Redfield, IA

2020 Urban Forest Management Plan
Prepared by Emma Hanigan
Iowa Department of Natural Resources

Table of Contents

Executive Summary 1
- Overview 1
- Inventory and Results 1
- Recommendations 1

Introduction 2
Inventory 2
Inventory Results 2
Annual Benefits 3
- Annual Energy Benefits 3
- Annual Stormwater Benefits 3
- Annual Air Quality Benefits 3
- Annual Carbon Benefits 3
- Annual Aesthetics Benefits 3
- Financial Summary of all Benefits 3

Forest Structure 3
- Species Distribution 3
- Age Class 4
- Condition: Wood and Foliage 4
- Management Needs 4
- Canopy Cover 4
- Land Use and Location 5

Recommendations 5
- Risk Management 5
- Pruning Cycle 5
- Planting 6
- Continual Monitoring 6
- Six Year Maintenance Plan with No Additional Funding 6

Emerald Ash Borer Plan 7
- Ash Tree Removal 7
- Treatment of Ash Trees 7
- EAB Quarantines 8
- Wood Disposal 8
- Canopy Replacement 8
- Postponed Work 8
- Monitoring 8
- Private Ash Trees 9

Budget 9
Works Cited 10
Appendix A: i-Tree Data 11
- Table 1: Annual Energy Benefits 11
- Table 2: Annual Stormwater Benefits 12
- Table 3: Annual Air Quality Benefits 13
- Table 4: Annual Carbon Stored 14
- Table 5: Annual Carbon Sequestered 15

Table 6: Annual Social and Aesthetic Benefits 16
Table 7: Summary of Benefits in Dollars 17
Figure 1: Species Distribution 18
Figure 2: Relative Age Class 18
Figure 3: Foliage Condition 19
Figure 4: Wood Condition 19
Figure 5: Canopy Cover in Acres 20
Figure 6: Land Use of city/park trees 21
Figure 7: Location of city/park trees 21
Appendix B: ArcGIS Mapping 22
Figure 1: Location of Ash Trees 22
Figure 2: Location of EAB symptoms 23
Figure 3: Location of Poor Condition Trees 24
Figure 4: Location of Trees with Recommended Maintenance 25
Figure 5: Maintenance Tasks *City ownership of the trees recommended for removal should be verified prior to any removal* 26
Appendix C: Redfield Tree Ordinances 27

Executive Summary

Overview

This plan was developed to assist the City of Redfield 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 11% of Redfield'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 2019, 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 150 trees inventoried.

- Redfield's trees provide $20,891 of benefits annually, an average of $139 a tree
- There are over 32 species of trees
- The top three genera are: Maple 33%,Crabapple , and Ash 11%
- 12% of trees are in need of some type of management
- 2 trees are recommended for removal*City ownership of the trees recommended for removal should be verified prior to any 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.

- 14 of the 16 ash trees should be carefully examined, as they have one or more symptoms that could be related to an EAB infestation
- 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: any fruit-bearing tree or any tree of the kinds commonly known as 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 7 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 Redfield 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 Redfield, these costs can be extended over years and public safety issues from dead and dying ash trees mitigated.

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

Inventory

In 2019, 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 150 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. Redfield's trees reduce energy related costs by approximately $5,647 annually (Appendix A, Table 1). These savings are both in Electricity (27 MWh) and in Natural Gas (2,046 Therms).

Annual Stormwater Benefits

Redfield's trees intercept about 311,953 gallons of rainfall or snow melt a year (Appendix A, Table 2). This interception provides $8,454 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 Redfield, it is estimated that trees remove 362.6 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 $1,028 (Appendix A, Table 3).

Annual Carbon Benefits

Carbon sequestration and storage reduce the amount of carbon in the atmosphere, mitigating climate change. In Redfield, trees sequester about 98,090 lbs of carbon a year with an associated value of $736 (Appendix A, Table 5). In addition, the trees store 1,197,757lbs of carbon, with a yearly benefit of $8,983 (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. Redfield receives $5,026 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, Redfield's trees provide $20,891 of benefits annually. Benefits of individual trees vary based on size, species, health and location, but on average each of the 150 trees in Redfield provide approximately $138 annually (Appendix A, Table 7).

Forest Structure

Species Distribution

Redfield has over 32 different tree species along city streets and parks (Appendix A, Figure 1).
The distribution of trees by genera is as follows:

Maple	50	33%
Apple (crabapple)	20	13%

Ash	16	11%
Oak	12	8%
Elm	12	8%
Hackberry	10	7%
Honey locust	7	5%
Spruce	5	3%
Other	5	3%
Walnut	2	1%
Pine	2	1%
Pear	2	1%
Japanese Tree Lilac	2	1%
Hickory	1	1%
Redbud	1	1%
White Cedar	1	1%
Poplar	1	1%
Linden	1	1%

Age Class

Most of Redfield's trees (51%) are under 12 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.

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 Redfield indicate that 85% of the trees are in good health, with only 1% of the foliage in poor health, dead or dying (Appendix A, Figure 3 & Appendix B, Figure 3). Also, 42% of Redfield's trees are in good health for wood condition (appendix A, Figure 4 & Appendix B, Figure 3). Wood condition that is in poor health, dead or dying is about 13% of the population. This 13% is an estimate of trees that need management follow up.

Management Needs

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

Crown Cleaning	8	1%
Crown Raising	7	<1%
Tree Removal	2	<1%
Crown Reduction	1	<1%

Canopy Cover

The total canopy with both private and public trees is 35%, 310 acres. The canopy cover included in the Redfield inventory includes approximately 3.3 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 65 trees need to be planted annually on public and private lands.

Land Use and Location

The majority of Redfield's city and park trees are in parks or 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	45%
Park/vacant/other	45%
Small commercial	10%
Industrial/Large commercial	0%
Multifamily residential	0%

Location	
Front yard	99%
Planting strip	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

Redfield has 2 critical concern trees and one of those needs immediate removal, the other trimming. 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 first. There are 5 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 16 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). Both trees needing removal are ash trees. There are a total of 16 ash trees, and 14 of those have signs and symptoms that have been associated with EAB. In addition, there are 4 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 Redfield.

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 (33%) (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: any fruit-bearing tree or any tree of the kinds commonly known as cottonwood, poplar, box elder, Chinese elm, evergreen, willow, or black walnut as outlined in section 151.02 of the city ordinance (Appendix C). All trees planted must meet the restrictions in city ordinance 151.02 (Appendix C).

Continual Monitoring

Due to the threat of EAB, it is important to continuously check the health of ash trees. It is recommended that ash trees be checked with a visual survey every year for tree decline and for the following signs and symptoms: canopy dieback, epicormic shoots, bark splitting, D-shaped borer exit holes, and wood pecker damage.

