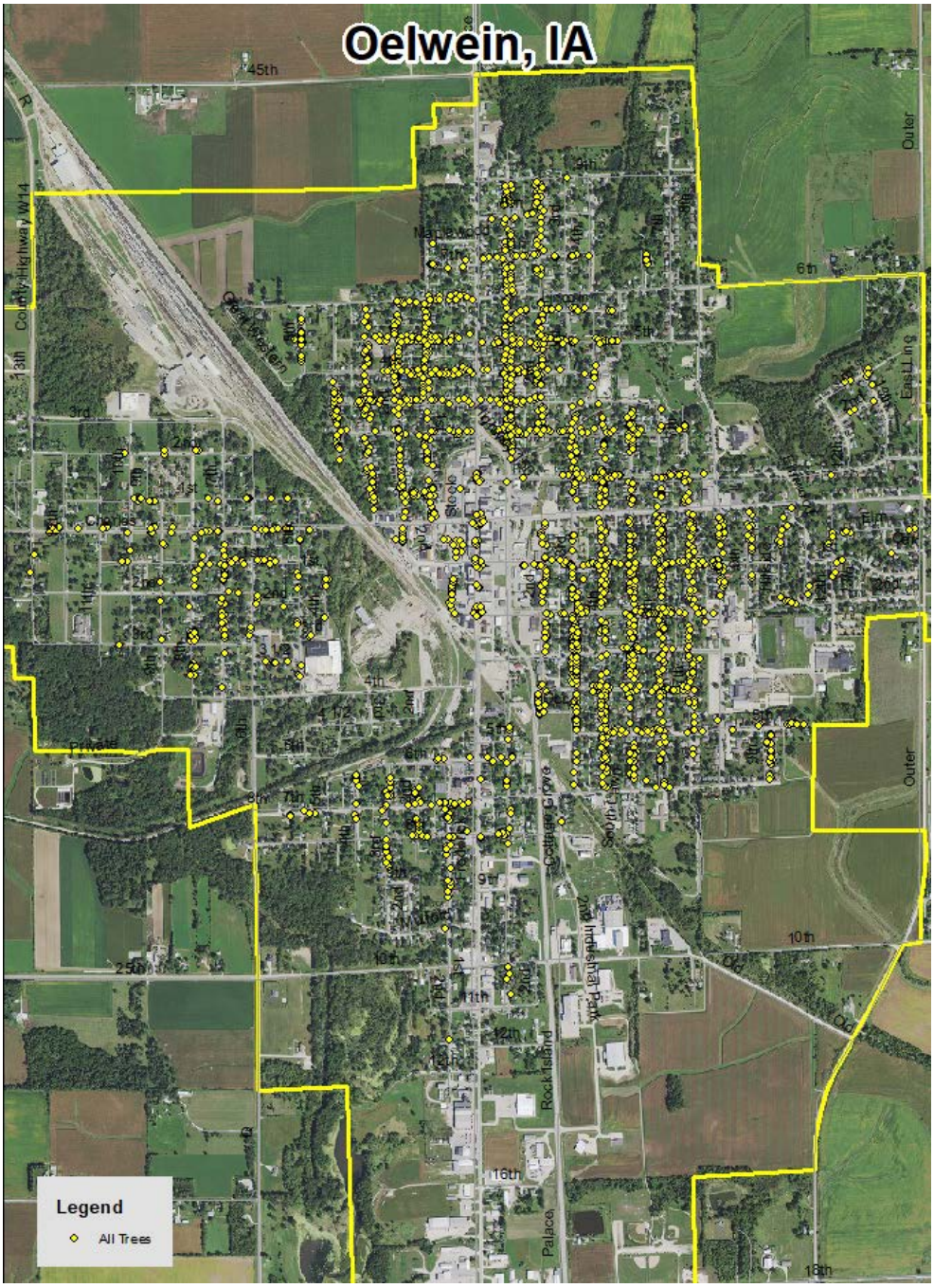
Oelwein, IA



2018 Urban Forest Management Plan
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Executive Summary

Overview

This plan was developed to assist the City of Oelwein 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 18% of Oelwein'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 2017, 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 1,988 trees inventoried.

- Oelwein's trees provide $395,978 of benefits annually, an average of $199 a tree
- There are over 74 species of trees
- The top three genera are: Maple 53%, Ash 18%, and Linden 5%
- 65% of trees are in need of some type of management
- 429 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 429 trees needing removal, 177 are critical concerns and must be addressed immediately *City ownership of the trees recommended for removal should be verified prior to any removal*
- All trees should be pruned on a routine schedule- one third of the city every other year
- Plant a diverse mix of trees
- Check ash trees with a visual survey yearly

Introduction

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

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

Inventory

In 2017, 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 1,988 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. Oelwein's trees reduce energy related costs by approximately $105,296 annually (Appendix A, Table 1). These savings are both in Electricity (500.5 MWh) and in Natural Gas (68,679 Therms).

Annual Stormwater Benefits

Oelwein's trees intercept about 5,475,204 gallons of rainfall or snow melt a year (Appendix A, Table 2). This interception provides $148,378 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 Oelwein, it is estimated that trees remove 5,066 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 $18,541 (Appendix A, Table 3).

Annual Carbon Benefits

Carbon sequestration and storage reduce the amount of carbon in the atmosphere, mitigating climate change. In Oelwein, trees sequester about 1,200,884 lbs of carbon a year with an associated value of $14,532 (Appendix A, Table 5). In addition, the trees store 20,306,572 lbs of carbon, with a yearly benefit of $152,299 (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. Oelwein receives $109,230 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, Oelwein's trees provide $395,978 of benefits annually. Benefits of individual trees vary based on size, species, health and location, but on average each of the 1,988 trees in Oelwein provide approximately $199 annually (Appendix A, Table 7).

Forest Structure

Species Distribution

Oelwein has over 74 different tree species along city streets and parks (Appendix A, Figure 1).
The distribution of trees by genera is as follows:

Maple	1051	53%
Ash	351	18%

Linden	92	5%
Walnut	57	3%
Oak	53	3%
Apple (crabapple)	46	2%
Black locust	46	2%
Honeylocust	38	2%
Elm	36	2%
Hackberry	30	2%
Other	27	1%
Spruce	27	1%
Cottonwood/Poplar	25	1%
Arborvitae	23	1%
Catalpa	13	1%
Pine	13	1%
Lilac	9	<1%
Birch	8	<1%
Sycamore	7	<1%
Chestnut	5	<1%
Pear	5	<1%
Mulberry	4	<1%
Buckeye	2	<1%
Hickory	2	<1%
Redbud	2	<1%
Dogwood	2	<1%
Kentucky Coffeetree	2	<1%
Cedar	2	<1%
Magnolia	2	<1%
Hophornbeam	2	<1%
Cherry	2	<1%
Ginkgo	1	<1%
Tuliptree	1	<1%
Sumac	1	<1%
Willow	1	<1%

Age Class

Most of Oelwein's trees (44%) are between 12 and 24 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. Oelwein'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 Oelwein indicate that 48% of the trees are in good health, with only 4% of the foliage in poor health, dead or dying (Appendix A, Figure 3 & Appendix B, Figure 3). Similarly,

14% of Oelwein'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 14% of the population. This 14% 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	335	17%
Crown Raising	508	25%
Tree Staking	14	<1%
Tree Removal	429	22%
Crown Reduction	18	1%

Canopy Cover

The total canopy with both private and public trees is 21%, 641 acres. The canopy cover included in the Oelwein inventory includes approximately 57 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 227 trees need to be planted annually on private and public lands.

Land Use and Location

The majority of Oelwein'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	97%
Park/vacant/other	1%
Industrial/Large commercial	<1%
Small commercial	<1%
Multifamily residential	<1%

Location	
Planting strip	90%
Other maintained locations	0%
Cutout (surrounded by pavement)	<1%
Front yard	1%

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

Oelwein has 177 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 14 trees over 24 inches in diameter at 4.5 ft that 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 maintenance. There are a total of 1,304 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 429 removals, 343 are ash trees. There are a total of 151 ash trees, and 92 of those have signs and symptoms that have been associated with EAB. In addition, there are 38 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 Oelwein.

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 (53%) (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. All trees planted must meet the restrictions in city tree policy (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: 100 largest and critical concern trees
Planting and Replacement: 120 trees to be planted in open locations
Young Tree Pruning & Maintenance
Visual Survey for signs and symptoms of EAB

Year 2

Removal: 50
Planting and Replacement: 60 trees in open locations from year one removals
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: 100 trees
Planting and Replacement: 120
Young Tree Pruning & Maintenance
Visual Survey for signs and symptoms of EAB

Year 4

Removal: 50
Planting and Replacement: 60 trees in open locations from year one removals
Young Tree Pruning & Maintenance:
Routine trimming: Contract to trim 1/3 of the city trees
Visual Survey for signs and symptoms of EAB

Year 5

Removal: 100 trees
Planting and Replacement: 120
Young Tree Pruning & Maintenance
Visual Survey for signs and symptoms of EAB

Year 6

Removal: 50
Planting and Replacement: 60 trees in open locations from year one removals
Young Tree Pruning & Maintenance:
Routine trimming: Contract to trim 1/3 of the city trees
Visual Survey for signs and symptoms of EAB

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 tree policy.

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 Tree Policy "The Urban Forester may remove or order to be removed any tree or shrub or part thereof which is in an unsafe condition or which by reason of its nature is injurious to sewers, gas lines, water lines or other public improvements or is affected with any injurious fungus, insect or other pest or which obstructs view of traffic."

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Appendix A: i-Tree Data

Table 1: Annual Energy Benefits

Oelwein

Annual Energy Benefits of Public Trees

4/3/2018

Species	Total Electricity (MWh)	Electricity ($)	Total Natural Gas (Therms)	Natural Gas ($)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Norway maple	126.0	9,565	18,116.4	17,754	27,319	(N/A)	25.5	25.9	53.99
Silver maple	113.6	8,621	14,964.9	14,666	23,286	(N/A)	17.0	22.1	69.10
Green ash	72.7	5,516	9,827.7	9,631	15,148	(N/A)	13.6	14.4	56.10
Ash	18.3	1,391	2,569.8	2,518	3,909	(N/A)	3.7	3.7	53.55
Maple	16.0	1,214	2,117.1	2,075	3,288	(N/A)	3.6	3.1	45.67
Littleleaf linden	6.0	454	850.9	834	1,288	(N/A)	3.4	1.2	18.94
Sugar maple	17.7	1,345	2,392.8	2,345	3,690	(N/A)	3.3	3.5	55.91
Black walnut	14.4	1,089	1,886.8	1,849	2,938	(N/A)	2.9	2.8	51.55
Red maple	11.9	907	1,568.8	1,537	2,444	(N/A)	2.6	2.3	47.92
Black locust	9.0	686	1,282.4	1,257	1,943	(N/A)	2.3	1.8	42.24
Apple	4.4	337	675.2	662	999	(N/A)	2.3	0.9	21.71
Honeylocust	11.8	898	1,542.7	1,512	2,410	(N/A)	1.9	2.3	63.42
Northern hackberry	9.7	740	1,405.7	1,378	2,117	(N/A)	1.5	2.0	70.58
American basswood	6.5	490	919.5	901	1,391	(N/A)	1.2	1.3	57.98
Northern white cedar	1.9	140	249.7	245	385	(N/A)	1.2	0.4	16.75
Pin oak	6.4	488	862.2	845	1,333	(N/A)	1.0	1.3	66.65
Cottonwood	6.3	477	841.2	824	1,301	(N/A)	0.8	1.2	81.31
Elm	3.7	279	484.2	475	754	(N/A)	0.7	0.7	53.85
Spruce	1.3	101	165.9	163	263	(N/A)	0.6	0.3	23.94
Northern red oak	1.7	129	239.4	235	363	(N/A)	0.6	0.3	33.04
Chinese elm	2.2	163	296.2	290	453	(N/A)	0.5	0.4	45.35
Northern catalpa	3.5	267	488.5	479	746	(N/A)	0.5	0.7	74.60
Broadleaf Deciduous Small	0.4	31	70.5	69	100	(N/A)	0.5	0.1	9.98
White ash	1.6	119	204.0	200	319	(N/A)	0.4	0.3	39.90
American elm	2.8	211	383.5	376	587	(N/A)	0.4	0.6	73.38
Northern pin oak	2.1	158	304.5	298	456	(N/A)	0.4	0.4	57.06
Lilac	0.7	51	103.2	101	152	(N/A)	0.4	0.1	19.01
Blue spruce	0.7	57	103.7	102	159	(N/A)	0.4	0.2	22.65
Black maple	1.6	123	222.7	218	341	(N/A)	0.4	0.3	48.69
Black poplar	2.4	179	323.6	317	496	(N/A)	0.4	0.5	70.88
American sycamore	2.6	200	365.9	359	559	(N/A)	0.4	0.5	79.83
American chestnut	1.5	117	212.5	208	325	(N/A)	0.3	0.3	65.08
River birch	0.9	72	141.4	139	210	(N/A)	0.3	0.2	42.09
Broadleaf Evergreen Large	1.3	101	180.7	177	278	(N/A)	0.3	0.3	55.54
Amur maple	0.7	53	99.7	98	151	(N/A)	0.3	0.1	30.16
Boxelder	0.9	71	132.1	129	200	(N/A)	0.3	0.2	40.08
Pear	0.5	39	83.7	82	121	(N/A)	0.3	0.1	24.26
Black spruce	0.8	60	108.2	106	166	(N/A)	0.3	0.2	33.28
Oak	1.1	81	131.5	129	209	(N/A)	0.3	0.2	41.88
Siberian elm	1.3	98	171.2	168	266	(N/A)	0.2	0.3	66.47
Conifer Evergreen Small	0.1	4	8.1	8	12	(N/A)	0.2	0.0	2.94
Mulberry	0.6	45	84.8	83	128	(N/A)	0.2	0.1	31.95
Bur oak	1.5	117	203.9	200	317	(N/A)	0.2	0.3	79.33
Norway spruce	0.6	45	73.6	72	117	(N/A)	0.2	0.1	29.23
Eastern white pine	0.4	28	48.3	47	75	(N/A)	0.2	0.1	18.86
Red pine	0.4	32	58.2	57	89	(N/A)	0.2	0.1	22.37
Scotch pine	0.4	27	48.9	48	75	(N/A)	0.2	0.1	24.84
White oak	0.7	56	92.1	90	146	(N/A)	0.2	0.1	48.59
Catalpa	1.0	72	127.5	125	197	(N/A)	0.2	0.2	65.72
Eastern redbud	0.4	30	63.2	62	92	(N/A)	0.1	0.1	46.14
Hickory	0.2	14	27.5	27	41	(N/A)	0.1	0.0	20.64
Broadleaf Deciduous Large	0.5	36	54.0	53	88	(N/A)	0.1	0.1	44.23
Austrian pine	0.3	20	34.7	34	54	(N/A)	0.1	0.1	27.08
Dogwood	0.2	15	32.2	32	47	(N/A)	0.1	0.0	23.50
Kentucky coffeetree	0.6	45	85.0	83	128	(N/A)	0.1	0.1	64.12
Eastern red cedar	0.1	7	15.9	16	23	(N/A)	0.1	0.0	11.47

