Community Tree Management Plan
For Whitten, IA

Prepared by the Iowa DNR
Urban and Community Forestry Program
2019

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
Size Class 7
Condition: Wood and Foliage Health 7
Canopy Cover 7
Land Use and Location 7
Management Needs 7

Recommendations **8**

Risk Management 8
Immediate Needs (defer up to 3 years) 8
Routine Maintenance (defer up to 6 years) 8
Planting 9
Continual Monitoring 9

Proposed Work Schedule & Estimated Costs **9**

Plan Prepared by: **10**

Works Cited **10**

Appendix A: i-Tree Data *12*
Table 1: Annual Energy Benefits 12
Table 2: Annual Stormwater Benefits 12
Table 3: Annual Air Quality Benefits 13
Table 4: Annual Carbon Stored 13
Table 5: Annual Carbon Sequestered 14
Table 6: Annual Social and Aesthetic Benefits 14
Table 7: Summary of Benefits in Dollars 15
Figure 1: Species Distribution 16
Figure 2: Relative Age Class 17
Figure 3: Foliage Condition 17
Figure 4: Wood Condition 18
Figure 5: Canopy Cover in Acres 19

Figure 6: Land Use of city/park trees 20
Figure 7: Location of city/park trees 20

Appendix B: ArcGIS Mapping *21*
Figure 1: Location of Ash Trees 21
Figure 3: Location of Poor Condition Trees 22
Figure 4: Location of Trees with Recommended Maintenance 23
Figure 5: Maintenance Tasks 24

Appendix C: Proposed Emerald Ash Borer Plan 3

Ash Tree Removal 3
EAB Quarantines 3
Wood Disposal 3
Canopy Replacement 3
Postponed Work 4
Monitoring 4
Private Ash Trees 4

Appendix D: Recommended Tree Planting List 5

Executive Summary

Overview

This plan was developed to assist the City of Whitten with managing its public tree population, including budgeting and future planning. Trees can provide a multitude of benefits to the community, and sound management of this resource is critical to fully reaping these rewards. Management is especially important considering the serious emerging threats posed by forest pests such as the Emerald Ash Borer (EAB), Gypsy Moth, Asian Longhorned Beetle, and others. With proper planning and management, the costs of removing dead and dying trees can be spread out over time, mitigating the financial burden as well as public safety issues.

Inventory and Results

In June 2018, a tree inventory was conducted using Global Positioning System (GPS) data collectors. The inventory was a complete survey of street and park trees. Below are some key findings of the 23 trees inventoried.

- Whitten's trees provide $4,889 of benefits annually, at an average of $213 a tree
- There are at least 12 different species of trees in Whitten
- The top four genus are: Maple 48%, Ash 13%, Poplar 13%, and Spruce 13%
- 10 trees (43% of the population) are in need of some type of maintenance (trimming, removal, etc.)

Recommendations

The core recommendations are detailed in the *Recommendations* section. Some key ones include:

- Begin planting new trees using a diverse mix of species wherever space is available and replacing existing trees that are in poor health to diversify the tree population and buffer against catastrophic tree pests such as EAB
- Address the 10 trees recommended for maintenance
- Begin regularly monitoring ash trees for signs or symptoms associated with EAB

Introduction

This plan was developed to assist Whitten with the management, budgeting and future planning of their community's 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 Whitten, these costs can be extended over years and public safety issues from dead and dying trees mitigated.

Trees are an important component of any community'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 Whitten and future generations through good urban forest management.

Good urban forest 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 Whitten maximize the benefits and minimize the costs of the tree canopy.

Inventory

In June 2018, a tree inventory was conducted of all municipally-owned trees on both streets and parks. Tree locations were recorded using a handheld Global Positioning System (GPS) receiver with an accuracy of 3 meters, which can be used as an active GIS data layer. Because the inventory is a digital document the data can be edited and 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 was 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, all ash trees were inspected for signs and symptoms of EAB. 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 23 city trees was entered into the USDA Forest service program Street Tree Resource Analysis Tool for Urban forestry Management (STRATUM), part of the i-Tree suite. The following are results from the i-Tree STRATUM analysis.

Annual Benefits

Annual Energy Benefits

Trees conserve energy by shading buildings and blocking winds. Whitten's trees reduce energy related costs by approximately $1,315 annually (Appendix A, Table 1). These savings are both in Electricity (6.4 MWh) and in Natural Gas (845.5 Therms).

Annual Stormwater Benefits

Whitten's trees intercept about 73,976 gallons of rainfall or snowmelt a year (Appendix A, Table 2). This interception provides $2,005 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 Whitten, it is estimated that trees remove 85.5 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 $241 (Appendix A, Table 3).

Annual Carbon Benefits

Carbon sequestration and storage reduce the amount of carbon in the atmosphere, mitigating climate change. In Whitten, trees sequester about 21,195 lbs of carbon each year with an associated value of $159 (Appendix A, Table 5). This equates to 340,588 lbs of carbon being stored in Whitten's trees with total benefit of $2,554 (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. Whitten receives $1,170 in annual social benefits from trees (Appendix A, Table 6).

Financial Summary of all Benefits

According to the USDA Forest Service i-Tree STRATUM analysis, Whitten's trees provide $4,889 of benefits annually. Benefits of individual trees vary based on size, species, health and location, but on average each of the 23 trees in Whitten provide approximately $213 annually (Appendix A, Table 7).

Forest Structure

Species Distribution

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

Maple	11	48%
Ash	3	13%
Spruce	3	13%
Poplar	3	3%
Birch	1	4%

Size Class

Most of Whitten's trees (87%) are over 12 inches in diameter at 4.5 ft (Appendix A, Figure 2). This indicates an imbalance in the city's tree population and suggests that as the larger, older trees decline and are removed, there is a lack of younger trees being planted to replace them. Having too many large trees and too few young ones increases the risk for catastrophic storm damage and a long "lag period" following major damage.

Condition: Wood and Foliage Health

Both wood condition and leaf condition are good indicators of the overall health of the urban forest. The survey results for Whitten indicate that 91% of the trees are in either good or fair health, while 9% of the trees are in poor health or are considered dead or dying (Appendix A, Figures 3 & 4 and Appendix B, Figure 3).