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

Year 1

- Removal: 2 tree marked for removal
- Trim Critical Concern tree
- Planting and Replacement: 4 trees to be planted in open locations
- Young Tree Pruning & Maintenance:
- Visual Survey for signs and symptoms of EAB

Year 2

- Removal: 2 removal of any new critical concern trees and ash in poor health
- Planting and Replacement: 3 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: 3 trees - removal of any new critical concern trees and ash in poor health

Planting and Replacement: 4 trees to be planted in open locations and locations from previous removals
Young Tree Pruning & Maintenance:
Visual Survey for signs and symptoms of EAB

Year 4
Removal: 2 removal of any new critical concern trees and ash in poor health
Planting and Replacement: 3 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: 3 trees - removal of any new critical concern trees and ash in poor health
Planting and Replacement: 4 trees to be planted in open locations and locations from previous removals
Young Tree Pruning & Maintenance:
Visual Survey for signs and symptoms of EAB

Year 6
Removal: 2 removal of any new critical concern trees and ash in poor health
Planting and Replacement: 3 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

*Reduction of ash over 6 years: Approximately 15 ash trees removed (approximately 93% of ash). It will take approximately 7 years to remove all ash with the current budget. EAB could potentially kill all ash within 4 to 15 years of its arrival.

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 because all but 2 ash trees are showing symptoms of EAB. For more information on the cost of treatment strategies visit http://extension.entm.purdue.edu/treecomputer/

EAB Quarantines

EAB is an extremely destructive plant pest and it is responsible for the death and decline of millions of ash trees. Ash in both forested and urban settings constitute a significant portion of the canopy cover in the United States. Current tools to detect, control, suppress and eradicate this pest are not as robust as the USDA would desire. In order to stay ahead of this hard to detect beetle, the USDA is attempting to contain the beetle before it spreads beyond its known positions by regulating articles.

A regulated article under the USDA's quarantine includes any of the following items:

- emerald ash borer
- firewood of all hardwood species (for example ash, oak, maple and hickory)
- nursery stock and green lumber of ash
- any other ash material, whether living, dead, cut or fallen, including logs, stumps, roots, branches, as well as composted and not composted chips of the genus ash (Mountain ash is not included)

In addition, any other article, product or means of conveyance not listed above may be designated as a regulated article if a USDA inspector determines that it presents a risk of spreading EAB once a quarantine is in effect for your county.

Wood Disposal

A very important aspect of planning is determining how wood infested with EAB will be handled, keeping in mind that quarantines will restrict its movement. Consider who will cut and haul the dead and dying trees? Is there an accessible, secured site big enough to store and sort the hundreds of trees and the associated brush and chips? How will wood be disposed of or utilized? Do you have equipment capable of handling the amount and size of ash trees your tree inventory has identified? Once your county is under quarantine for EAB, contact USDA-APHIS-PPQ at 515-251-4083 or visit the website http://www.aphis.usda.gov/plant_health/plant_pest_info/emerald_ash_b/regulatory.shtml. Wood waste can be disposed of as you normally would if your county is not part of a quarantine.

Canopy Replacement

As budget permits, all removed trees will be replaced. All trees will meet the restrictions in city ordinance 151.02 (Appendix C). The new plantings will be a diverse mix and will not include any fruit-bearing tree or any tree of the kinds commonly known as cottonwood, poplar, box elder, Chinese elm, evergreen, willow, or black walnut.

Postponed Work

While finances, staffing and equipment are focused on the management of ash, usual services may be delayed. Tree removal requests on genera other than ash will be prioritized by hazardous or emergency situations only.

Monitoring

It is recommended that ash trees be checked with a visual survey every year for tree death and for the following signs and symptoms: canopy dieback, epicormic shoots, bark splitting, D-shaped borer exit holes, and wood pecker damage.

Private Ash Trees

It is strongly recommended that private property owners start removing ash trees on their property upon arrival of EAB if preventative treatments are not being used. City Code 151.06 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 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

Current Budget

Total $17,400 over 6 years ($2,900/year)

FY 2020 Budget

Removal: $1,600
Trimming Critical: $800
Planting: $400
Watering & Maintenance: $100

FY 2021 Budget

Removal: $1,600
Planting: $300
Routine trimming: $900
Watering & Maintenance: $100

FY 2022 Budget

Removal: $2,400
Planting: $400
Watering & Maintenance: $100

FY 2023 Budget

Removal: $1,600
Planting: $300
Routine trimming: $900
Watering & Maintenance: $100

FY 2024 Budget

Removal: $2,400
Planting: $400
Watering & Maintenance: $100

FY 2025 Budget

Removal: $1,600

Planting: $300
Routine trimming: $900
Watering & Maintenance: $100

*Reduction of ash over 6 years: approximately 15 ash trees removed (approximately 93% of ash). **It will take approximately 7 years to remove all ash with the current budget.**

Purposed Budget Increase

EAB could potentially kill all ash trees in Redfield within 4 years of its arrival. To remove all ash trees within 6 years the budget would need to be increased to $19,500 a year. If the budget were increased to $10,000 a year all ash could be removed within 13 years. Additionally, it is recommended that Redfield 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.

Ash treatment is not an option at this time as all but 2 ash trees are showing symptoms or poor health from EAB.

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

Redfield

Annual Energy Benefits of Public Trees

4/13/2020

Species	Total Electricity (MWh)	Electricity ($)	Total Natural Gas (Therms)	Natural Gas ($)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Apple	0.4	34	77.2	76	109	(N/A)	13.3	1.9	5.47
Silver maple	5.1	387	659.9	647	1,034	(N/A)	11.3	18.3	60.82
Green ash	4.3	323	578.2	567	890	(N/A)	10.0	15.8	59.30
Maple	0.4	27	52.3	51	78	(N/A)	8.7	1.4	5.99
Northern hackberry	4.2	318	584.0	572	890	(N/A)	6.7	15.8	89.00
Siberian elm	2.9	217	376.4	369	586	(N/A)	6.0	10.4	65.10
Black maple	2.1	157	286.0	280	438	(N/A)	5.3	7.7	54.70
Honeylocust	1.0	75	133.0	130	205	(N/A)	4.7	3.6	29.30
Swamp white oak	0.3	26	52.2	51	77	(N/A)	4.7	1.4	11.06
Red maple	0.2	14	26.9	26	40	(N/A)	4.0	0.7	6.72
Norway maple	1.3	100	185.5	182	282	(N/A)	3.3	5.0	56.35
Bur oak	0.0	1	1.9	2	3	(N/A)	2.7	0.0	0.66
Broadleaf Deciduous Small	0.0	1	1.9	2	3	(N/A)	2.0	0.0	0.87
Japanese tree lilac	0.0	2	4.4	4	6	(N/A)	1.3	0.1	3.13
Black walnut	0.8	59	107.4	105	164	(N/A)	1.3	2.9	82.02
Pear	0.4	28	49.3	48	76	(N/A)	1.3	1.4	38.13
Spruce	0.1	9	19.0	19	27	(N/A)	1.3	0.5	13.58
American elm	1.1	80	133.9	131	211	(N/A)	1.3	3.7	105.59
Blue spruce	0.3	25	46.5	46	71	(N/A)	1.3	1.3	35.47
Eastern white pine	0.1	9	19.0	19	27	(N/A)	1.3	0.5	13.58
Conifer Evergreen Large	0.0	2	4.0	4	6	(N/A)	0.7	0.1	5.61
Boxelder	0.3	24	44.3	43	68	(N/A)	0.7	1.2	67.78
White ash	0.3	20	28.4	28	48	(N/A)	0.7	0.9	48.12
Littleleaf linden	0.3	22	41.9	41	63	(N/A)	0.7	1.1	62.69
Elm	0.4	29	53.7	53	82	(N/A)	0.7	1.5	82.02
Hickory	0.1	7	13.7	13	21	(N/A)	0.7	0.4	20.64
Eastern redbud	0.0	0	0.6	1	1	(N/A)	0.7	0.0	0.87
Scarlet oak	0.0	0	0.5	0	1	(N/A)	0.7	0.0	0.66
Norway spruce	0.2	14	24.6	24	38	(N/A)	0.7	0.7	38.17
Broadleaf Deciduous Mediu	0.0	0	0.8	1	1	(N/A)	0.7	0.0	1.10
Eastern red cedar	0.0	4	7.9	8	11	(N/A)	0.7	0.2	11.47
Black poplar	0.4	33	59.0	58	91	(N/A)	0.7	1.6	91.02
Total	27.0	2,046	3,674.1	3,601	5,647	(N/A)	100.0	100.0	37.65

