(N/A)	1.5	0.3	16.62
Norway spruce	1,722	13	(N/A)	1.0	0.0	3.23
Broadleaf Deciduous	547	4	(N/A)	1.0	0.0	1.03
Black walnut	47,318	355	(N/A)	0.8	1.2	118.30
Basswood	31,731	238	(N/A)	0.8	0.8	79.33
Black poplar	137,907	1,034	(N/A)	0.8	3.6	344.77
Sugar maple	11,788	88	(N/A)	0.8	0.3	29.47
Amur maple	1,086	8	(N/A)	0.5	0.0	4.07
White ash	7,344	55	(N/A)	0.5	0.2	27.54
Ginkgo	1,791	13	(N/A)	0.5	0.0	6.72
American sycamore	41,716	313	(N/A)	0.5	1.1	156.43
Mulberry	3,037	23	(N/A)	0.3	0.1	22.78
Scotch pine	1,170	9	(N/A)	0.3	0.0	8.78
Quaking aspen	1,035	8	(N/A)	0.3	0.0	7.76
Paper birch	25,943	195	(N/A)	0.3	0.7	194.57
Bur oak	8,458	63	(N/A)	0.3	0.2	63.43
Kentucky coffeetree	15,773	118	(N/A)	0.3	0.4	118.30
Austrian pine	1,118	8	(N/A)	0.3	0.0	8.39
Plum	908	7	(N/A)	0.3	0.0	6.81
American elm	29,353	220	(N/A)	0.3	0.8	220.15
Swamp white oak	7,945	60	(N/A)	0.3	0.2	59.59
Flowering dogwood	14	0	(N/A)	0.3	0.0	0.10
Citywide total	3,855,958	28,920	(N/A)	100.0	100.0	74.15

Table 5: Annual Carbon Sequestered

Annual CO₂ Benefits of Public Trees

8/31/2020

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	127,815	959	-8,655	-328	-67	48,982	367	167,814	1,259 (N/A)	20.8	46.6	15.54
Green ash	43,257	324	-4,212	-192	-33	30,606	230	69,458	521 (N/A)	16.2	19.3	8.27
Norway maple	12,658	95	-896	-74	-7	12,843	96	24,531	184 (N/A)	9.5	6.8	4.97
Spruce	530	4	-17	-13	0	963	7	1,462	11 (N/A)	7.9	0.4	0.35
Apple	944	7	-36	-11	0	999	7	1,896	14 (N/A)	4.4	0.5	0.84
Blue spruce	1,026	8	-69	-23	-1	2,099	16	3,033	23 (N/A)	3.6	0.8	1.62
Red pine	1,439	11	-69	-25	-1	2,692	20	4,038	30 (N/A)	3.3	1.1	2.33
Maple	2,415	18	-93	-12	-1	1,701	13	4,011	30 (N/A)	3.1	1.1	2.51
Conifer Evergreen Large	180	1	-2	-6	0	378	3	550	4 (N/A)	2.6	0.2	0.41
Pear	989	7	-40	-10	0	1,078	8	2,017	15 (N/A)	2.6	0.6	1.51
Northern hackberry	4,229	32	-432	-31	-3	5,334	40	9,100	68 (N/A)	2.3	2.5	7.58
American basswood	10,039	75	-881	-32	-7	4,428	33	13,555	102 (N/A)	2.3	3.8	11.30
Honeylocust	5,838	44	-272	-18	-2	3,891	29	9,439	71 (N/A)	2.1	2.6	8.85
Siberian elm	5,962	45	-734	-33	-6	5,105	38	10,300	77 (N/A)	2.1	2.9	9.66
Lilac	304	2	-7	-5	0	298	2	590	4 (N/A)	2.1	0.2	0.55
Littleleaf linden	3,374	25	-151	-13	-1	1,772	13	4,982	37 (N/A)	2.1	1.4	4.67
Red maple	1,941	15	-70	-8	-1	1,744	13	3,607	27 (N/A)	1.8	1.0	3.86
Ohio buckeye	1,701	13	-65	-9	-1	1,601	12	3,229	24 (N/A)	1.5	0.9	4.04
Norway spruce	239	2	-8	-5	0	443	3	669	5 (N/A)	1.0	0.2	1.25
Broadleaf Deciduous Smal	123	1	-3	-2	0	117	1	235	2 (N/A)	1.0	0.1	0.44
Black walnut	2,571	19	-227	-11	-2	1,657	12	3,990	30 (N/A)	0.8	1.1	9.97
Basswood	1,788	13	-152	-8	-1	1,153	9	2,781	21 (N/A)	0.8	0.8	6.95
Black poplar	1,917	14	-662	-16	-5	2,276	17	3,515	26 (N/A)	0.8	1.0	8.79
Sugar maple	898	7	-57	-5	0	884	7	1,720	13 (N/A)	0.8	0.5	4.30
Amur maple	152	1	-5	-2	0	161	1	306	2 (N/A)	0.5	0.1	1.15
White ash	987	7	-35	-4	0	898	7	1,846	14 (N/A)	0.5	0.5	6.92
Ginkgo	136	1	-9	-2	0	289	2	415	3 (N/A)	0.5	0.1	1.55
American sycamore	1,816	14	-200	-8	-2	1,202	9	2,811	21 (N/A)	0.5	0.8	10.54
Mulberry	268	2	-15	-2	0	308	2	560	4 (N/A)	0.3	0.2	4.20
Scotch pine	116	1	-6	-2	0	216	2	324	2 (N/A)	0.3	0.1	2.43
Quaking aspen	209	2	-5	-1	0	159	1	361	3 (N/A)	0.3	0.1	2.71
Paper birch	960	7	-125	-4	-1	650	5	1,481	11 (N/A)	0.3	0.4	11.11
Bur oak	660	5	-41	-3	0	441	3	1,058	8 (N/A)	0.3	0.3	7.93
Kentucky coffeetree	857	6	-76	-4	-1	552	4	1,330	10 (N/A)	0.3	0.4	9.97
Austrian pine	91	1	-5	-2	0	213	2	296	2 (N/A)	0.3	0.1	2.22
Plum	114	1	-4	-1	0	124	1	232	2 (N/A)	0.3	0.1	1.74
American elm	655	5	-141	-5	-1	883	7	1,392	10 (N/A)	0.3	0.4	10.44
Swamp white oak	470	4	-38	-3	0	440	3	869	7 (N/A)	0.3	0.2	6.52
Flowering dogwood	9	0	0	0	0	6	0	14	0 (N/A)	0.3	0.0	0.10
Citywide total	239,676	1,798	-18,514	-932	-146	139,588	1,047	359,818	2,699 (N/A)	100.0	100.0	6.92