The 9% of trees classified as poor, dead, or dying represent opportunity costs to the city where time and space are being sacrificed. Trees in poor health should be promptly removed and replaced with new, healthy trees to diversify and improve the overall health and resiliency of Whitten's urban tree population.

Canopy Cover

The amount of tree canopy cover over Whitten is approximately 1 acres (Appendix A, Figure 5). According to the U.S. Census, Whitten occupies 346 acres of land. Thus the canopy cover on city land is less than 1%. This figure could be improved through increased tree planting.

Land Use and Location

The majority of Whitten's city and park trees are in planting strips in single family residential neighborhoods (Appendix A, Figures 6 & 7).

Management Needs

The following table outlines specific management needs of the street and park trees that were identified during the survey. (Appendix B, Figures 4 & 5).

Maintenance Type Needed	# of Trees	Pct. of Tree Population
Crown Cleaning	9	39%
Crown Reduction	1	4%
Tree Removal	0	0%
Crown Raising	0	0%
Tree Staking/Training	0	0%
Pest/Disease Treatment	0	0%

Definitions: "Crown cleaning" removes dead, diseased, and broken limbs. *"Crown reduction"* involves shortening or removing individual limbs to avoid interference with nearby structures, utility wires, traffic flow, or other branches. "*Removal"* implies that the entire tree needs to be removed either for safety or tree health purposes. *"Raising"* removes lower branches from the tree trunk to eliminate obstructions or clearance issues. *"Staking/training"* refers to corrective staking or pruning on very young saplings to help develop proper form and prevent future problems. "*Pest/Disease Treatment"* would imply treating very high value or important landscape trees with preventative pesticides to protect their health.

Recommendations

Risk Management

Hazardous trees and branches 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 immediately.

Hazardous trees & branches: Critical concerns

No "critical concern" trees were identified during the inventory.

Immediate Needs (defer up to 3 years)

There were 2 trees marked as needing "immediate" maintenance attention, meaning within the next three years. These include: 1 crown reduction and 1 crown cleaning. Refer to the maps in Figures 4 and 5 of Appendix B to view the locations of these trees.

Routine Maintenance (defer up to 6 years)

After addressing the immediate need trees above, there are 8 trees recommended for "routine" maintenance within the next six years (Appendix B, Figures 4 & 5). Of this number, all 8 are recommended for crown cleaning.

Proper pruning can extend the life and good health of trees, as well as reduce public safety issues. It is generally recommended that all trees be inspected for pruning needs every five to ten years.

Planting

Additional tree planting is recommended for Whitten to increase its current canopy cover and expand the benefits that those trees bring to the community. It is important to plant a diverse mix of differing species in the urban forest to maintain canopy health, since most insects and diseases target a single genus of trees (e.g., ash, maple, oak).

Current diversity recommendations advise that:

- No single species should comprise more than 10% of the total tree population in the community (e.g. silver maple, sugar maple, white oak, bur oak)
- No single genus should comprise more than 20% of the total tree population

Presently, Whitten's urban forest is heavily planted with the genus Maple, at 48% (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 for various reasons include: cottonwood, poplar, boxelder, Chinese elm, evergreens, willow, or black walnut, and any others identified in the city tree code.

A list containing generally acceptable and recommended trees for planting in Iowa is provided with this plan (Appendix D). Ensure each individual planting is tailored for the environmental conditions, available space, and other factors.

Continual Monitoring

Due to the threat of EAB, it is important to continuously check the health of ash trees. It is recommended that all ash trees which are showing any signs or symptoms of EAB be checked annually with a visual survey for tree death and for additional symptoms (canopy dieback, epicormic shoots, bark splitting, D-shaped borer exit holes, and wood pecker damage). All other ash trees in the city which aren't exhibiting these symptoms should still be routinely monitored as time allows.

Proposed Work Schedule & Estimated Costs

The trees in Whitten represent an important part of its overall infrastructure and quality of life for its residents. By budgeting for routine maintenance, replacement, and removals now, the city can be proactive and preventative rather than reactive when this pest arrives.

The following is a proposed 6-year work plan that would address the highest priority issues at this time. Estimated costs are based on $700/tree average for removal, $25/tree average for trimming*, and $150/tree average for planting. *Individual homeowners are presumed to be responsible for light trimming and staking/training of young trees in the City right-of-way. For new tree plantings & replacements, it is recommended that Whitten apply for grants. 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.

Year 1	Estimated Costs
Planting and replacements: 10 new trees	$1500
Trimming: 10 of the 10 recommended trees	$250
Routine monitoring for EAB symptoms	
Year 6	
Planting and replacements: 10 new trees	$1500
Trimming: inspect all trees for maintenance	$250
Ash tree removal (presuming EAB mortality)	$2100
Annually thereafter	
Removals: 1/year avg. focusing on poor condition ash & maple	$700
Planting and replacements: 1/year avg.	$150
Routine trimming: 2 trees/year avg.	$500

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All data and information used for this report may be obtained by contacting the Iowa DNR Forestry Bureau.

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Appendix A: i-Tree Data

Table 1: Annual Energy Benefits

Whitten

Annual Energy Benefits of Public Trees

1/10/2019

Species	Total Electricity (MWh)	Electricity ($)	Total Natural Gas (Therms)	Natural Gas ($)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Sugar maple	1.5	117	203.7	200	317	(N/A)	17.4	24.1	79.27
Ash	0.8	60	106.4	104	164	(N/A)	13.0	12.5	54.80
Blue spruce	0.3	20	39.9	39	59	(N/A)	13.0	4.5	19.75
Black maple	0.8	61	100.0	98	159	(N/A)	13.0	12.1	52.86
Norway maple	0.6	49	94.8	93	142	(N/A)	8.7	10.8	70.84
Black poplar	0.7	55	90.1	88	143	(N/A)	8.7	10.9	71.43
Birch	0.2	18	29.5	29	47	(N/A)	4.3	3.6	46.78
Cottonwood	0.5	37	63.1	62	99	(N/A)	4.3	7.5	98.63
Sweetgum	0.1	7	13.7	13	21	(N/A)	4.3	1.6	20.64
Silver maple	0.4	29	49.5	49	78	(N/A)	4.3	5.9	77.56
Red maple	0.3	19	30.1	29	49	(N/A)	4.3	3.7	48.95
Apple	0.2	14	24.7	24	38	(N/A)	4.3	2.9	38.13
Total	6.4	486	845.5	829	1,315	(N/A)	100.0	100.0	57.15