Paper birch	0.7	54	100.5	99	153 (N/A)	0.1	0.1	76.46
Swamp white oak	0.1	11	23.0	23	33 (N/A)	0.1	0.0	16.73
Ohio buckeye	0.3	26	46.3	45	71 (N/A)	0.1	0.1	35.62
Conifer Evergreen Large	0.3	21	34.3	34	55 (N/A)	0.1	0.1	27.30
Eastern hophornbeam	0.1	11	25.7	25	36 (N/A)	0.1	0.0	18.19
Sumac	0.0	2	3.8	4	5 (N/A)	0.1	0.0	5.40
Eastern cottonwood	0.4	33	59.0	58	91 (N/A)	0.1	0.1	91.02
Sweetbay	0.1	4	9.2	9	13 (N/A)	0.1	0.0	13.40
Black cherry	0.2	15	31.6	31	46 (N/A)	0.1	0.0	46.14
Ginkgo	0.2	14	26.5	26	40 (N/A)	0.1	0.0	40.40
Broadleaf Evergreen Mediu	0.1	6	12.7	12	19 (N/A)	0.1	0.0	18.82
Kwanzan cherry	0.0	0	0.6	1	1 (N/A)	0.1	0.0	0.87
Southern magnolia	0.0	3	5.6	5	8 (N/A)	0.1	0.0	8.11
Willow	0.3	24	47.4	46	71 (N/A)	0.1	0.1	70.84
Tulip tree	0.3	20	38.1	37	57 (N/A)	0.1	0.1	57.32
Birch	0.3	20	39.6	39	59 (N/A)	0.1	0.1	58.69
Quaking aspen	0.1	7	13.7	13	21 (N/A)	0.1	0.0	20.64
Mountain ash	0.1	6	12.8	13	18 (N/A)	0.1	0.0	18.19
Total	500.5	37,991	68,679.0	67,305	105,296 (N/A)	100.0	100.0	53.10

Table 2: Annual Stormwater Benefits

Oelwein

Annual Stormwater Benefits of Public Trees

4/3/2018

Species	Total rainfall interception (Gal)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Norway maple	1,171,279	31,742	(N/A)	25.5	21.4	62.73
Silver maple	1,652,422	44,781	(N/A)	17.0	30.2	132.88
Green ash	783,946	21,245	(N/A)	13.6	14.3	78.68
Ash	159,807	4,331	(N/A)	3.7	2.9	59.33
Maple	132,614	3,594	(N/A)	3.6	2.4	49.91
Littleleaf linden	43,413	1,176	(N/A)	3.4	0.8	17.30
Sugar maple	196,711	5,331	(N/A)	3.3	3.6	80.77
Black walnut	127,102	3,444	(N/A)	2.9	2.3	60.43
Red maple	97,848	2,652	(N/A)	2.6	1.8	51.99
Black locust	75,242	2,039	(N/A)	2.3	1.4	44.33
Apple	18,150	492	(N/A)	2.3	0.3	10.69
Honeylocust	119,902	3,249	(N/A)	1.9	2.2	85.51
Northern hackberry	92,107	2,496	(N/A)	1.5	1.7	83.20
American basswood	75,738	2,052	(N/A)	1.2	1.4	85.52
Northern white cedar	29,724	806	(N/A)	1.2	0.5	35.02
Pin oak	75,312	2,041	(N/A)	1.0	1.4	102.05
Cottonwood	86,211	2,336	(N/A)	0.8	1.6	146.02
Elm	41,597	1,127	(N/A)	0.7	0.8	80.52
Spruce	19,330	524	(N/A)	0.6	0.4	47.62
Northern red oak	15,134	410	(N/A)	0.6	0.3	37.28
Chinese elm	22,415	607	(N/A)	0.5	0.4	60.74
Northern catalpa	45,060	1,221	(N/A)	0.5	0.8	122.11
Broadleaf Deciduous Small	1,421	39	(N/A)	0.5	0.0	3.85
White ash	15,330	415	(N/A)	0.4	0.3	51.93
American elm	29,705	805	(N/A)	0.4	0.5	100.62
Northern pin oak	21,588	585	(N/A)	0.4	0.4	73.13
Lilac	3,309	90	(N/A)	0.4	0.1	11.21
Blue spruce	10,592	287	(N/A)	0.4	0.2	41.01
Black maple	14,322	388	(N/A)	0.4	0.3	55.45
Black poplar	33,363	904	(N/A)	0.4	0.6	129.16
American sycamore	37,288	1,010	(N/A)	0.4	0.7	144.36
American chestnut	17,433	472	(N/A)	0.3	0.3	94.49
River birch	10,183	276	(N/A)	0.3	0.2	55.19
Broadleaf Evergreen Large	21,153	573	(N/A)	0.3	0.4	114.65
Amur maple	2,529	69	(N/A)	0.3	0.0	13.70
Boxelder	9,930	269	(N/A)	0.3	0.2	53.82
Pear	2,750	75	(N/A)	0.3	0.1	14.90
Black spruce	13,243	359	(N/A)	0.3	0.2	71.77
Oak	8,511	231	(N/A)	0.3	0.2	46.13
Siberian elm	12,796	347	(N/A)	0.2	0.2	86.69
Conifer Evergreen Small	575	16	(N/A)	0.2	0.0	3.89
Mulberry	2,576	70	(N/A)	0.2	0.0	17.45
Bur oak	23,182	628	(N/A)	0.2	0.4	157.06
Norway spruce	10,651	289	(N/A)	0.2	0.2	72.16
Eastern white pine	4,268	116	(N/A)	0.2	0.1	28.92
Red pine	7,334	199	(N/A)	0.2	0.1	49.69
Scotch pine	6,534	177	(N/A)	0.2	0.1	59.02
White oak	5,522	150	(N/A)	0.2	0.1	49.88
Catalpa	10,899	295	(N/A)	0.2	0.2	98.45

Eastern redbud	2,348	64	(N/A)	0.1	0.0	31.82
Hickory	1,216	33	(N/A)	0.1	0.0	16.47
Broadleaf Deciduous Large	2,931	79	(N/A)	0.1	0.1	39.72
Austrian pine	3,857	105	(N/A)	0.1	0.1	52.26
Dogwood	1,181	32	(N/A)	0.1	0.0	16.01
Kentucky coffeetree	6,534	177	(N/A)	0.1	0.1	88.53
Eastern red cedar	1,318	36	(N/A)	0.1	0.0	17.86
Paper birch	9,433	256	(N/A)	0.1	0.2	127.82
Swamp white oak	749	20	(N/A)	0.1	0.0	10.14
Ohio buckeye	1,995	54	(N/A)	0.1	0.0	27.03
Conifer Evergreen Large	4,508	122	(N/A)	0.1	0.1	61.08
Eastern hophornbeam	529	14	(N/A)	0.1	0.0	7.17
Sumac	69	2	(N/A)	0.1	0.0	1.86
Eastern cottonwood	7,239	196	(N/A)	0.1	0.1	196.17
Sweetbay	289	8	(N/A)	0.1	0.0	7.83
Black cherry	1,174	32	(N/A)	0.1	0.0	31.82
Ginkgo	1,240	34	(N/A)	0.1	0.0	33.60
Broadleaf Evergreen Medium	677	18	(N/A)	0.1	0.0	18.34
Kwanzan cherry	7	0	(N/A)	0.1	0.0	0.20
Southern magnolia	155	4	(N/A)	0.1	0.0	4.21
Willow	3,764	102	(N/A)	0.1	0.1	102.01
Tulip tree	2,591	70	(N/A)	0.1	0.0	70.21
Birch	2,479	67	(N/A)	0.1	0.0	67.19
Quaking aspen	608	16	(N/A)	0.1	0.0	16.47
Mountain ash	264	7	(N/A)	0.1	0.0	7.17
Citywide total	5,475,204	148,378	(N/A)	100.0	100.0	74.83