Table 2: Annual Stormwater Benefits

Redfield

Annual Stormwater Benefits of Public Trees

4/13/2020

Species	Total rainfall interception (Gal)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Apple	1,483	40	(N/A)	13.3	0.5	2.01
Silver maple	76,056	2,061	(N/A)	11.3	24.4	121.24
Green ash	50,230	1,361	(N/A)	10.0	16.1	90.75
Maple	1,519	41	(N/A)	8.7	0.5	3.17
Northern hackberry	47,939	1,299	(N/A)	6.7	15.4	129.91
Siberian elm	29,825	808	(N/A)	6.0	9.6	89.81
Black maple	19,431	527	(N/A)	5.3	6.2	65.82
Honeylocust	10,273	278	(N/A)	4.7	3.3	39.77
Swamp white oak	3,838	104	(N/A)	4.7	1.2	14.86
Red maple	698	19	(N/A)	4.0	0.2	3.15
Norway maple	11,541	313	(N/A)	3.3	3.7	62.55
Bur oak	72	2	(N/A)	2.7	0.0	0.48
Broadleaf Deciduous Small	22	1	(N/A)	2.0	0.0	0.20
Japanese tree lilac	76	2	(N/A)	1.3	0.0	1.03
Black walnut	10,981	298	(N/A)	1.3	3.5	148.79
Pear	1,333	36	(N/A)	1.3	0.4	18.06
Spruce	1,191	32	(N/A)	1.3	0.4	16.14
American elm	9,102	247	(N/A)	1.3	2.9	123.33
Blue spruce	5,849	159	(N/A)	1.3	1.9	79.26
Eastern white pine	1,191	32	(N/A)	1.3	0.4	16.14
Conifer Evergreen Large	213	6	(N/A)	0.7	0.1	5.77
Boxelder	5,044	137	(N/A)	0.7	1.6	136.70
White ash	1,663	45	(N/A)	0.7	0.5	45.05
Littleleaf linden	3,744	101	(N/A)	0.7	1.2	101.46
Elm	5,491	149	(N/A)	0.7	1.8	148.79
Hickory	608	16	(N/A)	0.7	0.2	16.47
Eastern redbud	7	0	(N/A)	0.7	0.0	0.20
Scarlet oak	18	0	(N/A)	0.7	0.0	0.48
Norway spruce	4,605	125	(N/A)	0.7	1.5	124.79
Broadleaf Deciduous Medium	12	0	(N/A)	0.7	0.0	0.33
Eastern red cedar	659	18	(N/A)	0.7	0.2	17.86
Black poplar	7,239	196	(N/A)	0.7	2.3	196.17
Citywide total	311,953	8,454	(N/A)	100.0	100.0	56.36

Table 3: Annual Air Quality Benefits

Redfield

Annual Air Quality Benefits of Public Trees

4/13/2020

Species	Deposition (lb)				Total Depos. ($)	Avoided (lb)				Total Avoided ($)	BVOC Emissions (lb)	BVOC Emissions ($)	Total (lb)	Total ($)	Standard Error	% of Total Trees	Avg. $/tree
	O_3	NO_2	PM_{10}	SO_2		NO_2	PM_{10}	VOC	SO_2								
Apple	0.2	0.0	0.1	0.0	1	2.3	0.3	0.3	2.0	14	0.0	0	5.3	15	(N/A)	13.3	0.75
Silver maple	13.9	2.4	6.8	0.6	75	23.9	3.5	3.4	23.1	150	-7.4	-28	70.2	197	(N/A)	11.3	11.60
Green ash	6.5	1.0	3.1	0.3	35	20.3	3.0	2.8	19.3	126	0.0	0	56.3	161	(N/A)	10.0	10.74
Maple	0.1	0.0	0.1	0.0	1	1.7	0.2	0.2	1.6	11	-0.1	0	4.0	11	(N/A)	8.7	0.86
Northern hackberry	8.3	1.4	4.1	0.4	45	20.1	2.9	2.8	19.0	125	0.0	0	59.1	170	(N/A)	6.7	17.01
Siberian elm	5.0	0.9	2.4	0.2	27	13.5	2.0	1.9	13.0	84	0.0	0	38.9	112	(N/A)	6.0	12.39
Black maple	4.9	0.8	2.3	0.2	26	9.9	1.4	1.4	9.4	62	-1.6	-6	28.7	82	(N/A)	5.3	10.20
Honeylocust	1.9	0.3	0.9	0.1	10	4.7	0.7	0.7	4.5	29	-1.5	-6	12.1	34	(N/A)	4.7	4.80
Swamp white oak	0.9	0.1	0.4	0.0	5	1.7	0.2	0.2	1.6	10	-0.2	-1	5.0	14	(N/A)	4.7	2.06
Red maple	0.0	0.0	0.0	0.0	0	0.9	0.1	0.1	0.8	6	0.0	0	2.0	6	(N/A)	4.0	0.95
Norway maple	2.3	0.4	1.1	0.1	12	6.3	0.9	0.9	6.0	39	-0.5	-2	17.5	50	(N/A)	3.3	9.95
Bur oak	0.0	0.0	0.0	0.0	0	0.1	0.0	0.0	0.0	0	0.0	0	0.1	0	(N/A)	2.7	0.08
Broadleaf Deciduous Small	0.0	0.0	0.0	0.0	0	0.1	0.0	0.0	0.0	0	0.0	0	0.1	0	(N/A)	2.0	0.11
Japanese tree lilac	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)	1.3	0.41
Black walnut	1.6	0.3	0.7	0.1	8	3.7	0.5	0.5	3.5	23	0.0	0	10.9	31	(N/A)	1.3	15.71
Pear	0.4	0.1	0.2	0.0	2	1.7	0.3	0.2	1.7	11	0.0	0	4.6	13	(N/A)	1.3	6.56
Spruce	0.1	0.0	0.1	0.0	1	0.6	0.1	0.1	0.5	3	-0.3	-1	1.1	3	(N/A)	1.3	1.48
American elm	3.0	0.5	1.4	0.1	16	4.9	0.7	0.7	4.8	31	0.0	0	16.2	47	(N/A)	1.3	23.47
Blue spruce	1.1	0.2	0.8	0.1	7	1.6	0.2	0.2	1.5	10	-2.3	-9	3.5	8	(N/A)	1.3	4.16
Eastern white pine	0.1	0.0	0.1	0.0	1	0.6	0.1	0.1	0.5	3	-0.3	-1	1.1	3	(N/A)	1.3	1.48
Conifer Evergreen Large	0.0	0.0	0.0	0.0	0	0.1	0.0	0.0	0.1	1	-0.1	0	0.2	1	(N/A)	0.7	0.56
Boxelder	0.8	0.1	0.3	0.0	4	1.5	0.2	0.2	1.5	10	-0.2	-1	4.6	13	(N/A)	0.7	13.03
White ash	0.1	0.0	0.1	0.0	1	1.2	0.2	0.2	1.2	8	0.0	0	3.0	8	(N/A)	0.7	8.32
Littleleaf linden	0.7	0.1	0.3	0.0	4	1.4	0.2	0.2	1.3	9	-0.3	-1	4.0	11	(N/A)	0.7	11.21
Elm	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)	0.7	15.71
Hickory	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)	0.7	2.99
Eastern redbud	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)	0.7	0.11
Scarlet oak	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)	0.7	0.08
Norway spruce	0.6	0.1	0.4	0.1	4	0.9	0.1	0.1	0.8	5	-2.9	-11	0.3	-2	(N/A)	0.7	-1.58
Broadleaf Deciduous Medium	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)	0.7	0.14
Eastern red cedar	0.1	0.0	0.1	0.0	0	0.2	0.0	0.0	0.2	1	-0.3	-1	0.3	1	(N/A)	0.7	0.62
Black poplar	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)	0.7	19.04
Citywide total	54.7	9.3	26.9	2.6	295	128.5	18.7	17.9	122.1	801	-18.1	-68	362.6	1,028	(N/A)	100.0	6.86