Table 2: Annual Stormwater Benefits

Whitten

Annual Stormwater Benefits of Public Trees

1/10/2019

Species	Total rainfall interception (Gal)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Sugar maple	23,715	643	(N/A)	17.4	32.1	160.67
Ash	6,583	178	(N/A)	13.0	8.9	59.46
Blue spruce	3,823	104	(N/A)	13.0	5.2	34.54
Black maple	6,075	165	(N/A)	13.0	8.2	54.87
Norway maple	7,529	204	(N/A)	8.7	10.2	102.01
Black poplar	8,704	236	(N/A)	8.7	11.8	117.95
Birch	1,409	38	(N/A)	4.3	1.9	38.19
Cottonwood	7,239	196	(N/A)	4.3	9.8	196.17
Sweetgum	608	16	(N/A)	4.3	0.8	16.47
Silver maple	6,022	163	(N/A)	4.3	8.1	163.19
Red maple	1,604	43	(N/A)	4.3	2.2	43.46
Apple	667	18	(N/A)	4.3	0.9	18.06
Citywide total	73,976	2,005	(N/A)	100.0	100.0	87.16

Table 3: Annual Air Quality Benefits

Whitten

Annual Air Quality Benefits of Public Trees

1/10/2019

Species	Deposition (lb)				Total Depos. ($)	Avoided (lb)				Total Avoided ($)	BVOC Emissions (lb)	BVOC Emissions ($)	Total (lb)	Total ($)	Standard Error	% of Total Trees	Avg. $/tree
	O_3	NO_2	PM_{10}	SO_2		NO_2	PM_{10}	VOC	SO_2								
Sugar maple	4.0	0.7	1.9	0.2	21	7.3	1.1	1.0	7.0	46	-3.1	-12	20.1	55	(N/A)	17.4	13.87
Ash	1.3	0.2	0.6	0.1	7	3.8	0.6	0.5	3.6	24	-0.3	-1	10.4	29	(N/A)	13.0	9.81
Blue spruce	0.5	0.1	0.4	0.1	3	1.3	0.2	0.2	1.2	8	-1.4	-5	2.6	6	(N/A)	13.0	2.06
Black maple	1.4	0.2	0.7	0.1	7	3.7	0.5	0.5	3.6	23	-0.5	-2	10.3	29	(N/A)	13.0	9.68
Norway maple	1.7	0.3	0.8	0.1	9	3.1	0.5	0.4	2.9	19	-0.4	-1	9.5	27	(N/A)	8.7	13.58
Black poplar	1.7	0.3	0.8	0.1	9	3.4	0.5	0.5	3.3	21	0.0	0	10.4	30	(N/A)	8.7	14.99
Birch	0.2	0.0	0.1	0.0	1	1.1	0.2	0.2	1.1	7	-0.1	0	2.8	8	(N/A)	4.3	7.92
Cottonwood	1.6	0.3	0.7	0.1	8	2.3	0.3	0.3	2.2	14	0.0	0	7.7	23	(N/A)	4.3	22.55
Sweetgum	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)	4.3	2.99
Silver maple	1.1	0.2	0.5	0.0	6	1.8	0.3	0.3	1.7	11	-0.5	-2	5.4	15	(N/A)	4.3	15.14
Red maple	0.3	0.1	0.2	0.0	2	1.2	0.2	0.2	1.2	7	-0.1	0	3.1	9	(N/A)	4.3	8.75
Apple	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)	4.3	6.56
Citywide total	14.1	2.4	6.8	0.7	75	30.3	4.4	4.2	29.0	189	-6.3	-24	85.5	241	(N/A)	100.0	10.48

Table 4: Annual Carbon Stored

Whitten

Stored CO2 Benefits of Public Trees

1/10/2019

Species	Total Stored CO2 (lbs)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Sugar maple	122,314	917	(N/A)	17.4	35.9	229.34
Ash	21,528	161	(N/A)	13.0	6.3	53.82
Blue spruce	3,230	24	(N/A)	13.0	0.9	8.07
Black maple	15,194	114	(N/A)	13.0	4.5	37.98
Norway maple	28,560	214	(N/A)	8.7	8.4	107.10
Black poplar	59,654	447	(N/A)	8.7	17.5	223.70
Birch	3,624	27	(N/A)	4.3	1.1	27.18
Cottonwood	55,982	420	(N/A)	4.3	16.4	419.86
Sweetgum	1,035	8	(N/A)	4.3	0.3	7.76
Silver maple	22,806	171	(N/A)	4.3	6.7	171.04
Red maple	3,624	27	(N/A)	4.3	1.1	27.18
Apple	3,037	23	(N/A)	4.3	0.9	22.78
Citywide total	340,588	2,554	(N/A)	100.0	100.0	111.06

Table 5: Annual Carbon Sequestered

Whitten

Annual CO Benefits of Public Trees

1/10/2019

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
Sugar maple	4,659	35	-587	-19	-5	2,595	19	6,648	50	(N/A)	17.4	31.4	12.46
Ash	1,142	9	-103	-7	-1	1,329	10	2,360	18	(N/A)	13.0	11.1	5.90
Blue spruce	224	2	-16	-5	0	445	3	649	5	(N/A)	13.0	3.1	1.62
Black maple	966	7	-73	-7	-1	1,339	10	2,226	17	(N/A)	13.0	10.5	5.56
Norway maple	740	6	-137	-7	-1	1,077	8	1,673	13	(N/A)	8.7	7.9	6.27
Black poplar	924	7	-286	-8	-2	1,206	9	1,836	14	(N/A)	8.7	8.7	6.88
Birch	386	3	-17	-2	0	395	3	762	6	(N/A)	4.3	3.6	5.71
Cottonwood	479	4	-269	-6	-2	813	6	1,017	8	(N/A)	4.3	4.8	7.63
Sweetgum	209	2	-5	-1	0	159	1	361	3	(N/A)	4.3	1.7	2.71
Silver maple	1,681	13	-109	-4	-1	642	5	2,209	17	(N/A)	4.3	10.4	16.57
Red maple	483	4	-17	-2	0	431	3	895	7	(N/A)	4.3	4.2	6.71
Apple	268	2	-15	-2	0	308	2	560	4	(N/A)	4.3	2.6	4.20
Citywide total	12,161	91	-1,635	-70	-13	10,738	81	21,195	159	(N/A)	100.0	100.0	6.91