Table 3: Annual Air Quality Benefits

Oelwein

Annual Air Quality Benefits of Public Trees

4/3/2018

Species	Deposition (lb) O_3	NO_2	PM_{10}	SO_2	Total Depos. ($)	Avoided (lb) NO_2	PM_{10}	VOC	SO_2	Total Avoided ($)	BVOC Emissions (lb)	BVOC Emissions ($)	Total (lb)	Total ($) Standard Error	% of Total Trees	Avg. $/tree
Norway maple	238.7	41.2	117.3	10.6	1,290	610.5	88.3	84.0	571.8	3,783	-56.0	-210	1,706.4	4,863 (N/A)	25.5	9.61
Silver maple	288.8	49.0	141.5	12.8	1,556	535.6	78.4	74.8	513.8	3,350	-150.5	-564	1,544.1	4,342 (N/A)	17.0	12.89
Green ash	96.3	15.4	46.4	4.3	514	345.9	50.4	48.1	329.4	2,158	0.0	0	936.3	2,671 (N/A)	13.6	9.89
Ash	31.7	5.5	15.7	1.4	172	88.2	12.8	12.2	83.1	548	-7.5	-28	243.1	691 (N/A)	3.7	9.47
Maple	31.4	5.4	14.7	1.4	168	75.6	11.1	10.6	72.4	473	-10.6	-40	211.9	600 (N/A)	3.6	8.34
Littleleaf linden	5.7	1.0	3.1	0.3	32	28.9	4.2	4.0	27.1	179	-3.0	-11	71.2	200 (N/A)	3.4	2.93
Sugar maple	26.3	4.5	13.1	1.2	143	84.2	12.3	11.7	80.3	525	-20.7	-78	212.9	590 (N/A)	3.3	8.95
Black walnut	13.0	2.1	6.7	0.6	71	67.8	9.9	9.5	65.1	424	0.0	0	174.7	495 (N/A)	2.9	8.68
Red maple	23.1	3.9	10.8	1.0	123	56.4	8.3	7.9	54.1	353	-7.8	-29	157.7	447 (N/A)	2.6	8.76
Black locust	14.4	2.5	7.2	0.6	78	43.7	6.3	6.0	41.0	271	-3.5	-13	118.3	336 (N/A)	2.3	7.30
Apple	5.2	0.9	2.5	0.2	28	21.8	3.1	3.0	20.1	134	0.0	0	56.8	162 (N/A)	2.3	3.52
Honeylocust	23.0	3.8	10.6	1.0	122	55.7	8.2	7.8	53.6	349	-17.5	-66	146.2	405 (N/A)	1.9	10.66
Northern hackberry	13.9	2.4	7.2	0.6	76	47.2	6.8	6.5	44.2	293	0.0	0	128.9	369 (N/A)	1.5	12.30
American basswood	10.8	1.8	5.2	0.5	58	31.2	4.5	4.3	29.3	194	-9.0	-34	78.6	218 (N/A)	1.2	9.07
Northern white cedar	3.2	0.6	2.8	0.4	22	8.8	1.3	1.2	8.4	55	-13.7	-51	13.1	25 (N/A)	1.2	1.10
Pin oak	13.7	2.4	6.9	0.6	75	30.5	4.5	4.2	29.1	190	-25.2	-94	66.7	171 (N/A)	1.0	8.53
Cottonwood	15.8	2.5	7.0	0.7	83	29.8	4.4	4.2	28.5	186	0.0	0	92.8	269 (N/A)	0.8	16.80
Elm	6.3	1.0	2.9	0.3	33	17.4	2.5	2.4	16.7	109	0.0	0	49.6	142 (N/A)	0.7	10.16
Spruce	2.2	0.4	1.8	0.3	14	6.2	0.9	0.9	6.0	39	-7.7	-29	10.9	24 (N/A)	0.6	2.20
Northern red oak	3.0	0.5	1.5	0.1	16	8.2	1.2	1.1	7.7	51	-4.3	-16	19.0	51 (N/A)	0.6	4.62
Chinese elm	3.1	0.5	1.5	0.1	16	10.3	1.5	1.4	9.7	64	0.0	0	28.1	80 (N/A)	0.5	8.03
Northern catalpa	7.0	1.1	3.2	0.3	37	16.9	2.5	2.3	16.0	105	0.0	0	49.3	142 (N/A)	0.5	14.20
Broadleaf Deciduous Small	0.2	0.0	0.1	0.0	1	2.1	0.3	0.3	1.8	13	0.0	0	4.9	14 (N/A)	0.5	1.39
White ash	2.0	0.3	1.0	0.1	11	7.4	1.1	1.0	7.1	46	0.0	0	20.1	57 (N/A)	0.4	7.15
American elm	3.6	0.6	1.9	0.2	20	13.3	1.9	1.8	12.6	83	0.0	0	36.0	103 (N/A)	0.4	12.82
Northern pin oak	4.7	0.8	2.3	0.2	25	10.1	1.5	1.4	9.4	63	-1.1	-4	29.3	84 (N/A)	0.4	10.47
Lilac	1.1	0.2	0.5	0.1	6	3.3	0.5	0.4	3.0	20	0.0	0	9.1	26 (N/A)	0.4	3.28
Blue spruce	1.5	0.3	1.2	0.2	10	3.6	0.5	0.5	3.4	22	-3.8	-14	7.3	18 (N/A)	0.4	2.52
Black maple	3.5	0.6	1.6	0.2	18	7.7	1.1	1.1	7.3	48	-1.2	-4	21.9	62 (N/A)	0.4	8.88
Black poplar	5.3	0.9	2.4	0.2	28	11.3	1.6	1.6	10.7	70	0.0	0	34.0	98 (N/A)	0.4	14.01
American sycamore	5.4	0.9	2.4	0.2	28	12.6	1.8	1.8	12.0	79	0.0	0	37.1	107 (N/A)	0.4	15.27
American chestnut	2.2	0.3	1.0	0.1	11	7.4	1.1	1.0	7.0	46	0.0	0	20.1	57 (N/A)	0.3	11.49
River birch	2.2	0.4	1.1	0.1	12	4.6	0.7	0.6	4.3	29	-0.5	-2	13.5	39 (N/A)	0.3	7.73
Broadleaf Evergreen Large	3.0	0.6	2.5	0.4	20	6.3	0.9	0.9	6.0	39	-9.5	-36	11.0	23 (N/A)	0.3	4.65
Amur maple	0.7	0.1	0.3	0.0	4	3.4	0.5	0.5	3.2	21	0.0	0	8.7	25 (N/A)	0.3	4.95
Boxelder	1.3	0.2	0.6	0.1	7	4.5	0.7	0.6	4.2	28	-0.5	-2	11.6	33 (N/A)	0.3	6.56
Pear	0.9	0.2	0.4	0.0	5	2.6	0.4	0.3	2.3	16	0.0	0	7.2	21 (N/A)	0.3	4.13
Black spruce	2.3	0.5	1.8	0.3	15	3.8	0.6	0.5	3.6	24	-5.1	-19	8.3	20 (N/A)	0.3	3.91
Oak	0.8	0.1	0.4	0.0	5	4.9	0.7	0.7	4.8	31	0.0	0	12.6	36 (N/A)	0.3	7.12
Siberian elm	2.0	0.3	1.0	0.1	11	6.1	0.9	0.9	5.9	38	0.0	0	17.2	49 (N/A)	0.2	12.30
Conifer Evergreen Small	0.0	0.0	0.0	0.0	0	0.3	0.0	0.0	0.2	2	-0.3	-1	0.3	1 (N/A)	0.2	0.17
Mulberry	0.9	0.1	0.4	0.0	5	2.9	0.4	0.4	2.7	18	0.0	0	7.7	22 (N/A)	0.2	5.54
Bur oak	3.6	0.6	1.6	0.2	19	7.3	1.1	1.0	7.0	46	0.0	0	22.3	65 (N/A)	0.2	16.13
Norway spruce	1.3	0.2	1.0	0.2	8	2.7	0.4	0.4	2.7	17	-5.3	-20	3.6	6 (N/A)	0.2	1.38
Eastern white pine	0.4	0.1	0.4	0.1	3	1.7	0.3	0.2	1.7	11	-1.4	-5	3.5	9 (N/A)	0.2	2.15
Red pine	0.8	0.2	0.7	0.1	6	2.0	0.3	0.3	1.9	13	-3.7	-14	2.6	4 (N/A)	0.2	1.05
Scotch pine	0.7	0.1	0.6	0.1	5	1.7	0.2	0.2	1.6	10	-2.9	-11	2.4	4 (N/A)	0.2	1.46
White oak	0.5	0.1	0.3	0.0	3	3.4	0.5	0.5	3.3	21	0.0	0	8.6	24 (N/A)	0.2	8.06
Catalpa	1.4	0.2	0.7	0.1	7	4.5	0.7	0.6	4.3	28	0.0	0	12.5	36 (N/A)	0.2	11.87
Eastern redbud	0.9	0.1	0.4	0.0	5	2.0	0.3	0.3	1.8	12	0.0	0	5.8	17 (N/A)	0.1	8.35
Hickory	0.0	0.0	0.0	0.0	0	0.9	0.1	0.1	0.9	6	0.0	0	2.1	6 (N/A)	0.1	2.99
Broadleaf Deciduous Large	0.2	0.0	0.1	0.0	1	2.1	0.3	0.3	2.1	14	0.0	0	5.3	15 (N/A)	0.1	7.42
Austrian pine	0.5	0.1	0.4	0.1	4	1.2	0.2	0.2	1.2	8	-1.4	-5	2.5	6 (N/A)	0.1	2.99
Dogwood	0.4	0.1	0.2	0.0	2	1.0	0.1	0.1	0.9	6	0.0	0	2.9	8 (N/A)	0.1	4.23
Kentucky coffeetree	0.8	0.1	0.4	0.0	4	2.9	0.4	0.4	2.7	18	0.0	0	7.6	22 (N/A)	0.1	10.91
Eastern red cedar	0.1	0.0	0.1	0.0	1	0.5	0.1	0.1	0.4	3	-0.7	-3	0.6	1 (N/A)	0.1	0.62
Paper birch	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)	0.1	14.09
Swamp white oak	0.1	0.0	0.0	0.0	0	0.7	0.1	0.1	0.7	4	0.0	0	1.7	5 (N/A)	0.1	2.34
Ohio buckeye	0.3	0.0	0.2	0.0	2	1.6	0.2	0.2	1.5	10	-0.1	0	4.0	11 (N/A)	0.1	5.69
Conifer Evergreen Large	0.5	0.1	0.4	0.1	3	1.3	0.2	0.2	1.2	8	-1.9	-7	2.1	4 (N/A)	0.1	2.13
Eastern hophornbeam	0.1	0.0	0.1	0.0	1	0.8	0.1	0.1	0.7	5	0.0	0	1.8	5 (N/A)	0.1	2.55
Sumac	0.0	0.0	0.0	0.0	0	0.1	0.0	0.0	0.1	1	0.0	0	0.3	1 (N/A)	0.1	0.71
Eastern cottonwood	1.2	0.2	0.5	0.1	6	2.1	0.3	0.3	2.0	13	0.0	0	6.6	19 (N/A)	0.1	19.04
Sweetbay	0.0	0.0	0.0	0.0	0	0.3	0.0	0.0	0.3	2	0.0	0	0.7	2 (N/A)	0.1	2.06
Black cherry	0.4	0.1	0.2	0.0	2	1.0	0.1	0.1	0.9	6	0.0	0	2.9	8 (N/A)	0.1	8.35
Ginkgo	0.3	0.1	0.1	0.0	2	0.9	0.1	0.1	0.9	6	-0.1	0	2.4	7 (N/A)	0.1	6.92
Broadleaf Evergreen Medium	0.0	0.0	0.0	0.0	0	0.4	0.1	0.1	0.4	3	-0.2	-1	0.8	2 (N/A)	0.1	2.10
Kwanzan cherry	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)	0.1	0.11
Southern magnolia	0.0	0.0	0.0	0.0	0	0.2	0.0	0.0	0.2	1	0.0	0	0.4	1 (N/A)	0.1	1.05
Willow	0.9	0.1	0.4	0.0	5	1.6	0.2	0.2	1.5	10	-0.2	-1	4.7	14 (N/A)	0.1	13.58

Tulip tree	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)	0.1	9.34
Birch	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)	0.1	10.16
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)	0.1	2.99
Mountain ash	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)	0.1	2.55
Citywide total	937.9	158.8	462.7	43.0	5,066	2,390.7	348.0	331.8	2,268.1	14,890	-377.1	-1,414	6,563.9	18,541 (N/A)	100.0	9.35

Table 4: Annual Carbon Stored

Oelwein

Stored CO2 Benefits of Public Trees

4/3/2018

Species	Total Stored CO2 (lbs)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Norway maple	3,930,876	29,482	(N/A)	25.5	19.4	58.26
Silver maple	6,621,593	49,662	(N/A)	17.0	32.6	147.36
Green ash	3,164,924	23,737	(N/A)	13.6	15.6	87.91
Ash	521,568	3,912	(N/A)	3.7	2.6	53.59
Maple	341,607	2,562	(N/A)	3.6	1.7	35.58
Littleleaf linden	130,701	980	(N/A)	3.4	0.6	14.42
Sugar maple	760,885	5,707	(N/A)	3.3	3.7	86.46
Black walnut	421,455	3,161	(N/A)	2.9	2.1	55.45
Red maple	251,133	1,883	(N/A)	2.6	1.2	36.93
Black locust	238,213	1,787	(N/A)	2.3	1.2	38.84
Apple	83,482	626	(N/A)	2.3	0.4	13.61
Honeylocust	293,403	2,201	(N/A)	1.9	1.4	57.91
Northern hackberry	205,809	1,544	(N/A)	1.5	1.0	51.45
American basswood	403,863	3,029	(N/A)	1.2	2.0	126.21
Northern white cedar	32,012	240	(N/A)	1.2	0.2	10.44
Pin oak	361,558	2,712	(N/A)	1.0	1.8	135.58
Cottonwood	546,464	4,098	(N/A)	0.8	2.7	256.16
Elm	215,776	1,618	(N/A)	0.7	1.1	115.59
Spruce	17,563	132	(N/A)	0.6	0.1	11.97
Northern red oak	62,840	471	(N/A)	0.6	0.3	42.85
Chinese elm	104,089	781	(N/A)	0.5	0.5	78.07
Northern catalpa	236,542	1,774	(N/A)	0.5	1.2	177.41
Broadleaf Deciduous	4,772	36	(N/A)	0.5	0.0	3.58
White ash	40,390	303	(N/A)	0.4	0.2	37.87
American elm	85,230	639	(N/A)	0.4	0.4	79.90
Northern pin oak	76,854	576	(N/A)	0.4	0.4	72.05
Lilac	17,486	131	(N/A)	0.4	0.1	16.39
Blue spruce	10,644	80	(N/A)	0.4	0.1	11.40
Black maple	37,607	282	(N/A)	0.4	0.2	40.29
Black poplar	178,685	1,340	(N/A)	0.4	0.9	191.45
American sycamore	177,722	1,333	(N/A)	0.4	0.9	190.42
American chestnut	69,618	522	(N/A)	0.3	0.3	104.43
River birch	36,741	276	(N/A)	0.3	0.2	55.11
Broadleaf Evergreen I	36,295	272	(N/A)	0.3	0.2	54.44
Amur maple	10,927	82	(N/A)	0.3	0.1	16.39
Boxelder	40,898	307	(N/A)	0.3	0.2	61.35
Pear	14,749	111	(N/A)	0.3	0.1	22.12
Black spruce	20,692	155	(N/A)	0.3	0.1	31.04
Oak	26,974	202	(N/A)	0.3	0.1	40.46
Siberian elm	49,236	369	(N/A)	0.2	0.2	92.32
Conifer Evergreen Sn	132	1	(N/A)	0.2	0.0	0.25
Mulberry	12,995	97	(N/A)	0.2	0.1	24.37
Bur oak	121,447	911	(N/A)	0.2	0.6	227.71
Norway spruce	13,174	99	(N/A)	0.2	0.1	24.70
Eastern white pine	2,854	21	(N/A)	0.2	0.0	5.35
Red pine	9,174	69	(N/A)	0.2	0.0	17.20
Scotch pine	6,942	52	(N/A)	0.2	0.0	17.36
White oak	15,801	119	(N/A)	0.2	0.1	39.50
Catalpa	45,388	340	(N/A)	0.2	0.2	113.47
Eastern redbud	13,485	101	(N/A)	0.1	0.1	50.57
Hickory	2,069	16	(N/A)	0.1	0.0	7.76
Broadleaf Deciduous	7,344	55	(N/A)	0.1	0.0	27.54
Austrian pine	3,779	28	(N/A)	0.1	0.0	14.17
Dogwood	6,756	51	(N/A)	0.1	0.0	25.34
Kentucky coffeetree	24,230	182	(N/A)	0.1	0.1	90.86