Table 4: Annual Carbon Stored

Redfield

Stored CO2 Benefits of Public Trees

4/13/2020

Species	Total Stored CO2 (lbs)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Apple	4,672	35	(N/A)	13.3	0.4	1.75
Silver maple	336,629	2,525	(N/A)	11.3	28.1	148.51
Green ash	215,041	1,613	(N/A)	10.0	18.0	107.52
Maple	2,512	19	(N/A)	8.7	0.2	1.45
Northern hackberry	131,796	988	(N/A)	6.7	11.0	98.85
Siberian elm	121,990	915	(N/A)	6.0	10.2	101.66
Black maple	52,397	393	(N/A)	5.3	4.4	49.12
Honeylocust	25,379	190	(N/A)	4.7	2.1	27.19
Swamp white oak	14,381	108	(N/A)	4.7	1.2	15.41
Red maple	1,109	8	(N/A)	4.0	0.1	1.39
Norway maple	37,419	281	(N/A)	3.3	3.1	56.13
Bur oak	49	0	(N/A)	2.7	0.0	0.09
Broadleaf Deciduous	41	0	(N/A)	2.0	0.0	0.10
Japanese tree lilac	192	1	(N/A)	1.3	0.0	0.72
Black walnut	51,886	389	(N/A)	1.3	4.3	194.57
Pear	6,074	46	(N/A)	1.3	0.5	22.78
Spruce	513	4	(N/A)	1.3	0.0	1.93
American elm	58,706	440	(N/A)	1.3	4.9	220.15
Blue spruce	9,787	73	(N/A)	1.3	0.8	36.70
Eastern white pine	513	4	(N/A)	1.3	0.0	1.93
Conifer Evergreen La	38	0	(N/A)	0.7	0.0	0.29
Boxelder	33,674	253	(N/A)	0.7	2.8	252.56
White ash	3,672	28	(N/A)	0.7	0.3	27.54
Littleleaf linden	15,239	114	(N/A)	0.7	1.3	114.29
Elm	25,943	195	(N/A)	0.7	2.2	194.57
Hickory	1,035	8	(N/A)	0.7	0.1	7.76
Eastern redbud	14	0	(N/A)	0.7	0.0	0.10
Scarlet oak	12	0	(N/A)	0.7	0.0	0.09
Norway spruce	7,490	56	(N/A)	0.7	0.6	56.18
Broadleaf Deciduous	17	0	(N/A)	0.7	0.0	0.13
Eastern red cedar	277	2	(N/A)	0.7	0.0	2.08
Black poplar	39,259	294	(N/A)	0.7	3.3	294.44
Citywide total	1,197,757	8,983	(N/A)	100.0	100.0	59.89

Table 5: Annual Carbon Sequestered

Redfield

Annual CO Benefits of Public Trees

4/13/2020

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
Apple	741	6	-23	-10	0	744	6	1,452	11 (N/A)	13.3	1.5	0.54
Silver maple	23,099	173	-1,616	-59	-13	8,555	64	29,979	225 (N/A)	11.3	30.6	13.23
Green ash	9,968	75	-1,032	-45	-8	7,136	54	16,027	120 (N/A)	10.0	16.3	8.01
Maple	415	3	-12	-6	0	589	4	985	7 (N/A)	8.7	1.0	0.57
Northern hackberry	5,816	44	-633	-41	-5	7,019	53	12,161	91 (N/A)	6.7	12.4	9.12
Siberian elm	5,372	40	-586	-30	-5	4,796	36	9,552	72 (N/A)	6.0	9.7	7.96
Black maple	648	5	-252	-20	-2	3,478	26	3,856	29 (N/A)	5.3	3.9	3.61
Honeylocust	224	2	-125	-8	-1	1,652	12	1,743	13 (N/A)	4.7	1.8	1.87
Swamp white oak	403	3	-69	-5	-1	582	4	910	7 (N/A)	4.7	0.9	0.98
Red maple	196	1	-5	-3	0	309	2	497	4 (N/A)	4.0	0.5	0.62
Norway maple	1,712	13	-180	-14	-1	2,209	17	3,727	28 (N/A)	3.3	3.8	5.59
Bur oak	10	0	0	-1	0	18	0	27	0 (N/A)	2.7	0.0	0.05
Broadleaf Deciduous Smal	26	0	0	-1	0	17	0	42	0 (N/A)	2.0	0.0	0.10
Japanese tree lilac	47	0	-1	-1	0	43	0	88	1 (N/A)	1.3	0.1	0.33
Black walnut	1,919	14	-249	-9	-2	1,300	10	2,962	22 (N/A)	1.3	3.0	11.11
Pear	535	4	-29	-4	0	617	5	1,119	8 (N/A)	1.3	1.1	4.20
Spruce	105	1	-2	-2	0	189	1	289	2 (N/A)	1.3	0.3	1.08
American elm	1,310	10	-282	-10	-2	1,767	13	2,784	21 (N/A)	1.3	2.8	10.44
Blue spruce	377	3	-47	-7	0	560	4	883	7 (N/A)	1.3	0.9	3.31
Eastern white pine	105	1	-2	-2	0	189	1	289	2 (N/A)	1.3	0.3	1.08
Conifer Evergreen Large	18	0	0	-1	0	38	0	55	0 (N/A)	0.7	0.1	0.41
Boxelder	1,872	14	-162	-5	-1	539	4	2,245	17 (N/A)	0.7	2.3	16.84
White ash	494	4	-18	-2	0	449	3	923	7 (N/A)	0.7	0.9	6.92
Littleleaf linden	1,118	8	-73	-4	-1	478	4	1,519	11 (N/A)	0.7	1.5	11.39
Elm	960	7	-125	-4	-1	650	5	1,481	11 (N/A)	0.7	1.5	11.11
Hickory	209	2	-5	-1	0	159	1	361	3 (N/A)	0.7	0.4	2.71
Eastern redbud	9	0	0	0	0	6	0	14	0 (N/A)	0.7	0.0	0.10
Scarlet oak	3	0	0	0	0	4	0	7	0 (N/A)	0.7	0.0	0.05
Norway spruce	256	2	-36	-4	0	311	2	528	4 (N/A)	0.7	0.5	3.96
Broadleaf Deciduous Medi	5	0	0	0	0	7	0	12	0 (N/A)	0.7	0.0	0.09
Eastern red cedar	40	0	-1	-1	0	82	1	119	1 (N/A)	0.7	0.1	0.89
Black poplar	912	7	-188	-5	-1	734	6	1,453	11 (N/A)	0.7	1.5	10.90
Citywide total	58,923	442	-5,754	-303	-45	45,224	339	98,090	736 (N/A)	100.0	100.0	4.90