Table 6: Annual Social and Aesthetic Benefits

Whitten

Annual Aesthetic/Other Benefits of Public Trees

1/10/2019

Species	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Sugar maple	427	(N/A)	17.4	36.5	106.87
Ash	110	(N/A)	13.0	9.4	36.59
Blue spruce	62	(N/A)	13.0	5.3	20.71
Black maple	132	(N/A)	13.0	11.3	43.93
Norway maple	63	(N/A)	8.7	5.4	31.46
Black poplar	74	(N/A)	8.7	6.4	37.21
Birch	39	(N/A)	4.3	3.3	39.16
Cottonwood	29	(N/A)	4.3	2.4	28.57
Sweetgum	29	(N/A)	4.3	2.4	28.56
Silver maple	124	(N/A)	4.3	10.6	123.87
Red maple	66	(N/A)	4.3	5.6	65.89
Apple	15	(N/A)	4.3	1.3	15.48
Citywide total	1,170	(N/A)	100.0	100.0	50.87

Table 7: Summary of Benefits in Dollars

Whitten

Annual Aesthetic/Other Benefits of Public Trees

1/10/2019

Species	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Sugar maple	427	(N/A)	17.4	36.5	106.87
Ash	110	(N/A)	13.0	9.4	36.59
Blue spruce	62	(N/A)	13.0	5.3	20.71
Black maple	132	(N/A)	13.0	11.3	43.93
Norway maple	63	(N/A)	8.7	5.4	31.46
Black poplar	74	(N/A)	8.7	6.4	37.21
Birch	39	(N/A)	4.3	3.3	39.16
Cottonwood	29	(N/A)	4.3	2.4	28.57
Sweetgum	29	(N/A)	4.3	2.4	28.56
Silver maple	124	(N/A)	4.3	10.6	123.87
Red maple	66	(N/A)	4.3	5.6	65.89
Apple	15	(N/A)	4.3	1.3	15.48
Citywide total	1,170	(N/A)	100.0	100.0	50.87