Eastern red cedar	554	4	(N/A)	0.1	0.0	2.08
Paper birch	41,716	313	(N/A)	0.1	0.2	156.43
Swamp white oak	1,319	10	(N/A)	0.1	0.0	4.95
Ohio buckeye	4,725	35	(N/A)	0.1	0.0	17.72
Conifer Evergreen La	4,513	34	(N/A)	0.1	0.0	16.92
Eastern hophornbeam	1,816	14	(N/A)	0.1	0.0	6.81
Sumac	178	1	(N/A)	0.1	0.0	1.33
Eastern cottonwood	39,259	294	(N/A)	0.1	0.2	294.44
Sweetbay	908	7	(N/A)	0.1	0.0	6.81
Black cherry	6,743	51	(N/A)	0.1	0.0	50.57
Ginkgo	4,203	32	(N/A)	0.1	0.0	31.52
Broadleaf Evergreen l	484	4	(N/A)	0.1	0.0	3.63
Kwanzan cherry	14	0	(N/A)	0.1	0.0	0.10
Southern magnolia	73	1	(N/A)	0.1	0.0	0.55
Willow	14,280	107	(N/A)	0.1	0.1	107.10
Tulip tree	8,458	63	(N/A)	0.1	0.0	63.43
Birch	7,945	60	(N/A)	0.1	0.0	59.59
Quaking aspen	1,035	8	(N/A)	0.1	0.0	7.76
Mountain ash	908	7	(N/A)	0.1	0.0	6.81
Citywide total	20,306,572	152,299	(N/A)	100.0	100.0	76.80

Table 5: Annual Carbon Sequestered

Oelwein

Annual CO Benefits of Public Trees

4/3/2018

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
Norway maple	172,566	1,294	-18,877	-1,319	-151	211,383	1,585	363,754	2,728 (N/A)	25.5	18.8	5.39
Silver maple	482,962	3,622	-31,786	-1,264	-248	190,511	1,429	640,423	4,803 (N/A)	17.0	33.1	14.25
Green ash	167,373	1,255	-15,192	-751	-120	121,911	914	273,341	2,050 (N/A)	13.6	14.1	7.59
Ash	24,554	184	-2,505	-187	-20	30,738	231	52,600	394 (N/A)	3.7	2.7	5.40
Maple	33,246	249	-1,640	-144	-13	26,820	201	58,282	437 (N/A)	3.6	3.0	6.07
Littleleaf linden	17,419	131	-644	-80	-5	10,029	75	26,725	200 (N/A)	3.4	1.4	2.95
Sugar maple	39,776	298	-3,652	-192	-29	29,724	223	65,656	492 (N/A)	3.3	3.4	7.46
Black walnut	32,403	243	-2,023	-138	-16	24,071	181	54,313	407 (N/A)	2.9	2.8	7.15
Red maple	18,637	140	-1,205	-106	-10	20,034	150	37,360	280 (N/A)	2.6	1.9	5.49
Black locust	14,551	109	-1,150	-91	-9	15,171	114	28,481	214 (N/A)	2.3	1.5	4.64
Apple	6,616	50	-401	-62	-3	7,448	56	13,601	102 (N/A)	2.3	0.7	2.22
Honeylocust	27,609	207	-1,408	-92	-11	19,851	149	45,959	345 (N/A)	1.9	2.4	9.07
Northern hackberry	12,357	93	-988	-92	-8	16,347	123	27,624	207 (N/A)	1.5	1.4	6.91
American basswood	22,656	170	-1,939	-77	-15	10,836	81	31,477	236 (N/A)	1.2	1.6	9.84
Northern white cedar	1,990	15	-154	-34	-1	3,105	23	4,907	37 (N/A)	1.2	0.3	1.60
Pin oak	32,436	243	-1,736	-69	-14	10,784	81	41,415	311 (N/A)	1.0	2.1	15.53
Cottonwood	10,227	77	-2,623	-72	-20	10,533	79	18,066	135 (N/A)	0.8	0.9	8.47
Elm	7,041	53	-1,036	-39	-8	6,175	46	12,141	91 (N/A)	0.7	0.6	6.50
Spruce	1,361	10	-84	-22	-1	2,227	17	3,481	26 (N/A)	0.6	0.2	2.37
Northern red oak	1,455	11	-302	-22	-2	2,849	21	3,980	30 (N/A)	0.6	0.2	2.71
Chinese elm	4,461	33	-500	-24	-4	3,607	27	7,545	57 (N/A)	0.5	0.4	5.66
Northern catalpa	7,427	56	-1,135	-39	-9	5,907	44	12,159	91 (N/A)	0.5	0.6	9.12
Broadleaf Deciduous Smal	642	5	-23	-7	0	680	5	1,292	10 (N/A)	0.5	0.1	0.97
White ash	4,035	30	-194	-15	-2	2,635	20	6,461	48 (N/A)	0.4	0.3	6.06
American elm	3,289	25	-409	-26	-3	4,669	35	7,522	56 (N/A)	0.4	0.4	7.05
Northern pin oak	1,791	13	-370	-24	-3	3,494	26	4,891	37 (N/A)	0.4	0.3	4.59
Lilac	1,373	10	-84	-9	-1	1,125	8	2,404	18 (N/A)	0.4	0.1	2.25
Blue spruce	444	3	-51	-14	0	1,257	9	1,636	12 (N/A)	0.4	0.1	1.75
Black maple	814	6	-181	-15	-1	2,710	20	3,328	25 (N/A)	0.4	0.2	3.57
Black poplar	5,027	38	-858	-27	-7	3,956	30	8,098	61 (N/A)	0.4	0.4	8.68
American sycamore	6,314	47	-853	-29	-7	4,425	33	9,857	74 (N/A)	0.4	0.5	10.56
American chestnut	3,778	28	-334	-16	-3	2,589	19	6,017	45 (N/A)	0.3	0.3	9.03
River birch	1,311	10	-177	-11	-1	1,589	12	2,712	20 (N/A)	0.3	0.1	4.07
Broadleaf Evergreen Large	2,837	21	-174	-12	-1	2,224	17	4,875	37 (N/A)	0.3	0.3	7.31
Amur maple	1,031	8	-52	-8	0	1,174	9	2,144	16 (N/A)	0.3	0.1	3.22
Boxelder	3,204	24	-196	-12	-2	1,568	12	4,564	34 (N/A)	0.3	0.2	6.85
Pear	668	5	-71	-9	-1	868	7	1,457	11 (N/A)	0.3	0.1	2.19
Black spruce	845	6	-99	-16	-1	1,332	10	2,062	15 (N/A)	0.3	0.1	3.09
Oak	2,267	17	-129	-10	-1	1,780	13	3,907	29 (N/A)	0.3	0.2	5.86
Siberian elm	2,392	18	-236	-13	-2	2,168	16	4,311	32 (N/A)	0.2	0.2	8.08
Conifer Evergreen Small	41	0	-1	-2	0	85	1	123	1 (N/A)	0.2	0.0	0.23
Mulberry	573	4	-62	-8	-1	989	7	1,492	11 (N/A)	0.2	0.1	2.80
Bur oak	3,182	24	-583	-17	-5	2,596	19	5,177	39 (N/A)	0.2	0.3	9.71
Norway spruce	675	5	-63	-10	-1	990	7	1,591	12 (N/A)	0.2	0.1	2.98
Eastern white pine	336	3	-14	-6	0	622	5	938	7 (N/A)	0.2	0.0	1.76
Red pine	477	4	-44	-8	0	716	5	1,141	9 (N/A)	0.2	0.1	2.14
Scotch pine	427	3	-33	-7	0	587	4	975	7 (N/A)	0.2	0.1	2.44
White oak	1,550	12	-76	-7	-1	1,227	9	2,695	20 (N/A)	0.2	0.1	6.74
Catalpa	2,262	17	-218	-10	-2	1,595	12	3,629	27 (N/A)	0.2	0.2	9.07
Eastern redbud	0	0	-65	-7	-1	670	5	598	4 (N/A)	0.1	0.0	2.24
Hickory	418	3	-10	-2	0	318	2	723	5 (N/A)	0.1	0.0	2.71
Broadleaf Deciduous Larg	891	7	-35	-4	0	786	6	1,637	12 (N/A)	0.1	0.1	6.14
Austrian pine	238	2	-18	-5	0	445	3	660	5 (N/A)	0.1	0.0	2.48
Dogwood	487	4	-32	-3	0	340	3	792	6 (N/A)	0.1	0.0	2.97
Kentucky coffeetree	1,517	11	-116	-6	-1	994	7	2,388	18 (N/A)	0.1	0.1	8.95
Eastern red cedar	80	1	-3	-2	0	164	1	239	2 (N/A)	0.1	0.0	0.89
Paper birch	1,816	14	-200	-8	-2	1,202	9	2,811	21 (N/A)	0.1	0.1	10.54
Swamp white oak	320	2	-7	-2	0	240	2	551	4 (N/A)	0.1	0.0	2.07
Ohio buckeye	610	5	-23	-3	0	571	4	1,155	9 (N/A)	0.1	0.1	4.33
Conifer Evergreen Large	303	2	-22	-5	0	463	3	739	6 (N/A)	0.1	0.0	2.77
Eastern hophornbeam	228	2	-9	-2	0	248	2	465	3 (N/A)	0.1	0.0	1.74
Sumac	38	0	-1	-1	0	37	0	74	1 (N/A)	0.1	0.0	0.55
Eastern cottonwood	912	7	-188	-5	-1	734	6	1,453	11 (N/A)	0.1	0.1	10.90
Sweetbay	81	1	-4	-1	0	98	1	174	1 (N/A)	0.1	0.0	1.30
Black cherry	478	4	-32	-3	0	335	3	778	6 (N/A)	0.1	0.0	5.84
Ginkgo	225	2	-20	-3	0	319	2	521	4 (N/A)	0.1	0.0	3.91
Broadleaf Evergreen Medi	56	0	-2	-1	0	141	1	194	1 (N/A)	0.1	0.0	1.45

Kwanzan cherry	9	0	0	0	0	6	0	14	0 (N/A)	0.1	0.0	0.10
Southern magnolia	16	0	0	-1	0	59	0	74	1 (N/A)	0.1	0.0	0.55
Willow	0	0	-69	-4	-1	539	4	466	3 (N/A)	0.1	0.0	3.49
Tulip tree	660	5	-41	-3	0	441	3	1,058	8 (N/A)	0.1	0.1	7.93
Birch	470	4	-38	-3	0	440	3	869	7 (N/A)	0.1	0.0	6.52
Quaking aspen	209	2	-5	-1	0	159	1	361	3 (N/A)	0.1	0.0	2.71
Mountain ash	114	1	-4	-1	0	124	1	232	2 (N/A)	0.1	0.0	1.74
Citywide total	1,200,884	9,007	-97,510	-5,339	-771	839,583	6,297	1,937,617	14,532 (N/A)	100.0	100.0	7.33