Table 6: Annual Social and Aesthetic Benefits

Redfield

Annual Aesthetic/Other Benefits of Public Trees

4/13/2020

Species	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Apple	36	(N/A)	13.3	0.7	1.81
Silver maple	1,732	(N/A)	11.3	34.5	101.87
Green ash	803	(N/A)	10.0	16.0	53.53
Maple	74	(N/A)	8.7	1.5	5.67
Northern hackberry	696	(N/A)	6.7	13.8	69.59
Siberian elm	382	(N/A)	6.0	7.6	42.47
Black maple	96	(N/A)	5.3	1.9	11.97
Honeylocust	38	(N/A)	4.7	0.8	5.44
Swamp white oak	48	(N/A)	4.7	1.0	6.84
Red maple	36	(N/A)	4.0	0.7	6.07
Norway maple	164	(N/A)	3.3	3.3	32.89
Bur oak	21	(N/A)	2.7	0.4	5.26
Broadleaf Deciduous Small	0	(N/A)	2.0	0.0	0.03
Japanese tree lilac	2	(N/A)	1.3	0.0	1.05
Black walnut	133	(N/A)	1.3	2.7	66.60
Pear	31	(N/A)	1.3	0.6	15.48
Spruce	31	(N/A)	1.3	0.6	15.42
American elm	165	(N/A)	1.3	3.3	82.32
Blue spruce	26	(N/A)	1.3	0.5	12.81
Eastern white pine	31	(N/A)	1.3	0.6	15.42
Conifer Evergreen Large	7	(N/A)	0.7	0.1	6.83
Boxelder	95	(N/A)	0.7	1.9	95.34
White ash	64	(N/A)	0.7	1.3	63.74
Littleleaf linden	106	(N/A)	0.7	2.1	106.03
Elm	67	(N/A)	0.7	1.3	66.60
Hickory	29	(N/A)	0.7	0.6	28.56
Eastern redbud	0	(N/A)	0.7	0.0	0.03
Scarlet oak	5	(N/A)	0.7	0.1	5.26
Norway spruce	26	(N/A)	0.7	0.5	26.25
Broadleaf Deciduous Medium	3	(N/A)	0.7	0.1	2.74
Eastern red cedar	21	(N/A)	0.7	0.4	21.34
Black poplar	58	(N/A)	0.7	1.2	58.34
Citywide total	5,026	(N/A)	100.0	100.0	33.51

Table 7: Summary of Benefits in Dollars

Redfield

Total Annual Benefits of Public Trees by Species ($)

4/13/2020

Species	Energy	CO_2	Air Quality	Stormwater	Aesthetic/Other	Total ($)	Standard Error	% of Total $
Apple	109	11	15	40	36	212	(N/A)	1.0
Silver maple	1,034	225	197	2,061	1,732	5,249	(N/A)	25.1
Green ash	890	120	161	1,361	803	3,335	(N/A)	16.0
Maple	78	7	11	41	74	211	(N/A)	1.0
Northern hackberry	890	91	170	1,299	696	3,146	(N/A)	15.1
Siberian elm	586	72	112	808	382	1,960	(N/A)	9.4
Black maple	438	29	82	527	96	1,171	(N/A)	5.6
Honeylocust	205	13	34	278	38	568	(N/A)	2.7
Swamp white oak	77	7	14	104	48	251	(N/A)	1.2
Red maple	40	4	6	19	36	105	(N/A)	0.5
Norway maple	282	28	50	313	164	837	(N/A)	4.0
Bur oak	3	0	0	2	21	26	(N/A)	0.1
Broadleaf Deciduous Sn	3	0	0	1	0	4	(N/A)	0.0
Japanese tree lilac	6	1	1	2	2	12	(N/A)	0.1
Black walnut	164	22	31	298	133	648	(N/A)	3.1
Pear	76	8	13	36	31	165	(N/A)	0.8
Spruce	27	2	3	32	31	95	(N/A)	0.5
American elm	211	21	47	247	165	690	(N/A)	3.3
Blue spruce	71	7	8	159	26	270	(N/A)	1.3
Eastern white pine	27	2	3	32	31	95	(N/A)	0.5
Conifer Evergreen Large	6	0	1	6	7	19	(N/A)	0.1
Boxelder	68	17	13	137	95	330	(N/A)	1.6
White ash	48	7	8	45	64	172	(N/A)	0.8
Littleleaf linden	63	11	11	101	106	293	(N/A)	1.4
Elm	82	11	16	149	67	324	(N/A)	1.6
Hickory	21	3	3	16	29	71	(N/A)	0.3
Eastern redbud	1	0	0	0	0	1	(N/A)	0.0
Scarlet oak	1	0	0	0	5	7	(N/A)	0.0
Norway spruce	38	4	-2	125	26	192	(N/A)	0.9
Broadleaf Deciduous M	1	0	0	0	3	4	(N/A)	0.0
Eastern red cedar	11	1	1	18	21	52	(N/A)	0.2
Black poplar	91	11	19	196	58	375	(N/A)	1.8
Citywide Total	5,647	736	1,028	8,454	5,026	20,891	(N/A)	100.0