Table 6: Annual Social and Aesthetic Benefits

Sloan

Annual Aesthetic/Other Benefits of Public Trees

8/31/2020

Species	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Silver maple	9,616	(N/A)	20.8	45.8	118.71
Green ash	3,507	(N/A)	16.2	16.7	55.67
Norway maple	1,250	(N/A)	9.5	5.9	33.79
Spruce	270	(N/A)	7.9	1.3	8.72
Apple	50	(N/A)	4.4	0.2	2.92
Blue spruce	295	(N/A)	3.6	1.4	21.06
Red pine	403	(N/A)	3.3	1.9	31.02
Maple	322	(N/A)	3.1	1.5	26.80
Conifer Evergreen Large	68	(N/A)	2.6	0.3	6.83
Pear	56	(N/A)	2.6	0.3	5.57
Northern hackberry	532	(N/A)	2.3	2.5	59.11
American basswood	681	(N/A)	2.3	3.2	75.66
Honeylocust	1,380	(N/A)	2.1	6.6	172.50
Siberian elm	388	(N/A)	2.1	1.8	48.46
Lilac	16	(N/A)	2.1	0.1	2.06
Littleleaf linden	378	(N/A)	2.1	1.8	47.24
Red maple	264	(N/A)	1.8	1.3	37.67
Ohio buckeye	183	(N/A)	1.5	0.9	30.47
Norway spruce	70	(N/A)	1.0	0.3	17.50
Broadleaf Deciduous Small	6	(N/A)	1.0	0.0	1.55
Black walnut	197	(N/A)	0.8	0.9	65.59
Basswood	146	(N/A)	0.8	0.7	48.64
Black poplar	124	(N/A)	0.8	0.6	41.25
Sugar maple	105	(N/A)	0.8	0.5	35.14
Amur maple	8	(N/A)	0.5	0.0	4.23
White ash	127	(N/A)	0.5	0.6	63.74
Ginkgo	12	(N/A)	0.5	0.1	6.22
American sycamore	132	(N/A)	0.5	0.6	66.10
Mulberry	15	(N/A)	0.3	0.1	15.48
Scotch pine	32	(N/A)	0.3	0.2	32.32
Quaking aspen	29	(N/A)	0.3	0.1	28.56
Paper birch	67	(N/A)	0.3	0.3	66.60
Bur oak	58	(N/A)	0.3	0.3	57.69
Kentucky coffeetree	66	(N/A)	0.3	0.3	65.59
Austrian pine	25	(N/A)	0.3	0.1	25.23
Plum	6	(N/A)	0.3	0.0	6.40
American elm	82	(N/A)	0.3	0.4	82.32
Swamp white oak	43	(N/A)	0.3	0.2	43.05
Flowering dogwood	0	(N/A)	0.3	0.0	0.03
Citywide total	21,011	(N/A)	100.0	100.0	53.87