Table 6: Annual Social and Aesthetic Benefits

Oelwein

Annual Aesthetic/Other Benefits of Public Trees

4/3/2018

Species	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Norway maple	16,422	(N/A)	25.5	15.0	32.46
Silver maple	37,059	(N/A)	17.0	33.9	109.97
Green ash	14,159	(N/A)	13.6	13.0	52.44
Ash	2,375	(N/A)	3.7	2.2	32.54
Maple	4,243	(N/A)	3.6	3.9	58.93
Littleleaf linden	2,091	(N/A)	3.4	1.9	30.75
Sugar maple	4,144	(N/A)	3.3	3.8	62.79
Black walnut	2,945	(N/A)	2.9	2.7	51.67
Red maple	2,442	(N/A)	2.6	2.2	47.88
Black locust	1,444	(N/A)	2.3	1.3	31.39
Apple	380	(N/A)	2.3	0.3	8.26
Honeylocust	6,465	(N/A)	1.9	5.9	170.13
Northern hackberry	1,660	(N/A)	1.5	1.5	55.35
American basswood	1,574	(N/A)	1.2	1.4	65.59
Northern white cedar	470	(N/A)	1.2	0.4	20.43
Pin oak	2,431	(N/A)	1.0	2.2	121.57
Cottonwood	735	(N/A)	0.8	0.7	45.92
Elm	603	(N/A)	0.7	0.6	43.11
Spruce	366	(N/A)	0.6	0.3	33.27
Northern red oak	140	(N/A)	0.6	0.1	12.73
Chinese elm	413	(N/A)	0.5	0.4	41.35
Northern catalpa	560	(N/A)	0.5	0.5	56.02
Broadleaf Deciduous Small	34	(N/A)	0.5	0.0	3.42
White ash	484	(N/A)	0.4	0.4	60.45
American elm	471	(N/A)	0.4	0.4	58.84
Northern pin oak	170	(N/A)	0.4	0.2	21.20
Lilac	80	(N/A)	0.4	0.1	9.95
Blue spruce	134	(N/A)	0.4	0.1	19.10
Black maple	126	(N/A)	0.4	0.1	17.94
Black poplar	357	(N/A)	0.4	0.3	50.94
American sycamore	447	(N/A)	0.4	0.4	63.81
American chestnut	301	(N/A)	0.3	0.3	60.27
River birch	122	(N/A)	0.3	0.1	24.32
Broadleaf Evergreen Large	528	(N/A)	0.3	0.5	105.59
Amur maple	59	(N/A)	0.3	0.1	11.85
Boxelder	236	(N/A)	0.3	0.2	47.20
Pear	39	(N/A)	0.3	0.0	7.86
Black spruce	76	(N/A)	0.3	0.1	15.29
Oak	218	(N/A)	0.3	0.2	43.58
Siberian elm	173	(N/A)	0.2	0.2	43.32
Conifer Evergreen Small	44	(N/A)	0.2	0.0	11.10
Mulberry	33	(N/A)	0.2	0.0	8.26
Bur oak	221	(N/A)	0.2	0.2	55.22
Norway spruce	138	(N/A)	0.2	0.1	34.49
Eastern white pine	95	(N/A)	0.2	0.1	23.87
Red pine	89	(N/A)	0.2	0.1	22.35
Scotch pine	110	(N/A)	0.2	0.1	36.53
White oak	149	(N/A)	0.2	0.1	49.80

Norway maple	16,422 (N/A)	25.5	15.0	32.46
Silver maple	37,059 (N/A)	17.0	33.9	109.97
Green ash	14,159 (N/A)	13.6	13.0	52.44
Ash	2,375 (N/A)	3.7	2.2	32.54
Maple	4,243 (N/A)	3.6	3.9	58.93
Littleleaf linden	2,091 (N/A)	3.4	1.9	30.75
Sugar maple	4,144 (N/A)	3.3	3.8	62.79
Black walnut	2,945 (N/A)	2.9	2.7	51.67
Red maple	2,442 (N/A)	2.6	2.2	47.88
Black locust	1,444 (N/A)	2.3	1.3	31.39
Apple	380 (N/A)	2.3	0.3	8.26
Honeylocust	6,465 (N/A)	1.9	5.9	170.13
Northern hackberry	1,660 (N/A)	1.5	1.5	55.35
American basswood	1,574 (N/A)	1.2	1.4	65.59
Northern white cedar	470 (N/A)	1.2	0.4	20.43
Pin oak	2,431 (N/A)	1.0	2.2	121.57
Cottonwood	735 (N/A)	0.8	0.7	45.92
Elm	603 (N/A)	0.7	0.6	43.11
Spruce	366 (N/A)	0.6	0.3	33.27
Northern red oak	140 (N/A)	0.6	0.1	12.73
Chinese elm	413 (N/A)	0.5	0.4	41.35
Northern catalpa	560 (N/A)	0.5	0.5	56.02
Broadleaf Deciduous Small	34 (N/A)	0.5	0.0	3.42
White ash	484 (N/A)	0.4	0.4	60.45
American elm	471 (N/A)	0.4	0.4	58.84
Northern pin oak	170 (N/A)	0.4	0.2	21.20
Lilac	80 (N/A)	0.4	0.1	9.95
Blue spruce	134 (N/A)	0.4	0.1	19.10
Black maple	126 (N/A)	0.4	0.1	17.94
Black poplar	357 (N/A)	0.4	0.3	50.94
American sycamore	447 (N/A)	0.4	0.4	63.81
American chestnut	301 (N/A)	0.3	0.3	60.27
River birch	122 (N/A)	0.3	0.1	24.32
Broadleaf Evergreen Large	528 (N/A)	0.3	0.5	105.59
Amur maple	59 (N/A)	0.3	0.1	11.85
Boxelder	236 (N/A)	0.3	0.2	47.20
Pear	39 (N/A)	0.3	0.0	7.86
Black spruce	76 (N/A)	0.3	0.1	15.29
Oak	218 (N/A)	0.3	0.2	43.58
Siberian elm	173 (N/A)	0.2	0.2	43.32
Conifer Evergreen Small	44 (N/A)	0.2	0.0	11.10
Mulberry	33 (N/A)	0.2	0.0	8.26
Bur oak	221 (N/A)	0.2	0.2	55.22
Norway spruce	138 (N/A)	0.2	0.1	34.49
Eastern white pine	95 (N/A)	0.2	0.1	23.87
Red pine	89 (N/A)	0.2	0.1	22.35
Scotch pine	110 (N/A)	0.2	0.1	36.53
White oak	149 (N/A)	0.2	0.1	49.80

Catalpa	178 (N/A)	0.2	0.2	59.35
Eastern redbud	0 (N/A)	0.1	0.0	0.00
Hickory	57 (N/A)	0.1	0.1	28.56
Broadleaf Deciduous Large	92 (N/A)	0.1	0.1	45.86
Austrian pine	45 (N/A)	0.1	0.0	22.60
Dogwood	29 (N/A)	0.1	0.0	14.42
Kentucky coffeetree	123 (N/A)	0.1	0.1	61.64
Eastern red cedar	43 (N/A)	0.1	0.0	21.34
Paper birch	132 (N/A)	0.1	0.1	66.10
Swamp white oak	39 (N/A)	0.1	0.0	19.55
Ohio buckeye	65 (N/A)	0.1	0.1	32.69
Conifer Evergreen Large	79 (N/A)	0.1	0.1	39.70
Eastern hophornbeam	13 (N/A)	0.1	0.0	6.40
Sumac	2 (N/A)	0.1	0.0	2.06
Eastern cottonwood	58 (N/A)	0.1	0.1	58.34
Sweetbay	4 (N/A)	0.1	0.0	4.38
Black cherry	29 (N/A)	0.1	0.0	28.80
Ginkgo	17 (N/A)	0.1	0.0	17.46
Broadleaf Evergreen Medium	22 (N/A)	0.1	0.0	21.93
Kwanzan cherry	0 (N/A)	0.1	0.0	0.03
Southern magnolia	9 (N/A)	0.1	0.0	9.46
Willow	0 (N/A)	0.1	0.0	0.00
Tulip tree	58 (N/A)	0.1	0.1	57.69
Birch	43 (N/A)	0.1	0.0	43.05
Quaking aspen	29 (N/A)	0.1	0.0	28.56
Mountain ash	6 (N/A)	0.1	0.0	6.40
Citywide total	109,230 (N/A)	100.0	100.0	55.08

Table 7: Summary of Benefits in Dollars

Oelwein

Total Annual Benefits of Public Trees by Species ($)

4/3/2018

Species	Energy	CO_2	Air Quality	Stormwater	Aesthetic/Other	Total ($)	Standard Error	% of Total $
Norway maple	27,319	2,728	4,863	31,742	16,422	83,074	(N/A)	21.0
Silver maple	23,286	4,803	4,342	44,781	37,059	114,271	(N/A)	28.9
Green ash	15,148	2,050	2,671	21,245	14,159	55,273	(N/A)	14.0
Ash	3,909	394	691	4,331	2,375	11,701	(N/A)	3.0
Maple	3,288	437	600	3,594	4,243	12,162	(N/A)	3.1
Littleleaf linden	1,288	200	200	1,176	2,091	4,955	(N/A)	1.3
Sugar maple	3,690	492	590	5,331	4,144	14,248	(N/A)	3.6
Black walnut	2,938	407	495	3,444	2,945	10,230	(N/A)	2.6
Red maple	2,444	280	447	2,652	2,442	8,264	(N/A)	2.1
Black locust	1,943	214	336	2,039	1,444	5,976	(N/A)	1.5
Apple	999	102	162	492	380	2,135	(N/A)	0.5
Honeylocust	2,410	345	405	3,249	6,465	12,874	(N/A)	3.3
Northern hackberry	2,117	207	369	2,496	1,660	6,850	(N/A)	1.7
American basswood	1,391	236	218	2,052	1,574	5,472	(N/A)	1.4
Northern white cedar	385	37	25	806	470	1,723	(N/A)	0.4
Pin oak	1,333	311	171	2,041	2,431	6,286	(N/A)	1.6
Cottonwood	1,301	135	269	2,336	735	4,776	(N/A)	1.2
Elm	754	91	142	1,127	603	2,718	(N/A)	0.7
Spruce	263	26	24	524	366	1,204	(N/A)	0.3
Northern red oak	363	30	51	410	140	994	(N/A)	0.3
Chinese elm	453	57	80	607	413	1,611	(N/A)	0.4
Northern catalpa	746	91	142	1,221	560	2,760	(N/A)	0.7
Broadleaf Deciduous Sn	100	10	14	39	34	196	(N/A)	0.0
White ash	319	48	57	415	484	1,324	(N/A)	0.3
American elm	587	56	103	805	471	2,022	(N/A)	0.5
Northern pin oak	456	37	84	585	170	1,332	(N/A)	0.3
Lilac	152	18	26	90	80	366	(N/A)	0.1
Blue spruce	159	12	18	287	134	609	(N/A)	0.2
Black maple	341	25	62	388	126	942	(N/A)	0.2
Black poplar	496	61	98	904	357	1,916	(N/A)	0.5
American sycamore	559	74	107	1,010	447	2,197	(N/A)	0.6
American chestnut	325	45	57	472	301	1,202	(N/A)	0.3
River birch	210	20	39	276	122	667	(N/A)	0.2
Broadleaf Evergreen Lar	278	37	23	573	528	1,439	(N/A)	0.4
Amur maple	151	16	25	69	59	319	(N/A)	0.1
Boxelder	200	34	33	269	236	773	(N/A)	0.2
Pear	121	11	21	75	39	267	(N/A)	0.1
Black spruce	166	15	20	359	76	637	(N/A)	0.2
Oak	209	29	36	231	218	723	(N/A)	0.2
Siberian elm	266	32	49	347	173	867	(N/A)	0.2
Conifer Evergreen Smal	12	1	1	16	44	73	(N/A)	0.0
Mulberry	128	11	22	70	33	264	(N/A)	0.1
Bur oak	317	39	65	628	221	1,270	(N/A)	0.3
Norway spruce	117	12	6	289	138	561	(N/A)	0.1
Eastern white pine	75	7	9	116	95	302	(N/A)	0.1
Red pine	89	9	4	199	89	390	(N/A)	0.1
Scotch pine	75	7	4	177	110	373	(N/A)	0.1
White oak	146	20	24	150	149	489	(N/A)	0.1