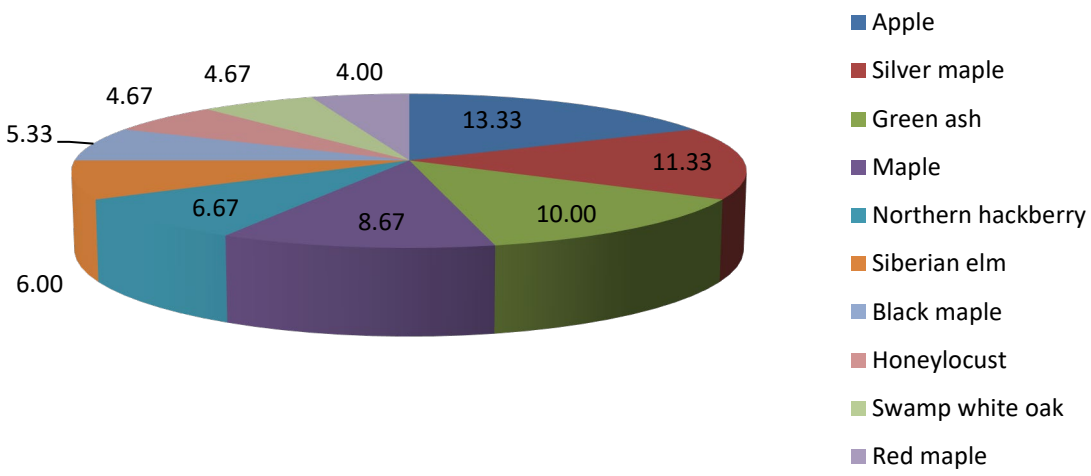

Figure 1: Species Distribution

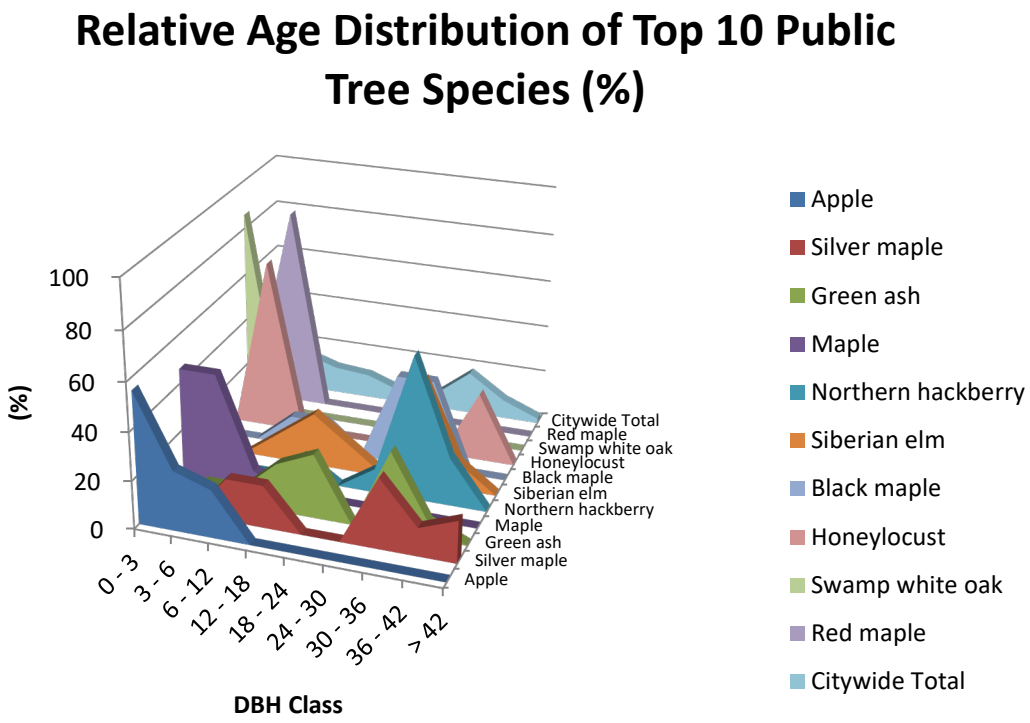

Figure 2: Relative Age Class

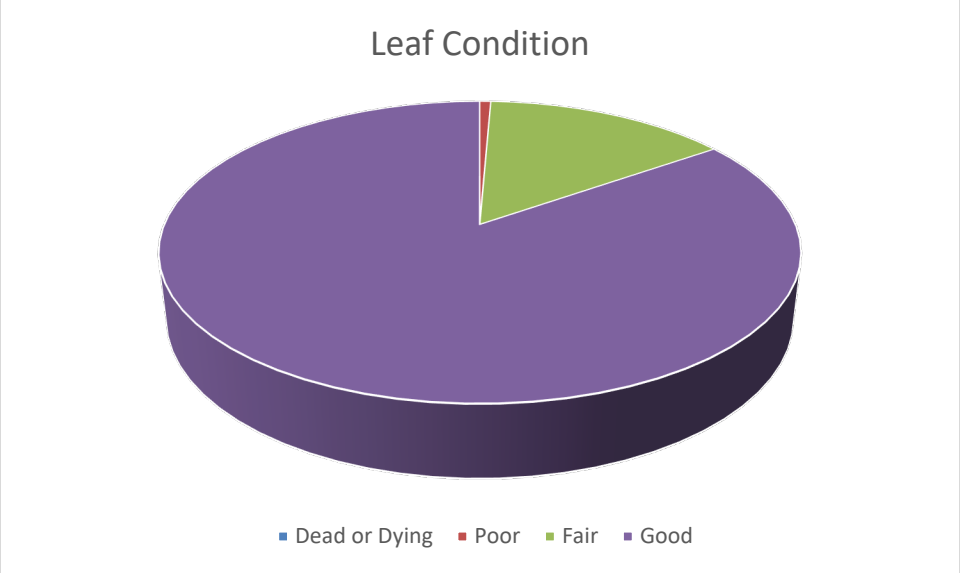

Figure 3: Foliage Condition

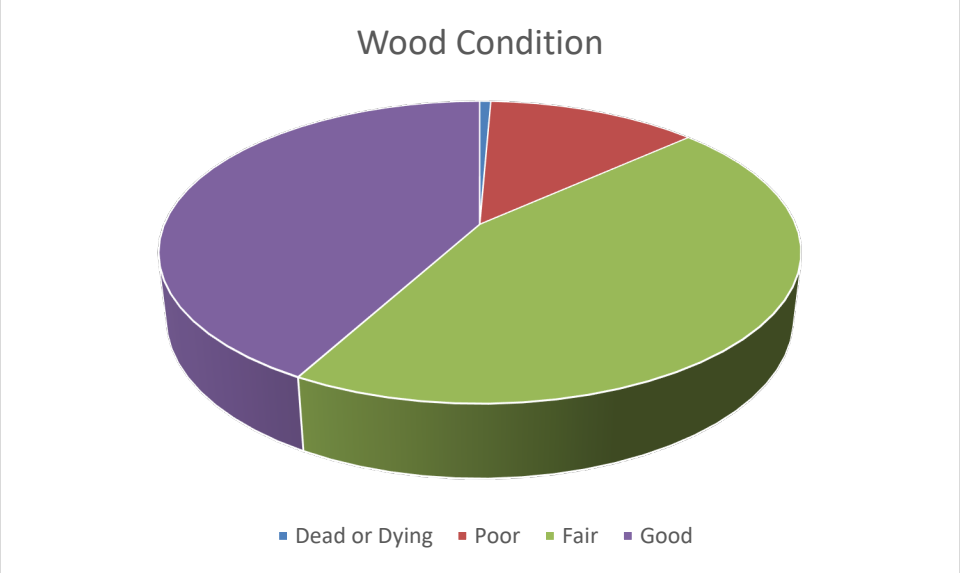

Figure 4: Wood Condition

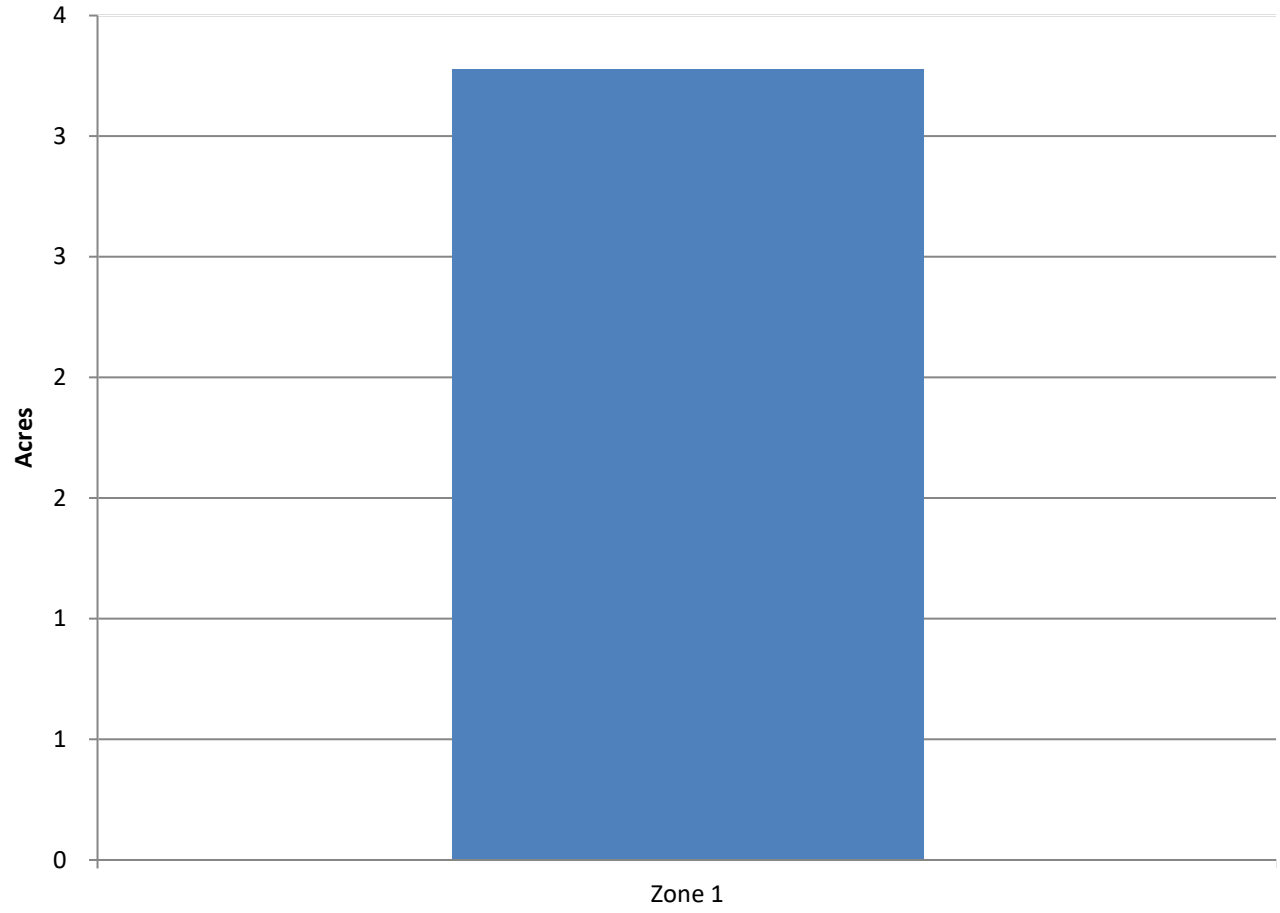

Figure 5: Canopy Cover in Acres

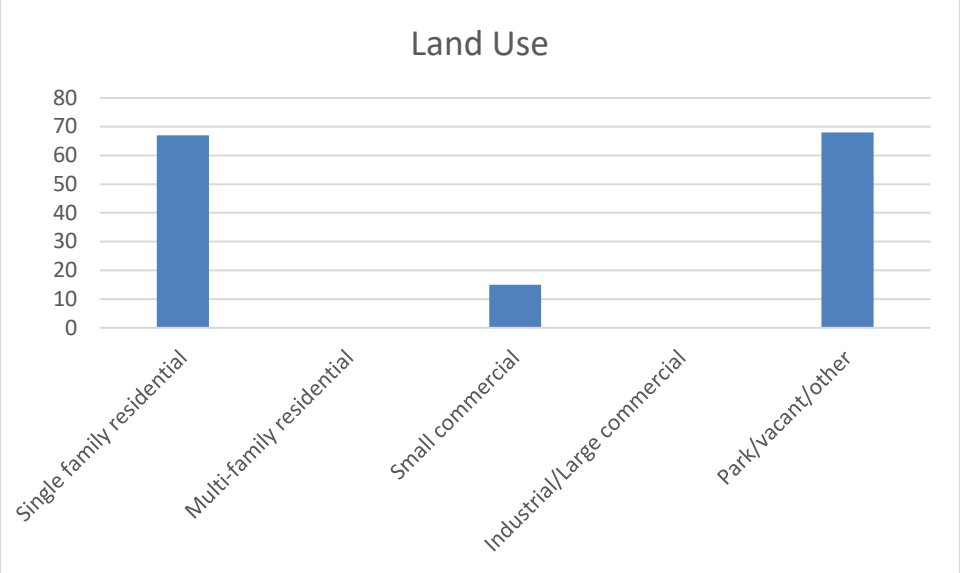

Figure 6: Land Use of city/park trees

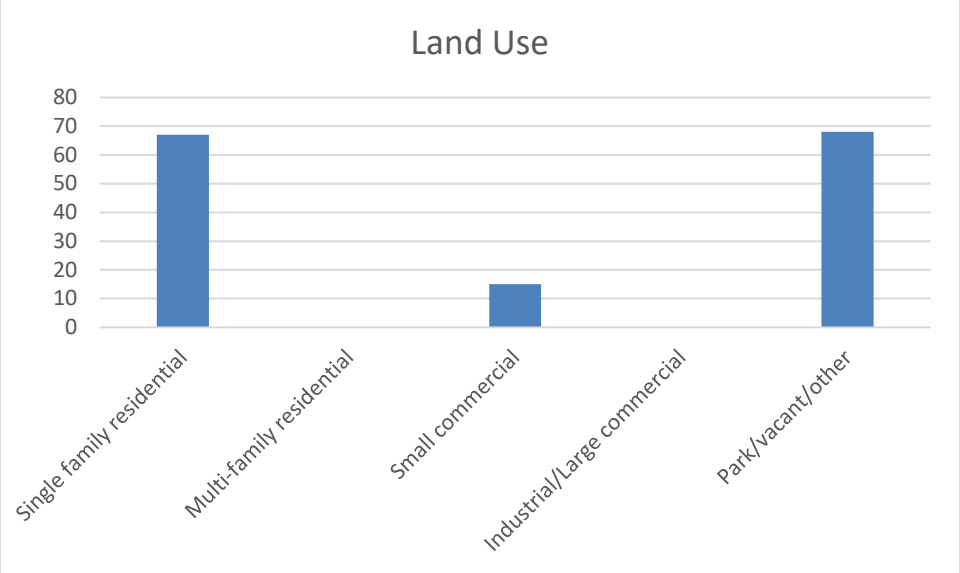

Figure 7: Location of city/park trees

Appendix B: ArcGIS Mapping

Figure 1: Location of Ash Trees

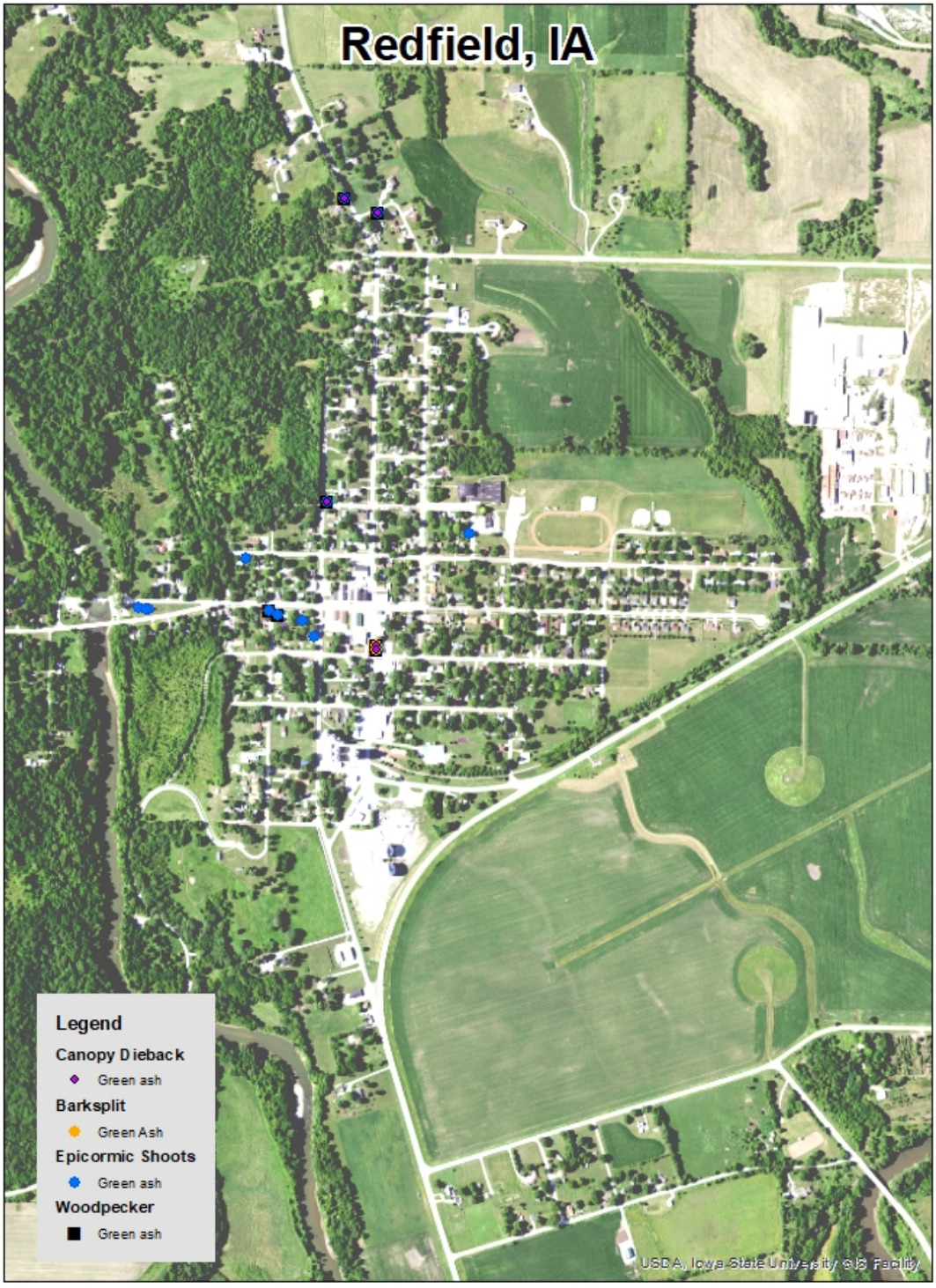

Figure 2: Location of EAB symptoms

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: Redfield Tree Ordinances

CHAPTER 151
TREES AND GRASS

151.01 Definition 151.05 Disease Control
151.02 Planting Restrictions 151.06 Inspection and Removal
151.03 Duty to Trim Trees 151.07 Duty to Trim Grass and Weeds
151.04 Trimming Trees to Be Supervised

151.01 DEFINITION. For use in this chapter, "parking" means that part of the street, avenue, or highway in the City not covered by sidewalk and lying between the lot line and the curb line or, on unpaved streets, that part of the street, avenue, or highway lying between the lot line and that portion of the street usually traveled by vehicular traffic.