Table 7: Summary of Benefits in Dollars

Sloan

Total Annual Benefits of Public Trees by Species ($)

8/31/2020

| Species	Energy	CO_2	Air Quality	Stormwater	Aesthetic/Other	Total ($)	Standard Error	% of Total $
Silver maple	5,948	1,259	1,135	12,039	9,616	29,997	(N/A)	42.0
Green ash	3,842	521	685	5,719	3,507	14,274	(N/A)	20.0
Norway maple	1,633	184	280	1,652	1,250	5,000	(N/A)	7.0
Spruce	126	11	13	181	270	601	(N/A)	0.8
Apple	139	14	20	56	50	279	(N/A)	0.4
Blue spruce	276	23	29	477	295	1,100	(N/A)	1.5
Red pine	303	30	35	516	403	1,289	(N/A)	1.8
Maple	220	30	37	212	322	821	(N/A)	1.2
Conifer Evergreen Large	56	4	6	58	68	192	(N/A)	0.3
Pear	151	15	22	61	56	305	(N/A)	0.4
Northern hackberry	679	68	126	928	532	2,333	(N/A)	3.3
American basswood	570	102	90	896	681	2,339	(N/A)	3.3
Honeylocust	471	71	79	628	1,380	2,629	(N/A)	3.7
Siberian elm	626	77	124	943	388	2,158	(N/A)	3.0
Lilac	43	4	6	15	16	85	(N/A)	0.1
Littleleaf linden	231	37	37	252	378	935	(N/A)	1.3
Red maple	199	27	35	175	264	700	(N/A)	1.0
Ohio buckeye	198	24	32	151	183	588	(N/A)	0.8
Norway spruce	57	5	6	80	70	218	(N/A)	0.3
Broadleaf Deciduous Sm	17	2	2	6	6	33	(N/A)	0.0
Black walnut	213	30	37	321	197	797	(N/A)	1.1
Basswood	148	21	26	218	146	559	(N/A)	0.8
Black poplar	279	26	61	541	124	1,031	(N/A)	1.4
Sugar maple	107	13	17	108	105	349	(N/A)	0.5
Amur maple	24	2	3	9	8	47	(N/A)	0.1
White ash	96	14	17	90	127	344	(N/A)	0.5
Ginkgo	32	3	6	20	12	73	(N/A)	0.1
American sycamore	153	21	28	256	132	590	(N/A)	0.8
Mulberry	38	4	7	18	15	82	(N/A)	0.1
Scotch pine	24	2	3	42	32	103	(N/A)	0.1
Quaking aspen	21	3	3	16	29	71	(N/A)	0.1
Paper birch	82	11	16	149	67	324	(N/A)	0.5
Bur oak	57	8	9	70	58	202	(N/A)	0.3
Kentucky coffeetree	71	10	12	107	66	266	(N/A)	0.4
Austrian pine	25	2	3	42	25	97	(N/A)	0.1
Plum	18	2	3	7	6	36	(N/A)	0.1
American elm	106	10	23	123	82	345	(N/A)	0.5
Swamp white oak	59	7	10	67	43	186	(N/A)	0.3
Flowering dogwood	1	0	0	0	0	1	(N/A)	0.0
Citywide Total	17,338	2,699	3,084	27,249	21,011	71,380	(N/A)	100.0
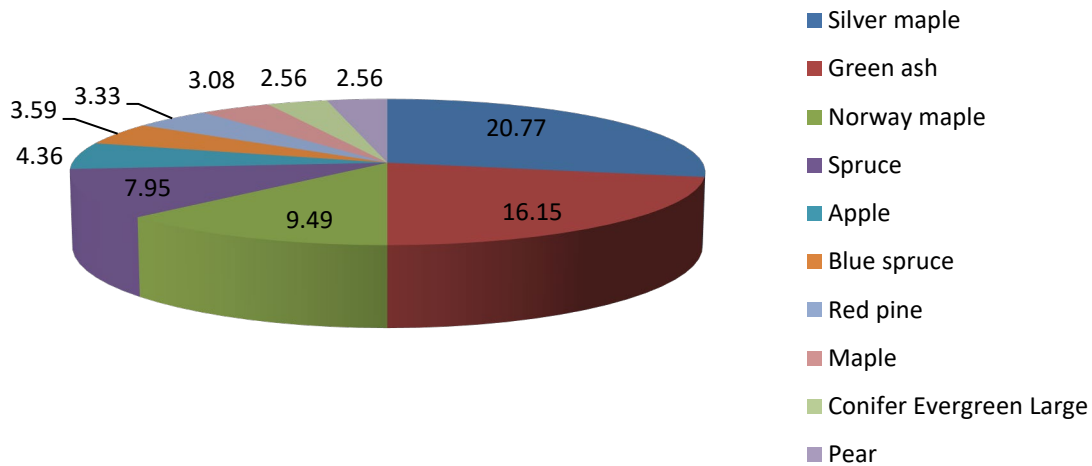
Figure 1: Species Distribution