Catalpa	197	27	36	295	178	733 (N/A)	0.2
Eastern redbud	92	4	17	64	0	177 (N/A)	0.0
Hickory	41	5	6	33	57	143 (N/A)	0.0
Broadleaf Deciduous La	88	12	15	79	92	287 (N/A)	0.1
Austrian pine	54	5	6	105	45	215 (N/A)	0.1
Dogwood	47	6	8	32	29	122 (N/A)	0.0
Kentucky coffeetree	128	18	22	177	123	468 (N/A)	0.1
Eastern red cedar	23	2	1	36	43	104 (N/A)	0.0
Paper birch	153	21	28	256	132	590 (N/A)	0.1
Swamp white oak	33	4	5	20	39	102 (N/A)	0.0
Ohio buckeye	71	9	11	54	65	211 (N/A)	0.1
Conifer Evergreen Large	55	6	4	122	79	266 (N/A)	0.1
Eastern hophornbeam	36	3	5	14	13	72 (N/A)	0.0
Sumac	5	1	1	2	2	11 (N/A)	0.0
Eastern cottonwood	91	11	19	196	58	375 (N/A)	0.1
Sweetbay	13	1	2	8	4	29 (N/A)	0.0
Black cherry	46	6	8	32	29	121 (N/A)	0.0
Ginkgo	40	4	7	34	17	102 (N/A)	0.0
Broadleaf Evergreen Me	19	1	2	18	22	63 (N/A)	0.0
Kwanzan cherry	1	0	0	0	0	1 (N/A)	0.0
Southern magnolia	8	1	1	4	9	23 (N/A)	0.0
Willow	71	3	14	102	0	190 (N/A)	0.0
Tulip tree	57	8	9	70	58	202 (N/A)	0.1
Birch	59	7	10	67	43	186 (N/A)	0.0
Quaking aspen	21	3	3	16	29	71 (N/A)	0.0
Mountain ash	18	2	3	7	6	36 (N/A)	0.0
Citywide Total	105,296	14,532	18,541	148,378	109,230	395,978 (N/A)	100.0