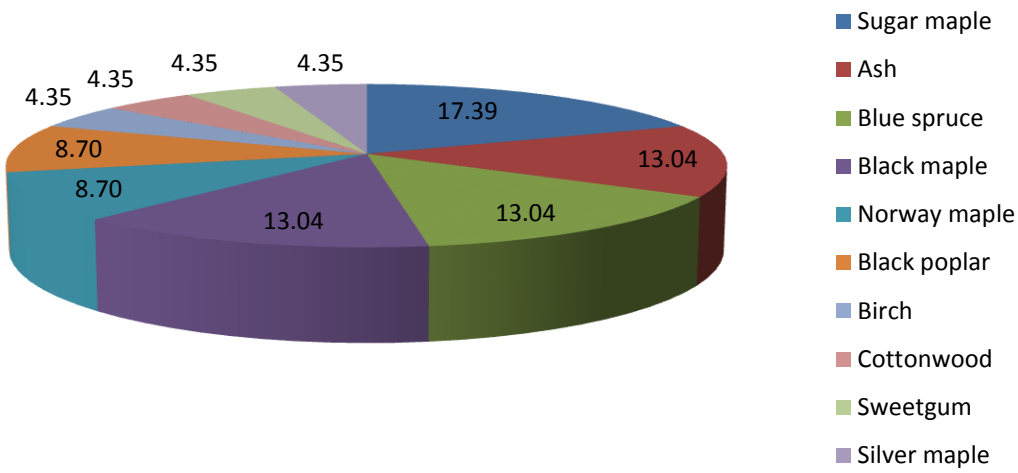

Figure 1: Species Distribution

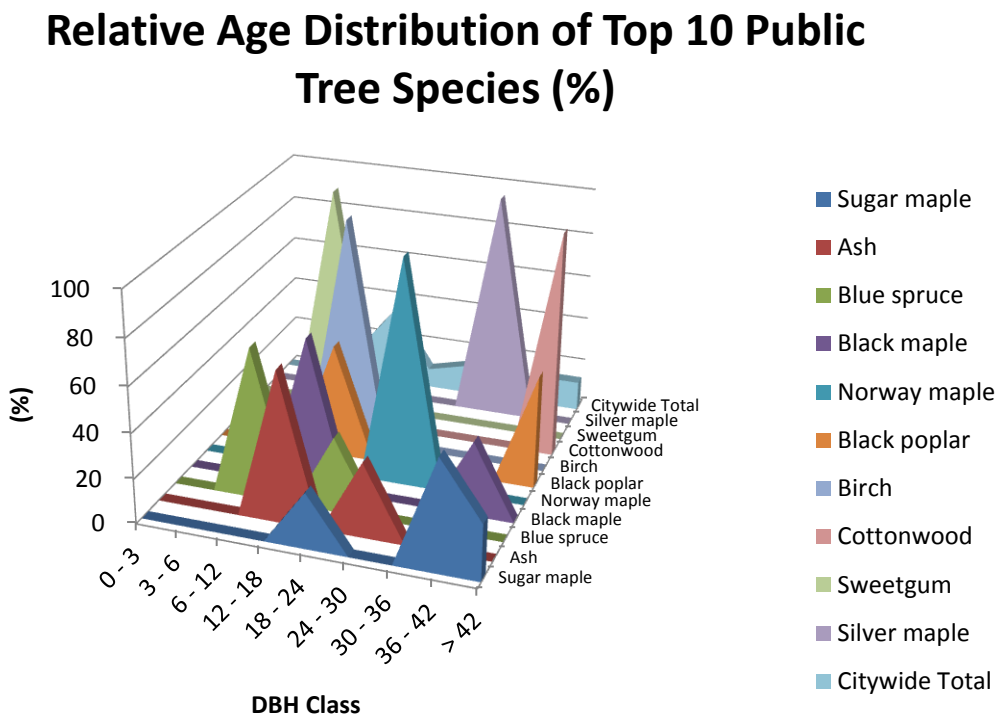

Figure 2: Relative Age Class

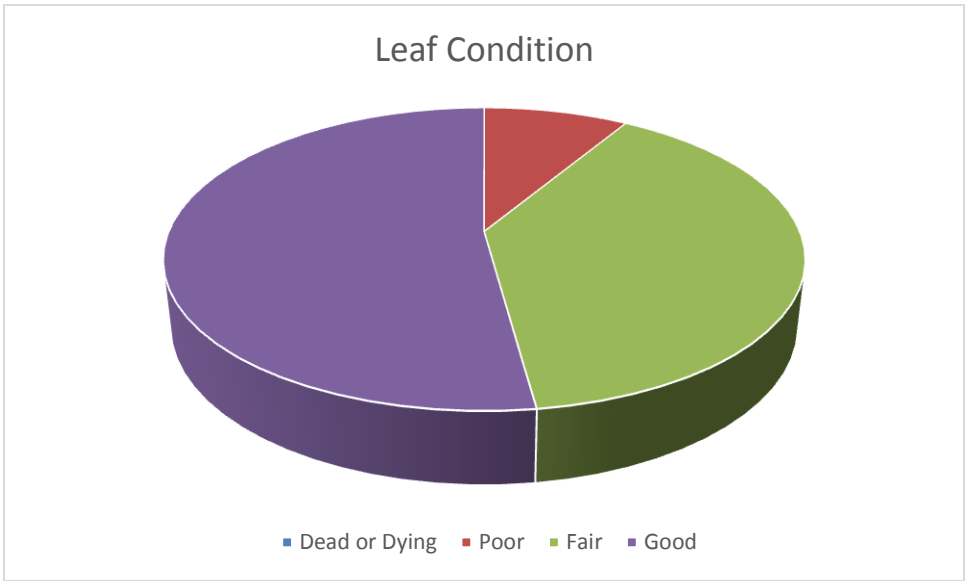

Figure 3: Foliage Condition

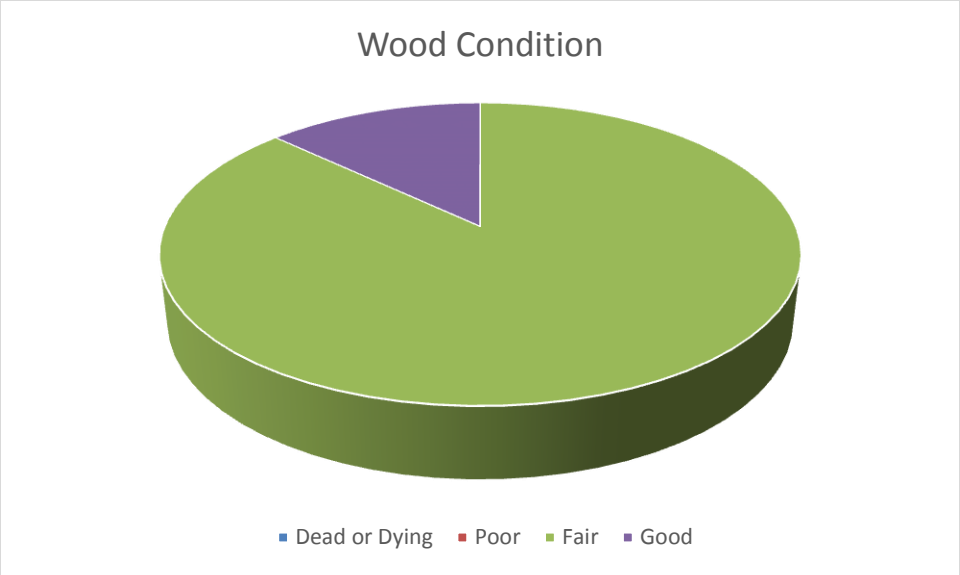

Figure 4: Wood Condition

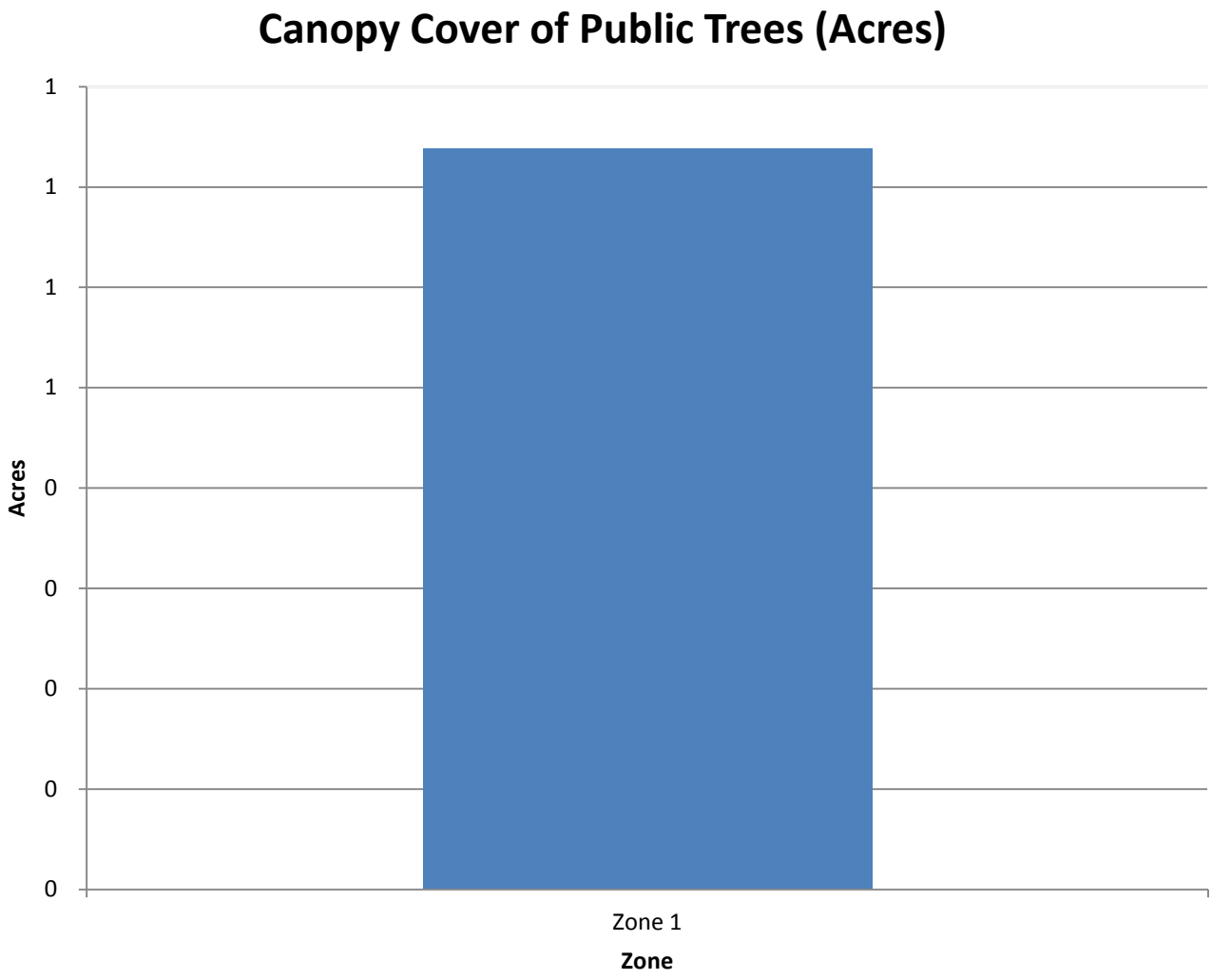

Figure 5: Canopy Cover in Acres

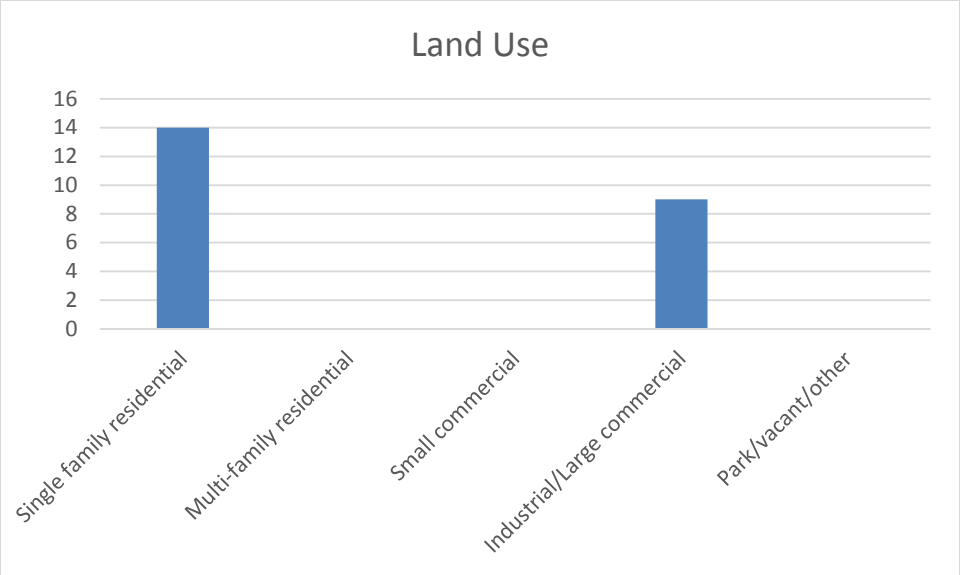

Figure 6: Land Use of city/park trees

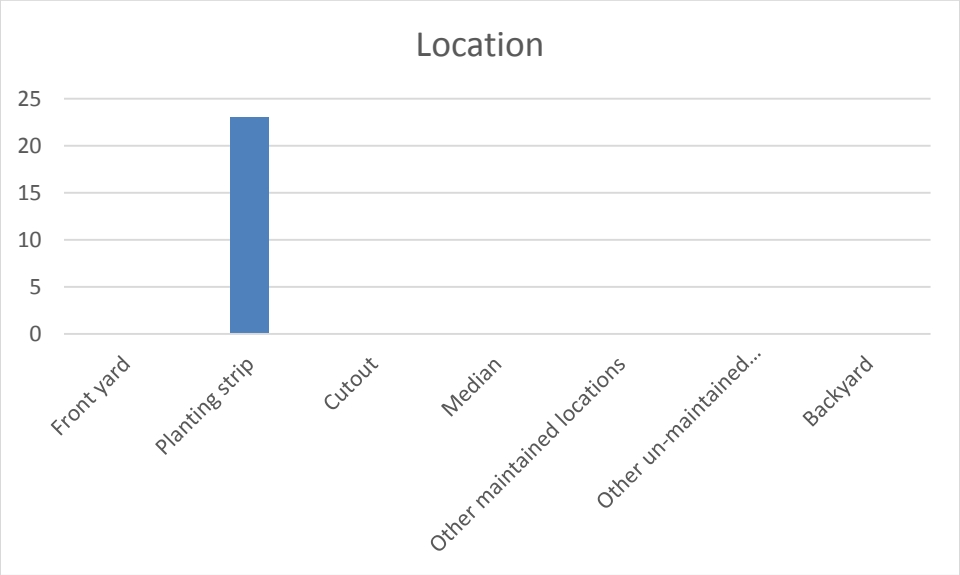

Figure 7: Location of city/park trees

Appendix B: ArcGIS Mapping

Figure 1: Location of Ash Trees

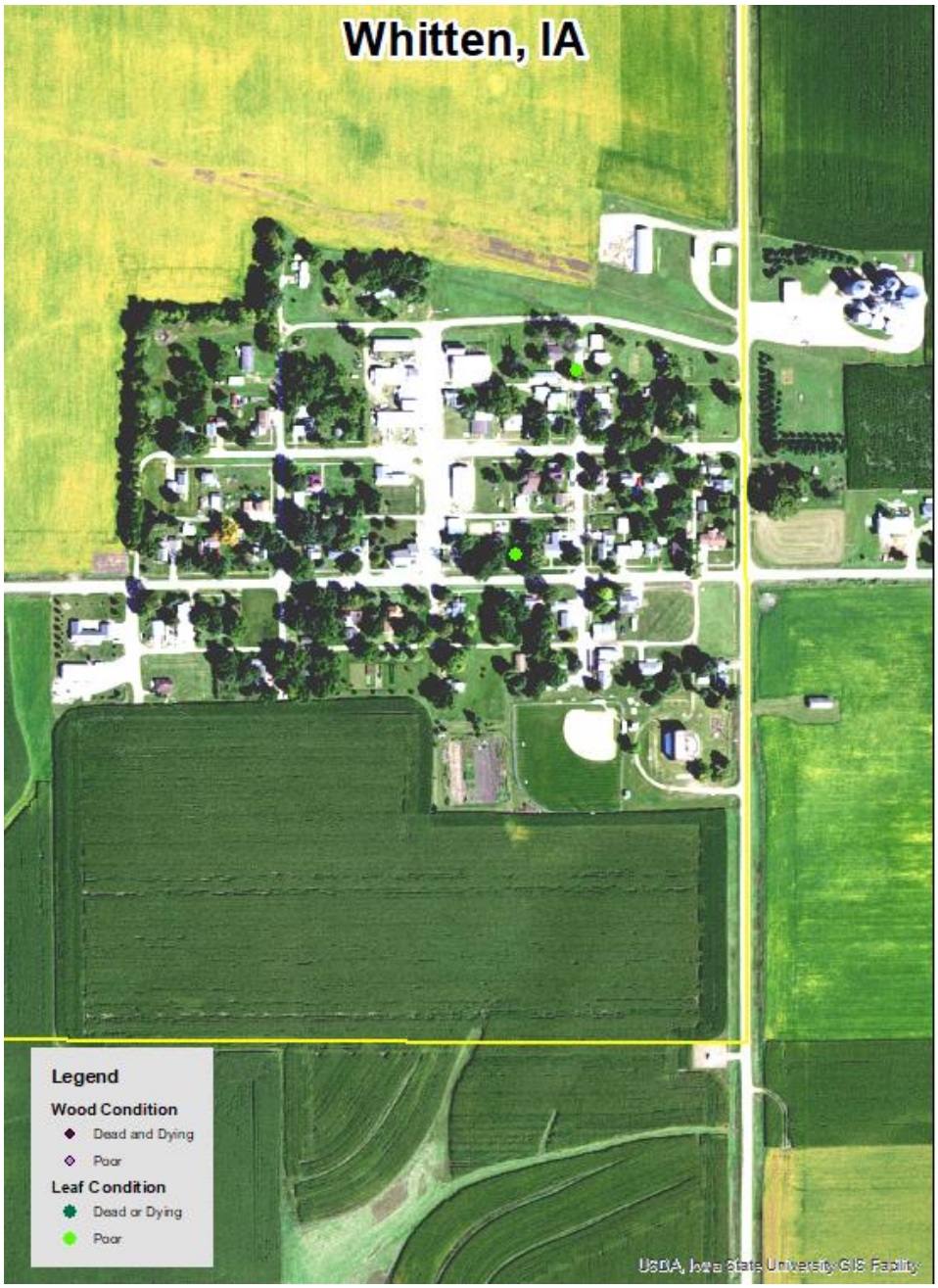

Figure 3: Location of Poor Condition Trees

Figure 4: Location of Trees with Recommended Maintenance

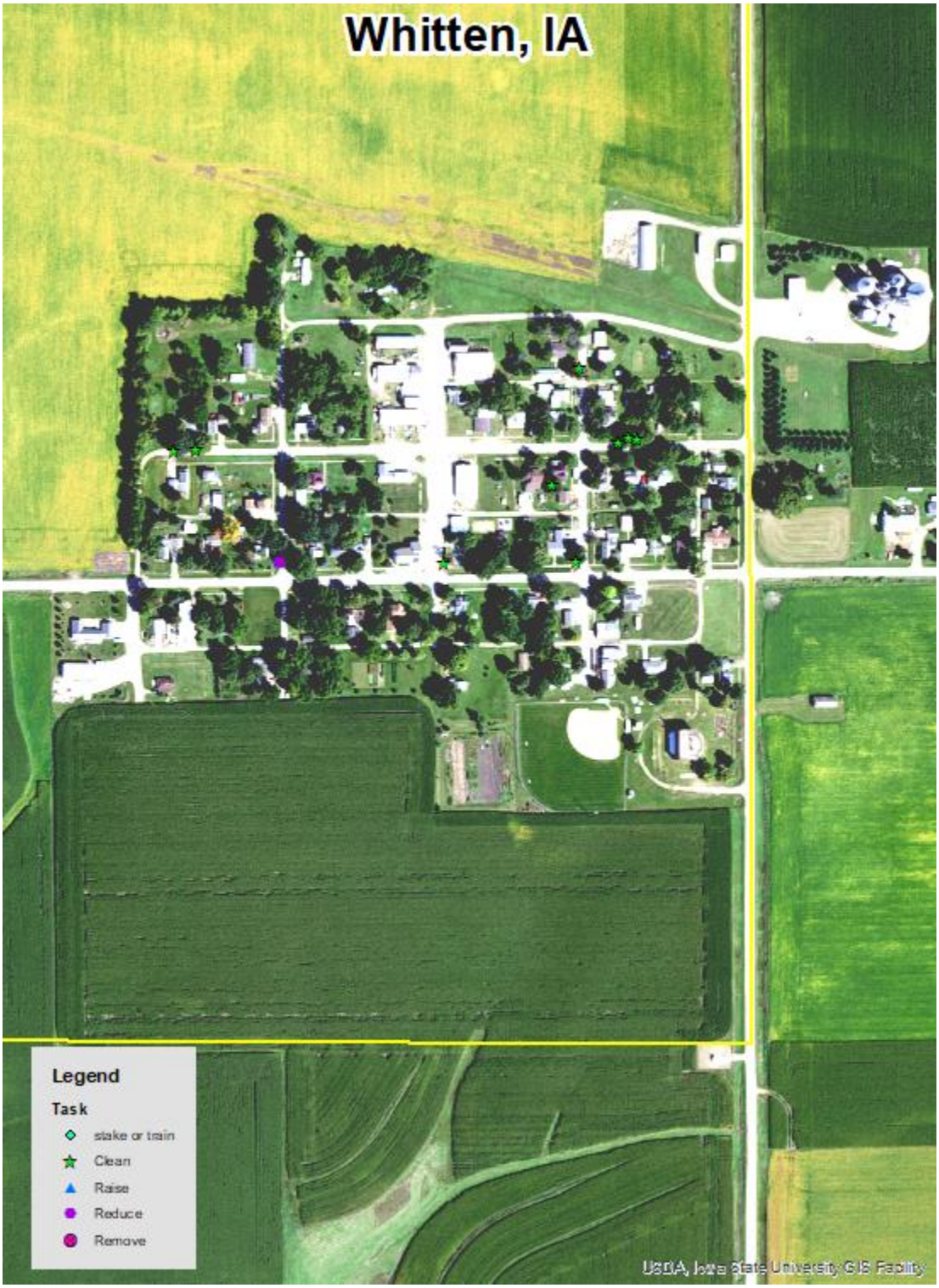

Figure 5: Maintenance Tasks

Appendix C: Proposed Emerald Ash Borer Plan

Ash Tree Removal

Ash trees that become infested with EAB will die within 6-8 years and can present very serious risks to life and property. Once branches or trees die, the tissue can become very brittle and unpredictable within 1-2 years, making removal more dangerous and expensive for tree services. Therefore, it is recommended that ash trees be removed immediately as soon as signs and symptoms of EAB are detected in those trees. Dead, dying, and hazardous ash trees should be prioritized for removal first to mitigate public safety and risk. Next should be all ash in poor condition and displaying early signs and symptoms of EAB. *City ownership of the tree recommended for removal should be verified prior to any removal*