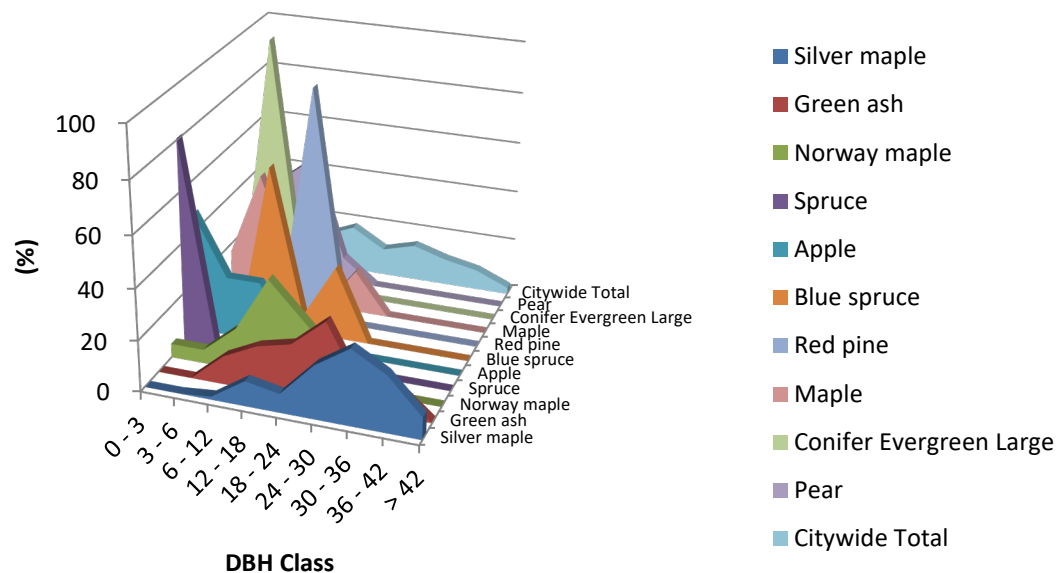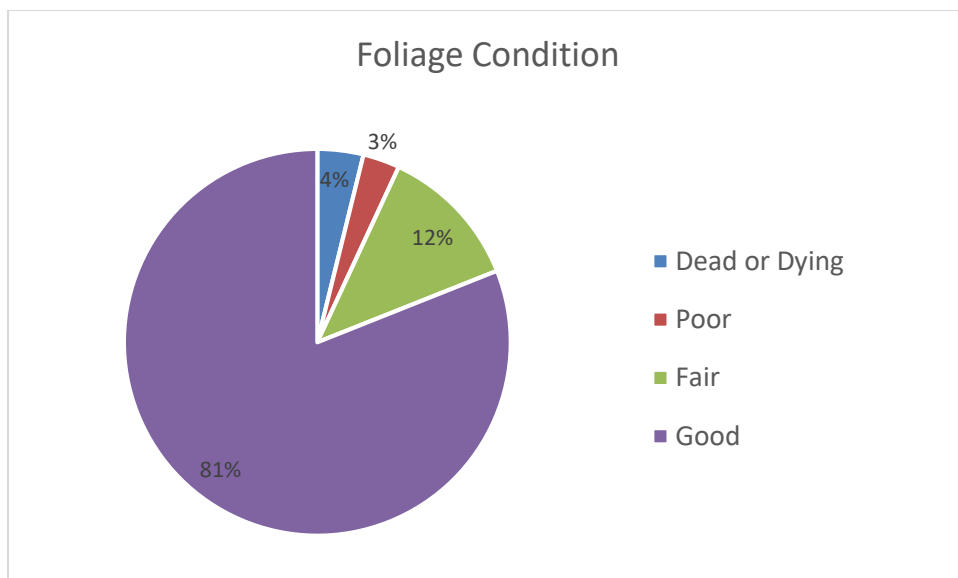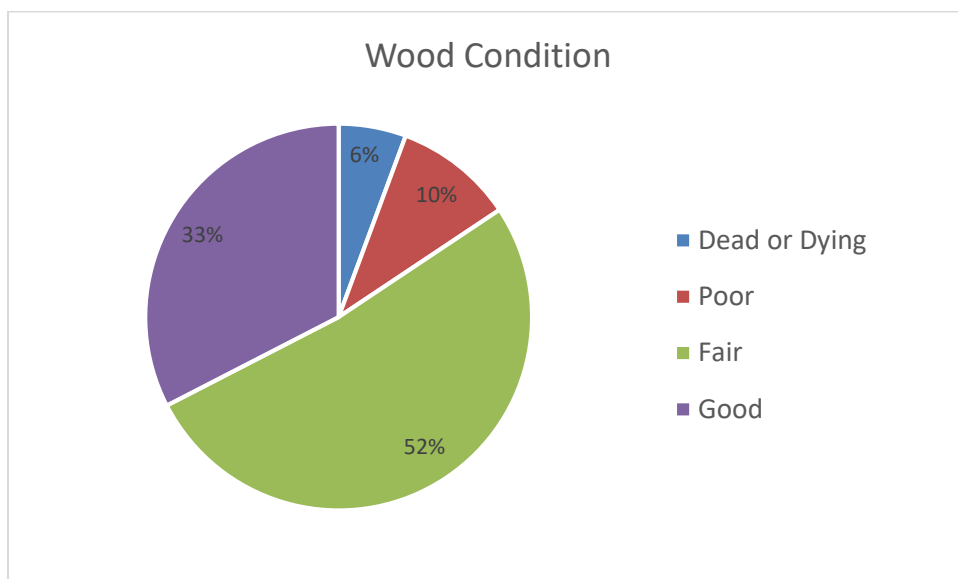## Relative Age Distribution of Top 10 Public Tree Species (%)