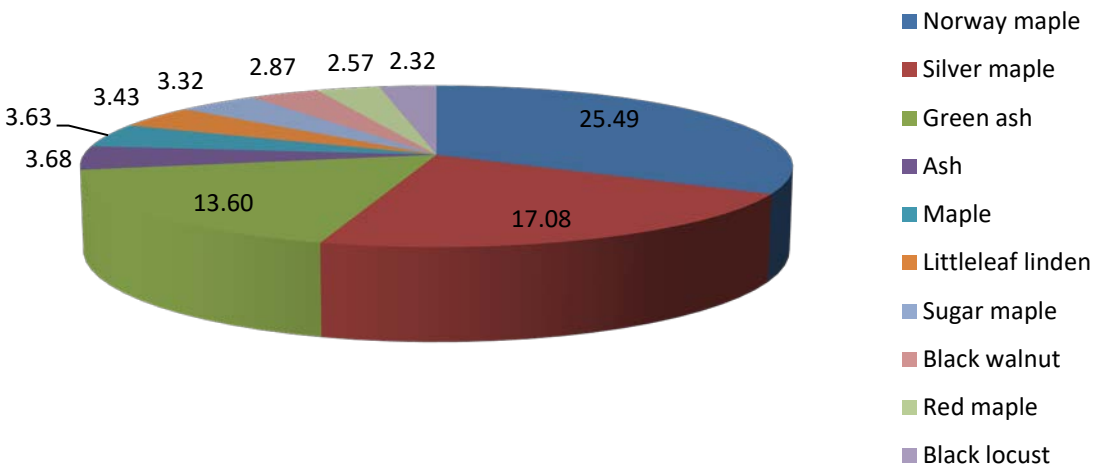

Figure 1: Species Distribution

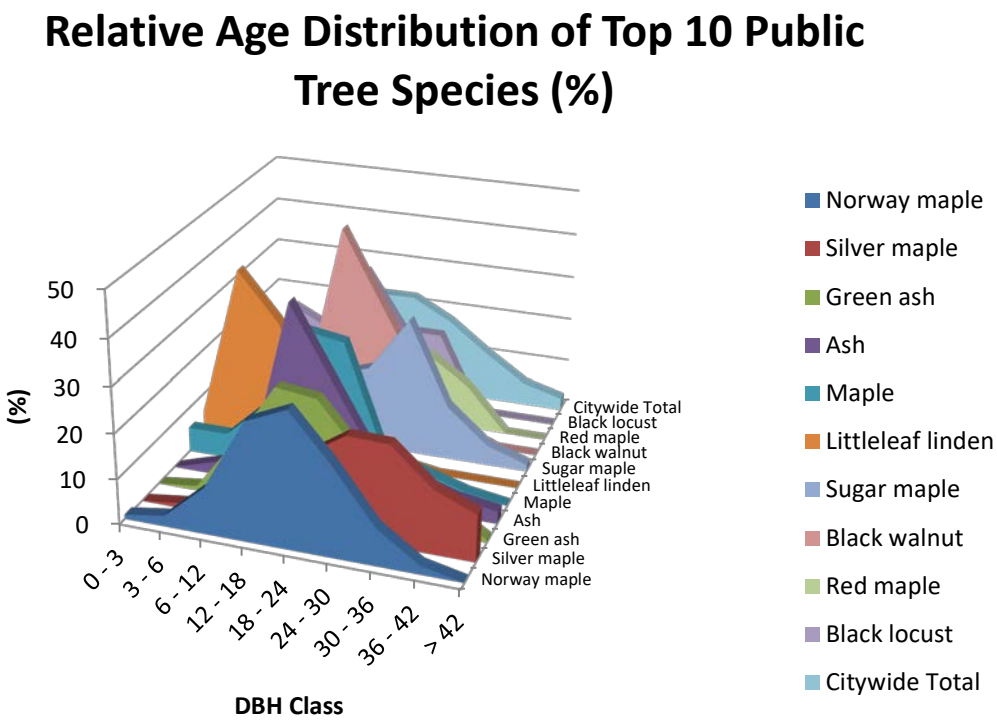

Figure 2: Relative Age Class

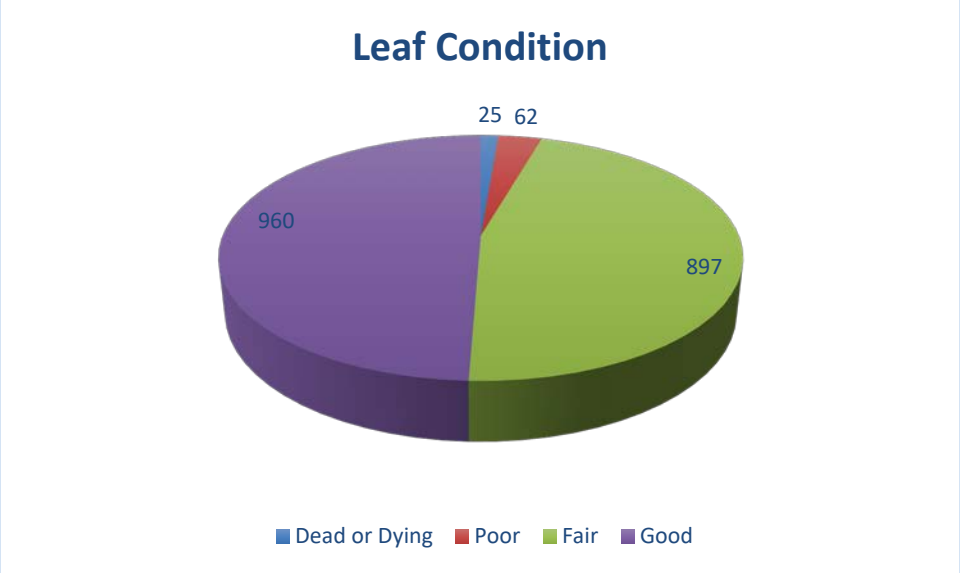

Figure 3: Foliage Condition

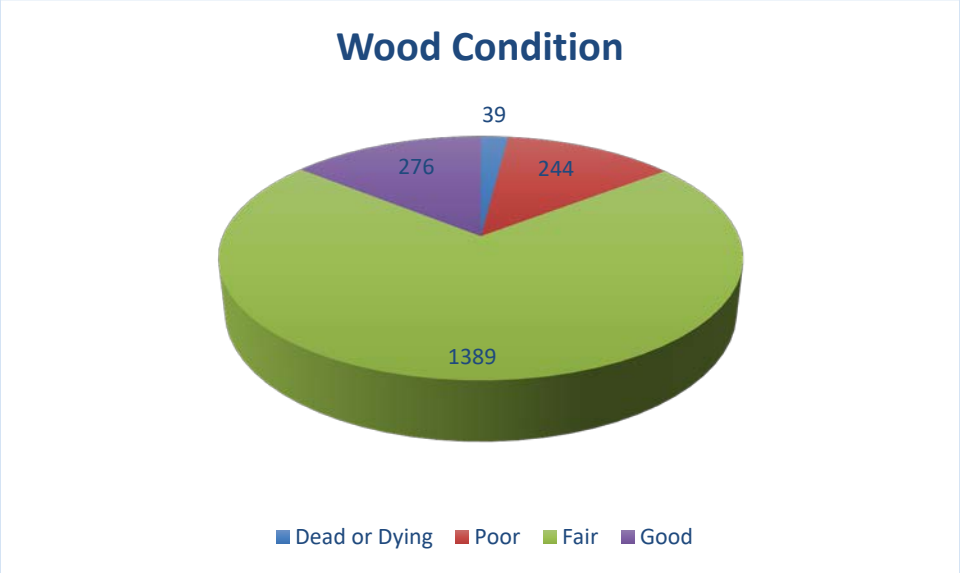

Figure 4: Wood Condition

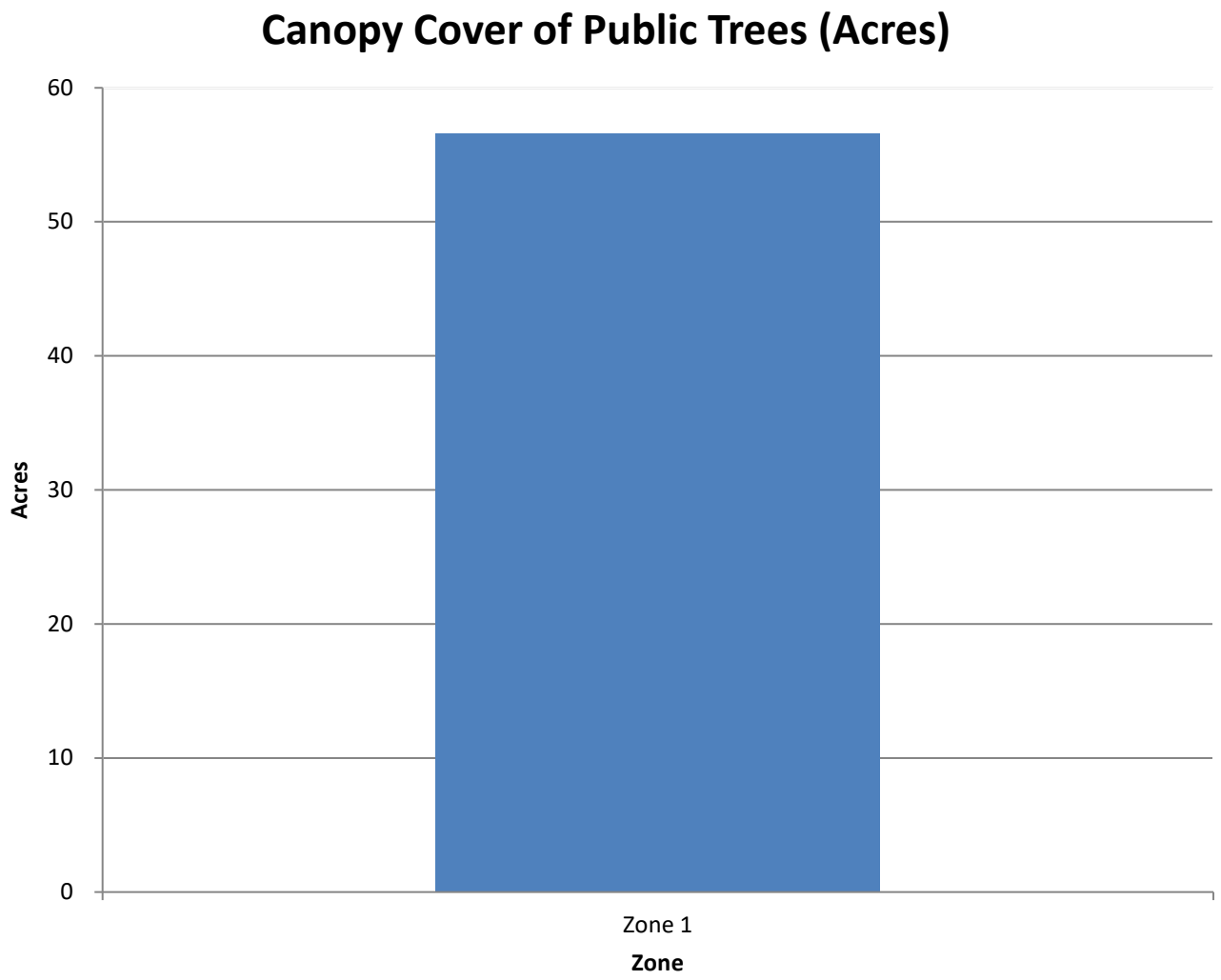

Figure 5: Canopy Cover in Acres

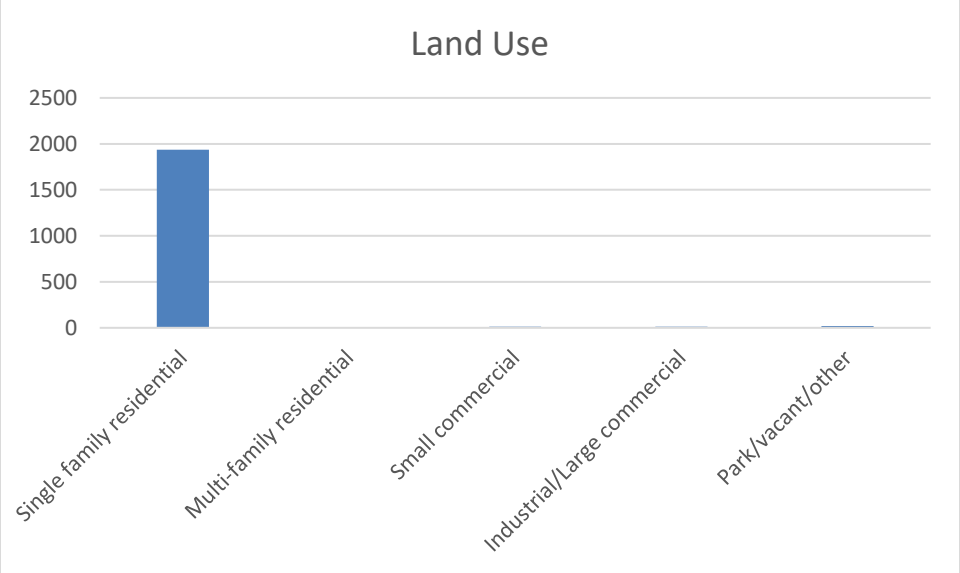

Figure 6: Land Use of city/park trees

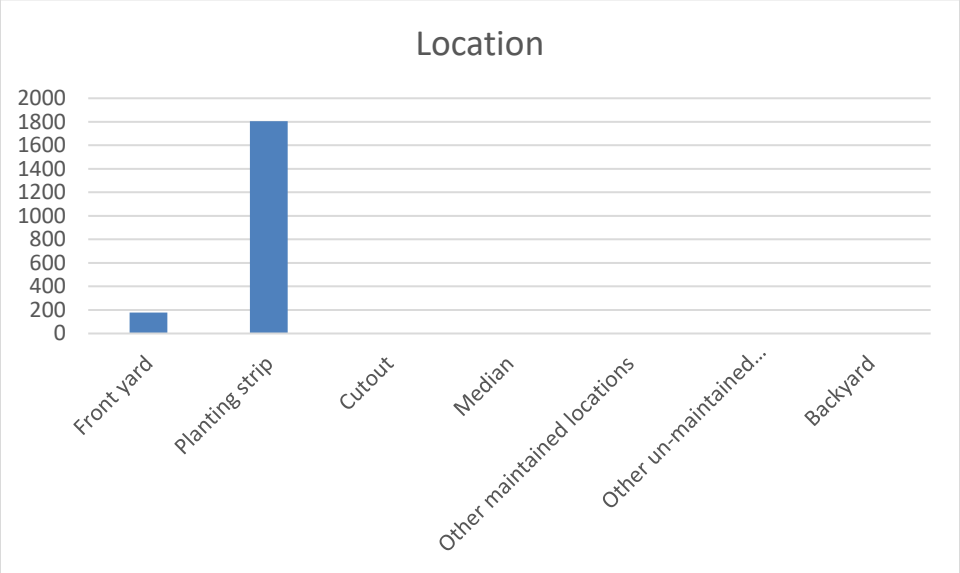

Figure 7: Location of city/park trees

Appendix B: ArcGIS Mapping

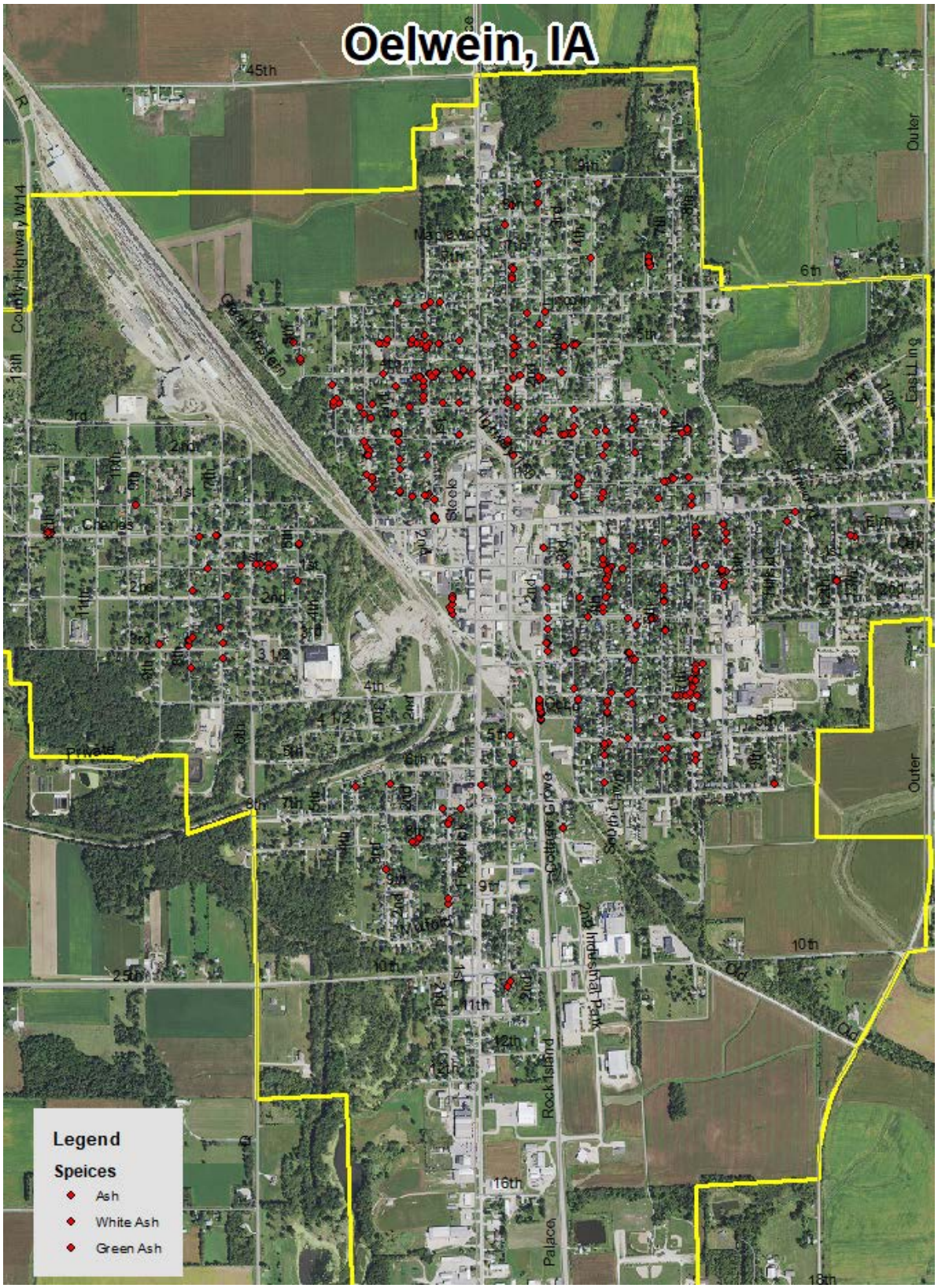

Figure 1: Location of Ash Trees

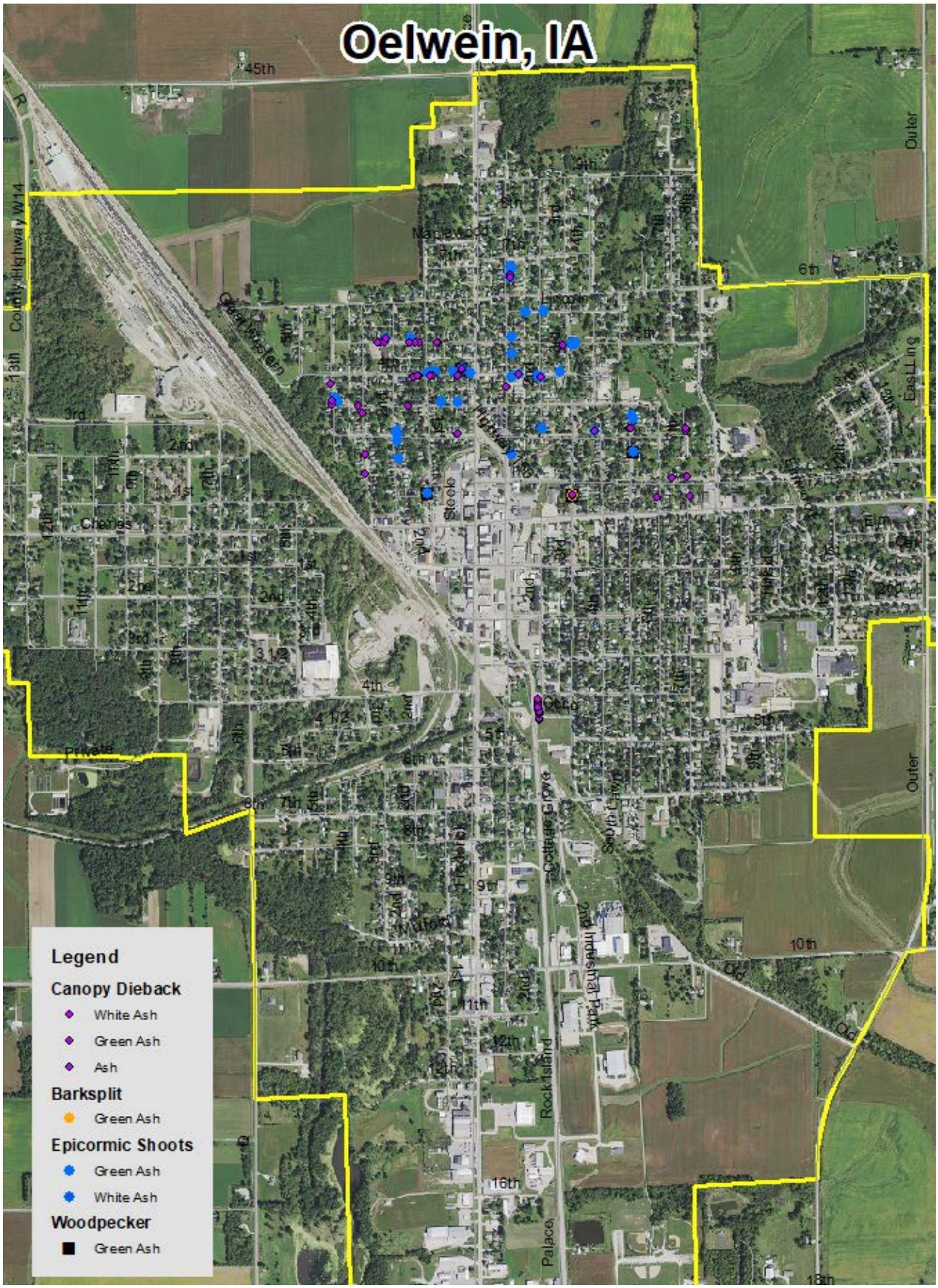

Figure 2: Location of EAB symptoms

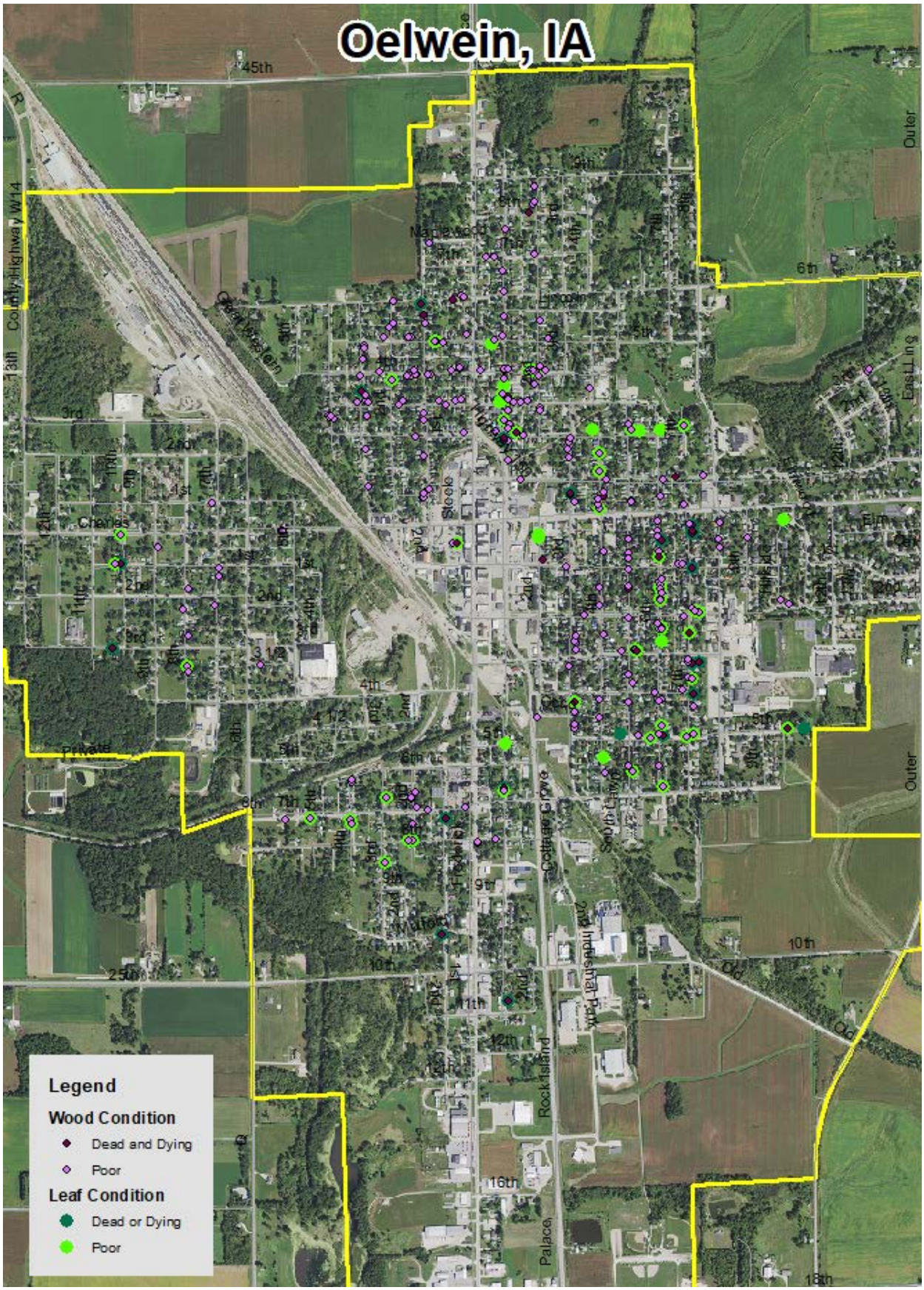

Figure 3: Location of Poor Condition Trees

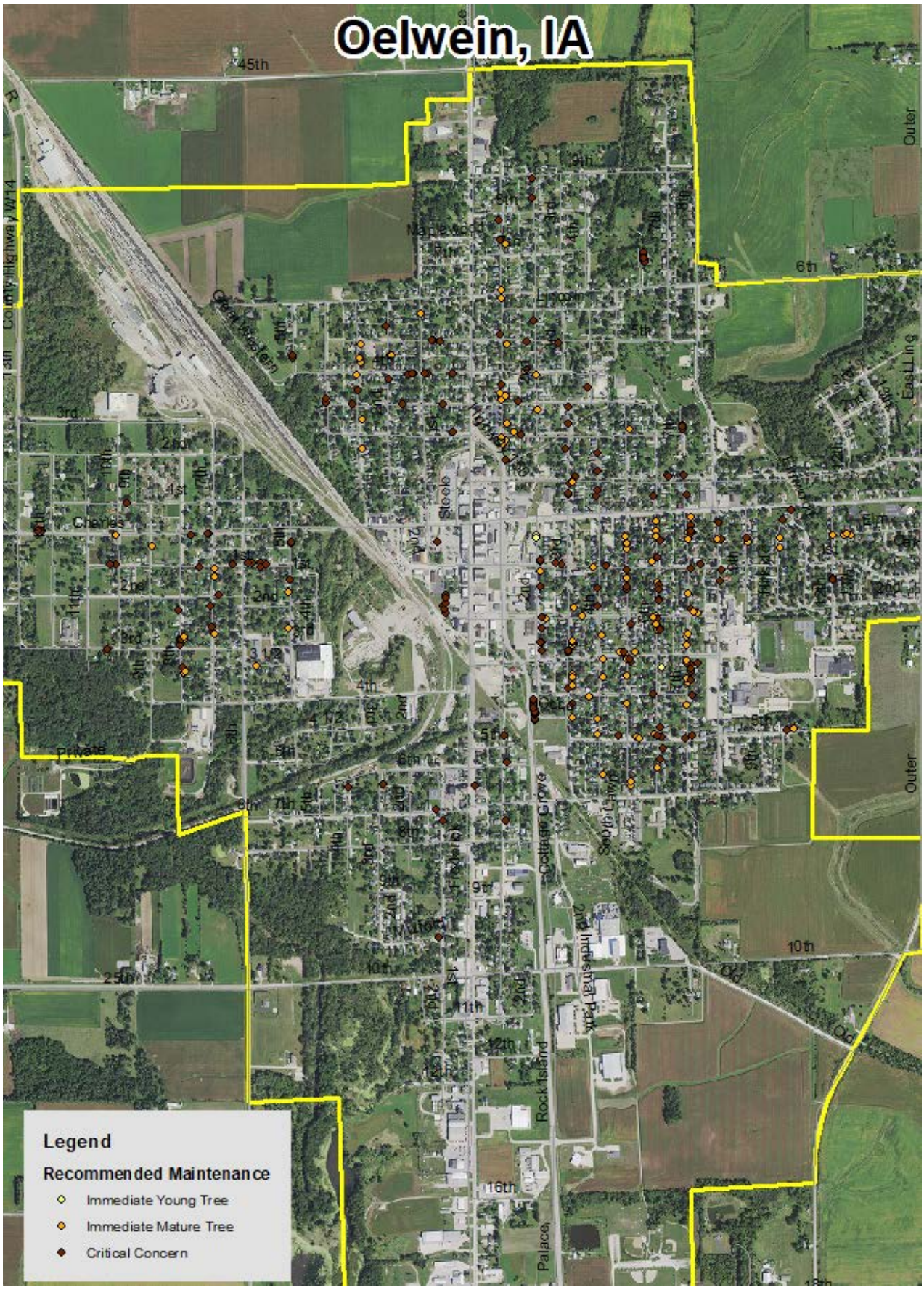

Figure 4: Location of Trees with Recommended Maintenance

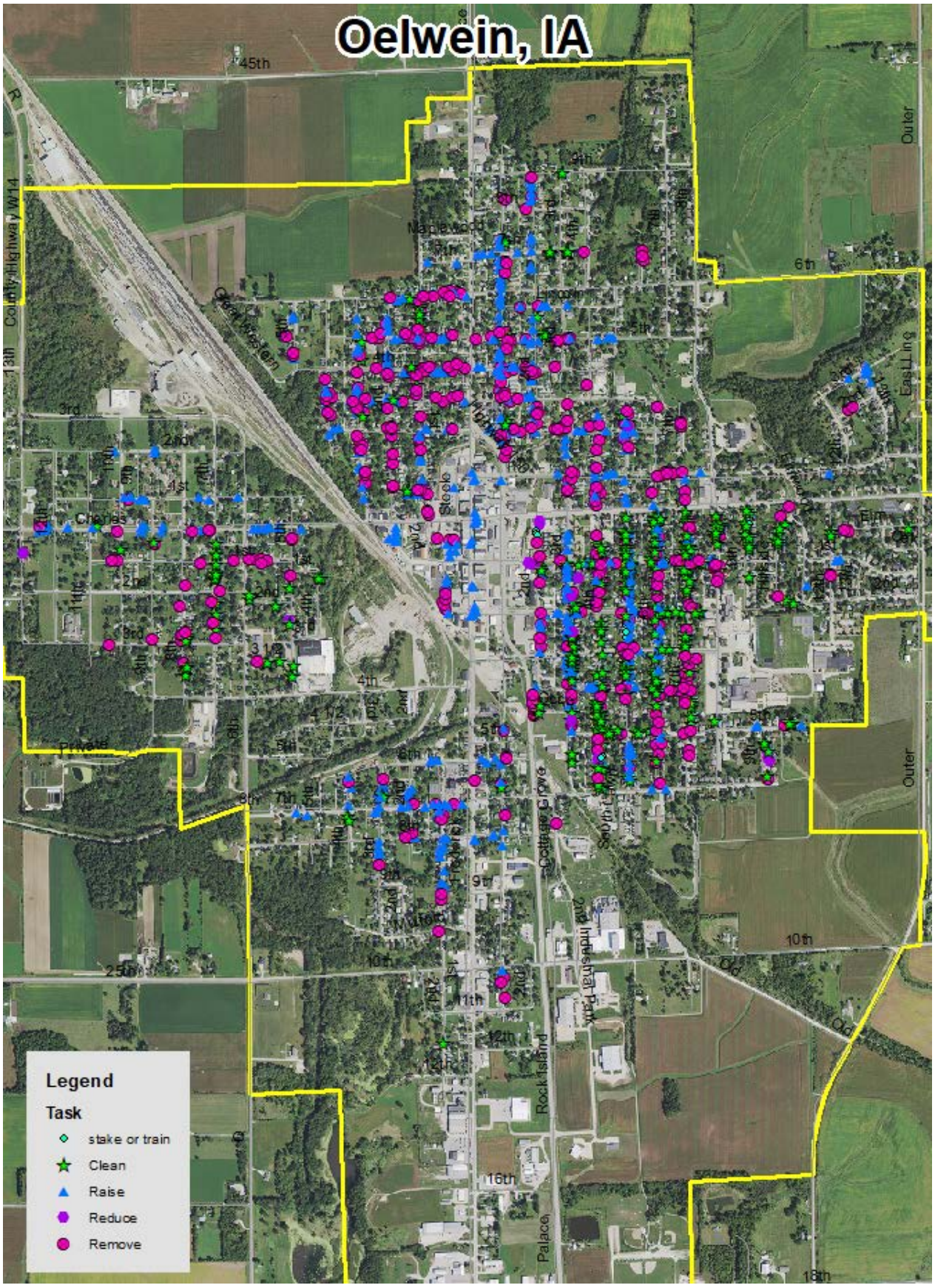

Figure 5: Maintenance Tasks *City ownership of the trees recommended for removal should be verified prior to any removal*

Appendix C: Oelwein Tree Policy

Oelwein Tree Policy

Oelwein Tree Board

Mission- "To work diligently to maintain and increase Oelwein's Urban Forest"

Conditions that may warrant a removal of a street tree

- Tree is dead, dying or dangerous

Conditions that do **not** warrant a removal of a street tree

- Tree drops flowers, fruits, nuts, seeds, branches, and leaves
- Tree is perceived as too large/tall or obstructs view
- Tree is perceived as making too much shade
- Cost of maintenance (e.g., pruning, fertilizing, treating for pests)
- Hazards that may be remedied by pruning and routine maintenance