EAB Quarantines

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.

The entire State of Iowa is under a quarantine which prohibits the transport of regulated articles to areas outside the federal quarantine area. For a current quarantine map, please visit http://www.emeraldashborer.info/moving-firewood.php. County-to-county transport of regulated articles inside the State of Iowa is permitted, but discouraged.

Wood Disposal

Wood waste can be disposed of by typical means, such as chipping, composting, burning, etc. Cities and residents are encouraged to destroy ash materials promptly to prevent their spread to other neighboring communities and counties. Firewood from ash trees should be kept and used locally as much as possible.

Canopy Replacement

Replace all ash trees promptly with a diverse species mix as budgets allow. Encourage local residents to plant trees on their adjoining properties. All trees should meet the guidelines in the City Code.

Postponed Work

While finances, staffing and equipment are focused on the management of ash, usual services may be delayed. Tree removal requests on trees 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 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 either before or upon arrival of EAB. Preventative treatments using insecticides are available to protect highly valuable ash trees but must be administered for the remainder of the tree's life. Treatments are formulated either for homeowner use or via professionally-applied trunk injections, depending on tree size, in accordance with ISU Extension bulletin PM-2084 (available online for free).

Appendix D: Recommended Tree Planting List

IOWA TREE LIST			
	*This is a statewide list; Species survivability may vary by location.		
	Common Name	**Scientific Name**	**Cultivars/ Selections**
SHADE TREES	Black Maple	*Acer nigrum*	
	Red Maple	*Acer rubrum*	Burgundy Belle, Red Sunset, Scarlet Jewel, Redpoint, Somerset
	Sugar Maple	*Acer saccharum*	Commemoration, Crescendo, Endowment, Fall Fiesta, Legacy, Green Mountain
	River Birch	*Betula nigra*	Heritage
	White-barked Birch	*Betula populifolia*	Whitespire Sr.
	American Elm	*Ulmus Americana*	Jefferson, Prairie Expedition (Lewis and Clark), Princeton
	Pecan	*Carya illinoinensis*	
	Shellbark Hickory	*Carya laciniosa*	
	Shagbark Hickory	*Carya ovata*	
	Hackberry	*Celtis occidentalis*	Chicagoland, Prairie Pride, Windy City
	Yellowwood	*Cladrastis kentuckea*	
	Turkish Filbert	*Corylus columa*	
	Ginkgo (male only)	*Ginkgo biloba*	Autumn Gold, Golden Colonnade, Halka, Magyar, Presidential Gold, Princeton Sentry
	Thornless Honeylocust	*Gleditisia triacanthos*	Northern Acclaim, Skyline, Shademaster
	Kentucky Coffeetree	*Gymnocladus dioicus*	
	Sweetgum	*Liquidambar styraciflua*	
	Tuliptree	*Liriodendron tulipifera*	
	Cucumbertree Magnolia	*Magnolia acuminata*	
	Blackgum	*Nyssa slyvatica*	