Figure 2: Relative Age Class

Figure 3: Foliage Condition

Figure 4: Wood Condition

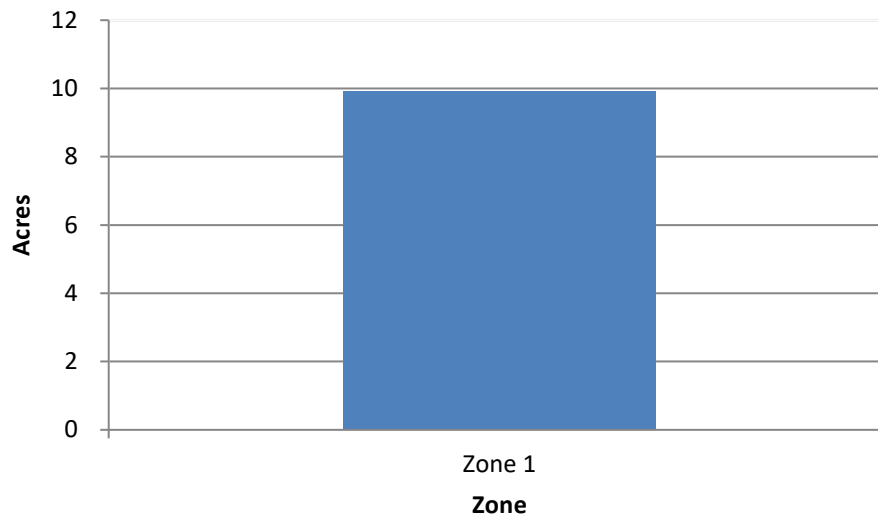# Canopy Cover of Public Trees (Acres)
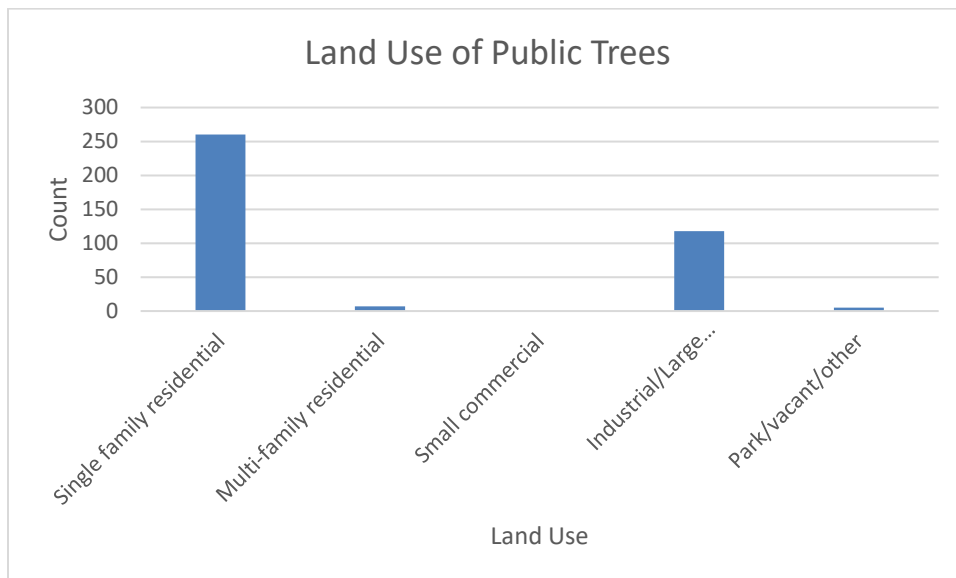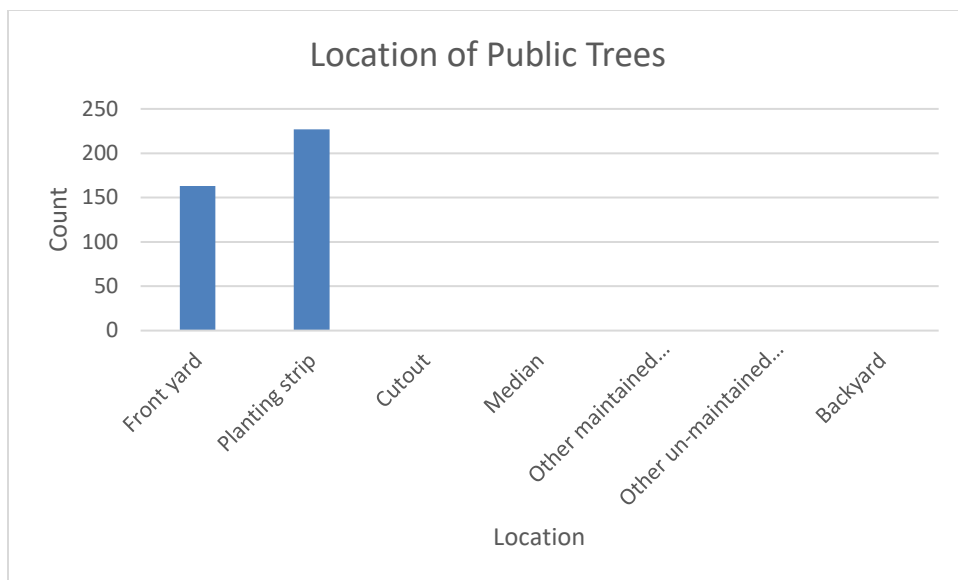