The Urban Forester may remove or order to be removed any tree or shrub or part thereof which is in an unsafe condition or which by reason of its nature is injurious to sewers, gas lines, water lines or other public improvements or is affected with any injurious fungus, insect or other pest or which obstructs view of traffic.

Street Trees to be removed upon request by city

- Upon request of the resident with abutting land for a tree to be removed because the tree is not on the approved tree list.

Residents that request a tree removed under these circumstances will be required to replace the tree so long as the area meets tree code requirements. Residents who do not agree with the City's decision to not remove a tree may appeal to the Oelwein Tree Board. The Oelwein Tree Board meets monthly.

Street Trees to be removed by the land owner

- Resident agrees to fill out a permit to remove the tree
- Resident hires out the removal of the tree
- Resident replants a tree in the fall within one year of removal
    - Tree must be on the approved tree list
    - If the tree dies within 1 year of planting the resident will replace said tree

Pruning:

The City shall have the right to prune any trees or shrubs on private property when the same interfere with the proper spread of light along the street from a street light or interfere with visibility of any traffic control device or sign.

The City may at times require residents to trim their own trees. When a right-of-way tree needs trimmed on the homeowner's side, the homeowner is responsible.

EAB/ Boulevard Ash Trees:

Emerald ash borer (EAB) was confirmed within the City of Oelwein in the spring of 2017. All infected ash trees on street boulevards shall be removed and replaced.

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.