	London Planetree	*Platanus x acerfolia*	Bloodgood, Exclamation
	White Oak	*Quercus alba*	
	Swamp White Oak	*Quercus bicolor*	
	Scarlet Oak	*Quercus coccinea*	
	Shingle Oak	*Quercus imbricaria*	
	Bur Oak	*Quercus macrocarpa*	
	Chinkapin Oak	*Quercus muehlenbergii*	
	Pin Oak	*Quercus Palustris*	
	Northern Red Oak	*Quercus rubra*	
	American Linden	*Tilia americana*	Boulevard, Front Yard, Legend, American Sentry
	Silver Linden	*Tilia tomemtosa*	
	Littleleaf Linden	*Tilia Cordata*	Glenleven
LOW-GROWING TREES	Serviceberry	*Amelanchier spp.*	Autumn Brilliance, Cole's Select, Cumulus, Princess Diana, Strata
	American Hornbeam	*Carpinus caroliniana*	
	Eastern Redbud	*Cercis canadensis*	
	Pagoda Dogwood	*Cornus alternifolia*	
	Flowering Crabapple	*Malus spp.*	Adirondack, Cardinal, David, Donald Wyman, Doublooms, Floribunda, Golden Raindrops, Harvest Gold, Indian Magic, Louisa, Mary Potter, Purple Prince, Red Jewel, Royal Fountain, Royal Raindrops, Sugar Tyme
	American Hophombeam	*Ostyra virginiana*	
	American Plum	*Prunus americana*	
	Japanese Tree Lilac	*Syringa reticulata*	Ivory Silk, Summer Snow
CONIFERS	White Fir	*Abies concolor*	
	Norway Spruce	*Picea abies*	
	White Spruce	*Picea glauca*	
	Black Hills Spruce	*Picea glauca var. densata*	
	Serbian Spruce	*Picea omorika*	
	White Pine	*Pinus strobus*	
	Arborvitae	*Thuja occidentalis*	
	Canadian Hemlock	*Tsuga canadensis*	
	Larch	*Larix decidua*	
	Bald Cypress	*Taxodium distichum*	

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