Figure 5: Canopy Cover in Acres
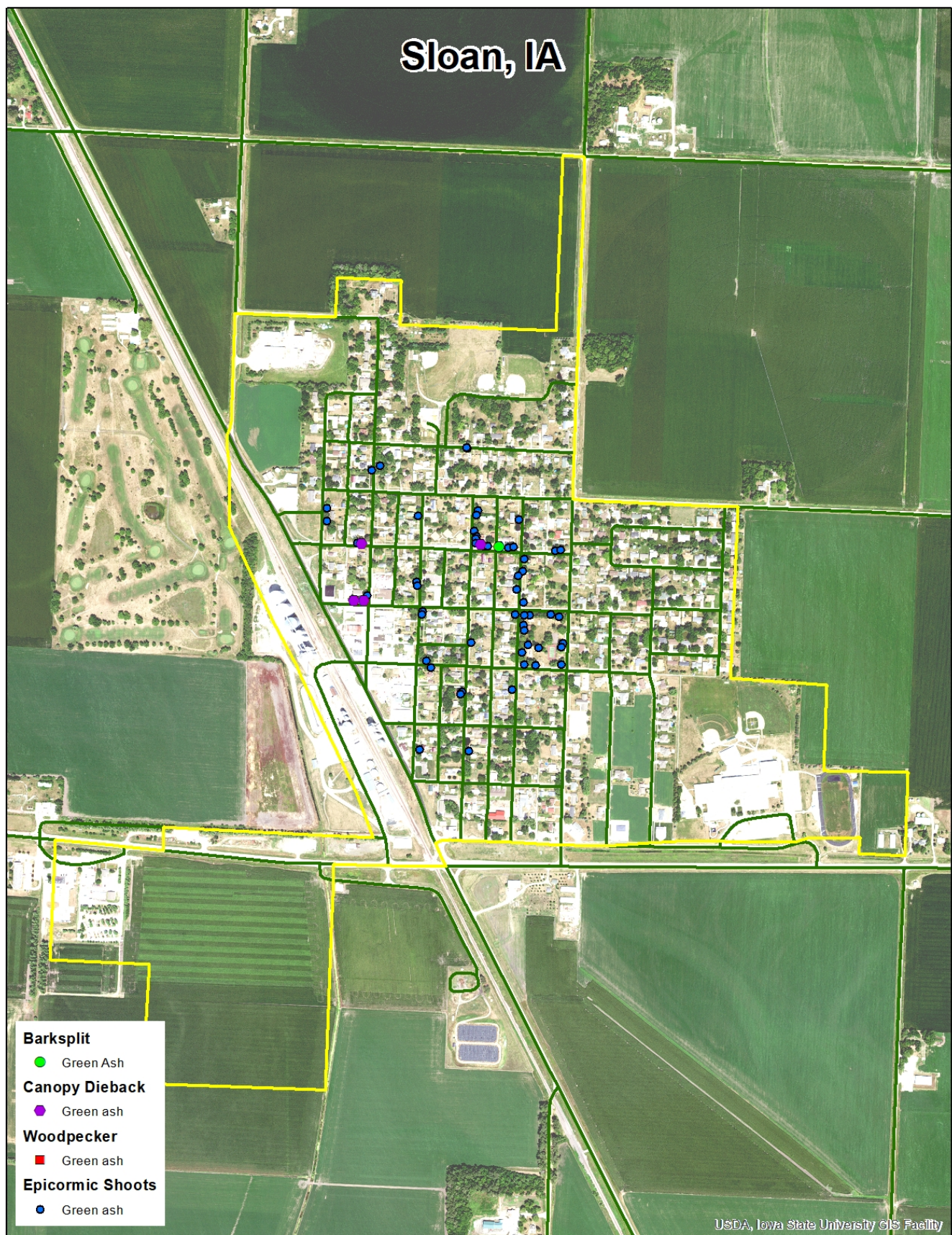

Figure 6: Land Use of city/park trees

Figure 7: Location of city/park trees

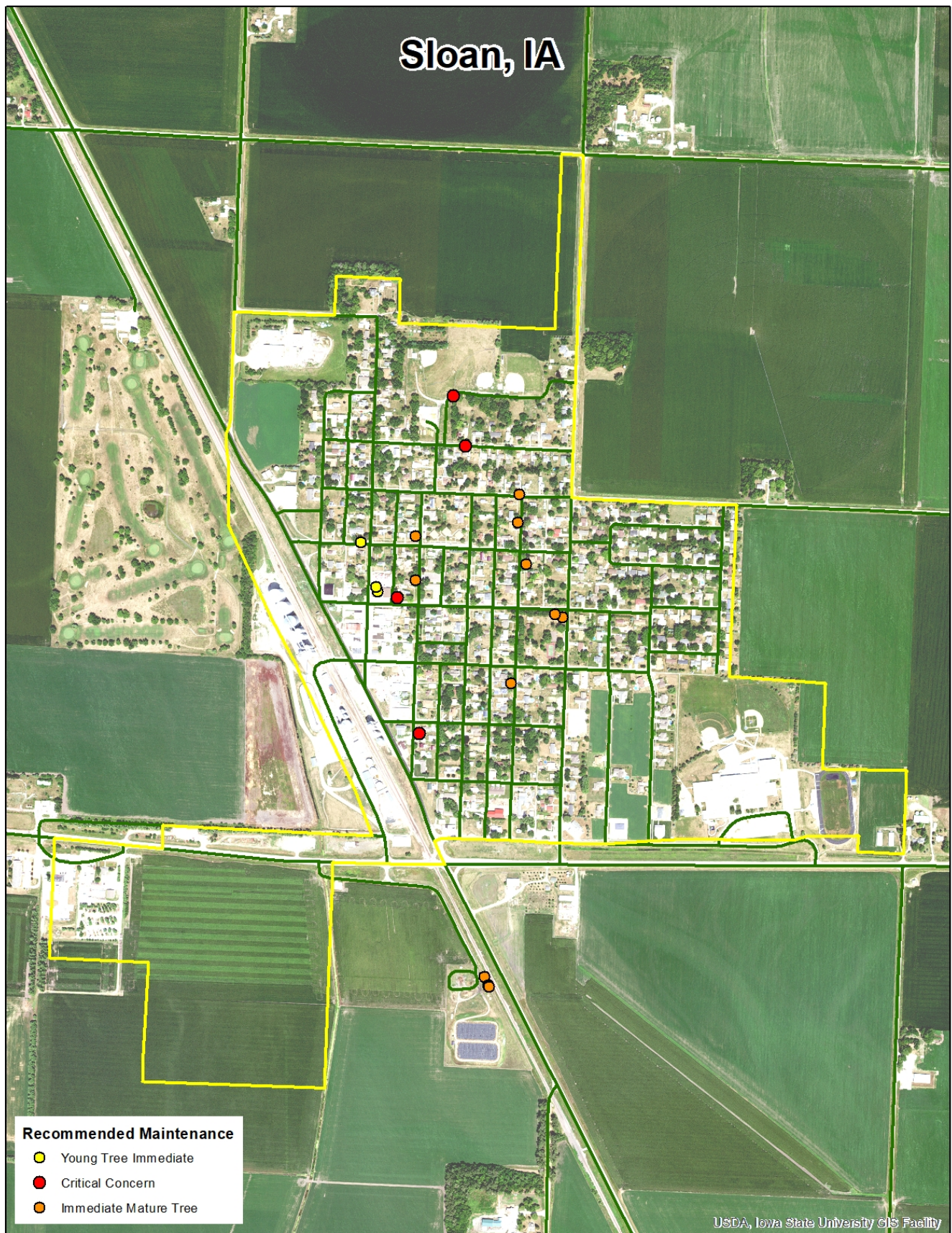# Appendix B: ArcGIS Mapping

Figure 1: Location of Ash Trees

Figure 2: Location of EAB symptoms
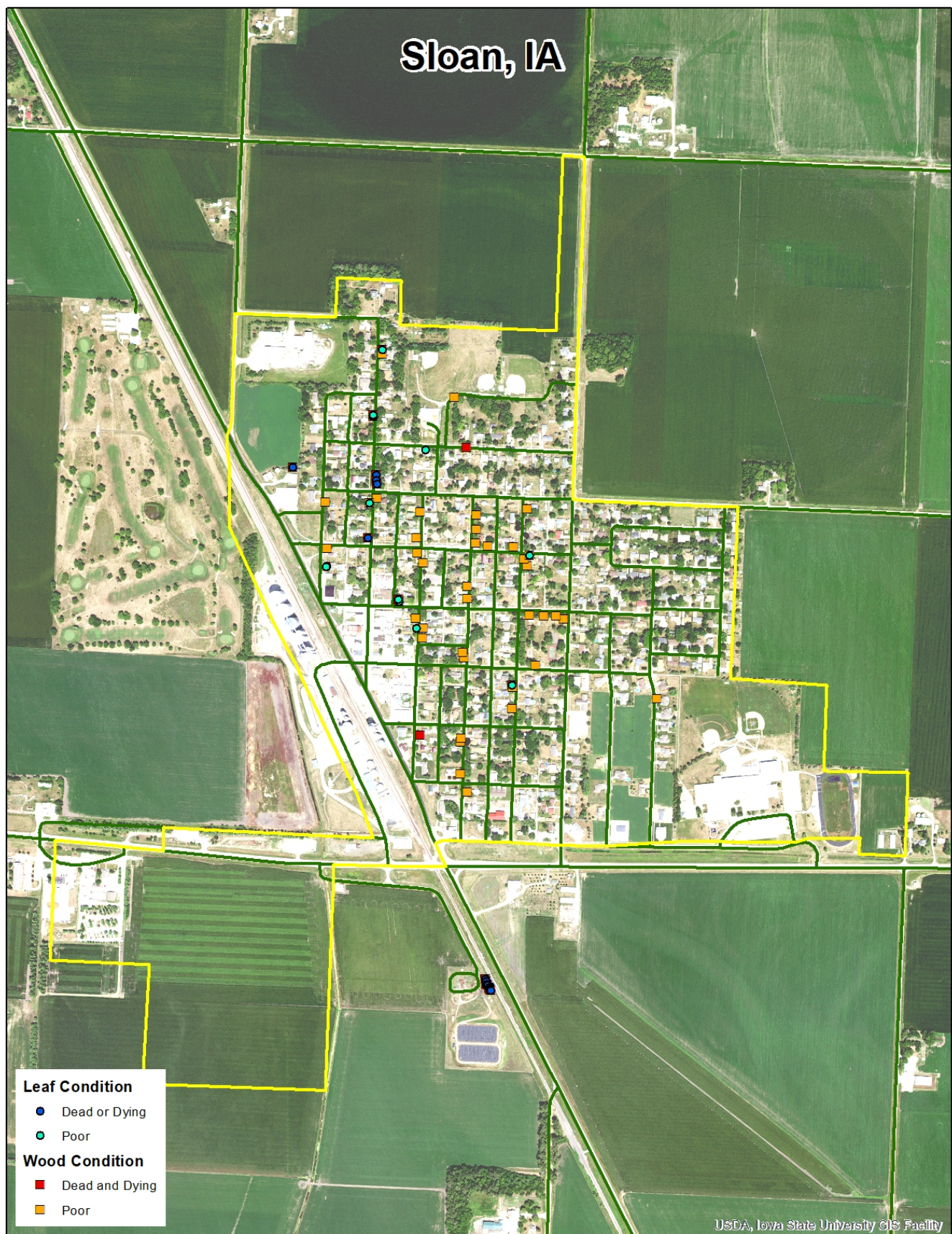
Figure 3: Location of Poor Condition Trees

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: Sloan Tree Ordinances

CHAPTER 150
TREES

150.01 Definition 150.04 Trimming Trees to Be Supervised

150.02 Planting Restrictions 150.05 Disease Control

150.03 Duty to Trim Trees 150.06 Inspection and Removal

150.01 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.

150.02 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 that 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.

150.03 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.

(Code of Iowa, Sec. 364.12[2c, d & e])

150.04 TRIMMING TREES TO BE SUPERVISED. Except as allowed in Section

150.03, 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.

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

150.06 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 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.