151.02 PLANTING RESTRICTIONS. No tree shall be planted in any parking or street except in accordance with the following:

1. Alignment. All trees planted in any street shall be planted in the parking midway between the outer line of the sidewalk and the curb. In the event a curb line is not established, trees shall be planted on a line 10 feet from the property line.
2. Spacing. Trees shall not be planted on any parking that is less than nine feet in width, or contains less than 81 square feet of exposed soil surface per tree. Trees shall not be planted closer than 20 feet from street intersections (property lines extended) and 10 feet from driveways. If it is at all possible, trees should be planted inside the property lines and not between the sidewalk and the curb.
3. Prohibited Trees. No person shall plant in any street any fruit-bearing tree or any tree of the kinds commonly known as cottonwood, poplar, box elder, Chinese elm, evergreen, willow, or black walnut.

151.03 DUTY TO TRIM TREES. The owner or agent of the abutting property shall keep the trees on, or overhanging the street, trimmed so that all branches will be at least 15 feet above the surface of the street and 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 days. If such action is not taken within that time, the City may perform the required action and assess the costs against the abutting property for collection in the same manner as a property tax.
(Code of Iowa, Sec. 364.12[2c, d & e])

151.04 TRIMMING TREES TO BE SUPERVISED. Except as allowed in Section 151.03, it is unlawful for any person to trim or cut any tree in a street or public place unless the work is done under the supervision of the City.

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

151.06 INSPECTION AND REMOVAL. The Council shall inspect or cause to be inspected any trees or shrubs in the City reported or suspected to be dead, diseased or damaged, and such trees and shrubs shall be subject to the following:

1. City Property. If it is determined that any such condition exists on any public property, including the strip between the curb and the lot line of private property, the

Council may cause such condition to be corrected by treatment or removal. The Council may also order the removal of any trees on the streets of the City which interfere with the making of improvements or with travel thereon.

2. Private Property. If it is determined with reasonable certainty that any such condition exists on private property and that danger to other trees or to adjoining property or passing motorists or pedestrians is imminent, the Council shall notify by certified mail the owner, occupant or person in charge of such property to correct such condition by treatment or removal within 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.