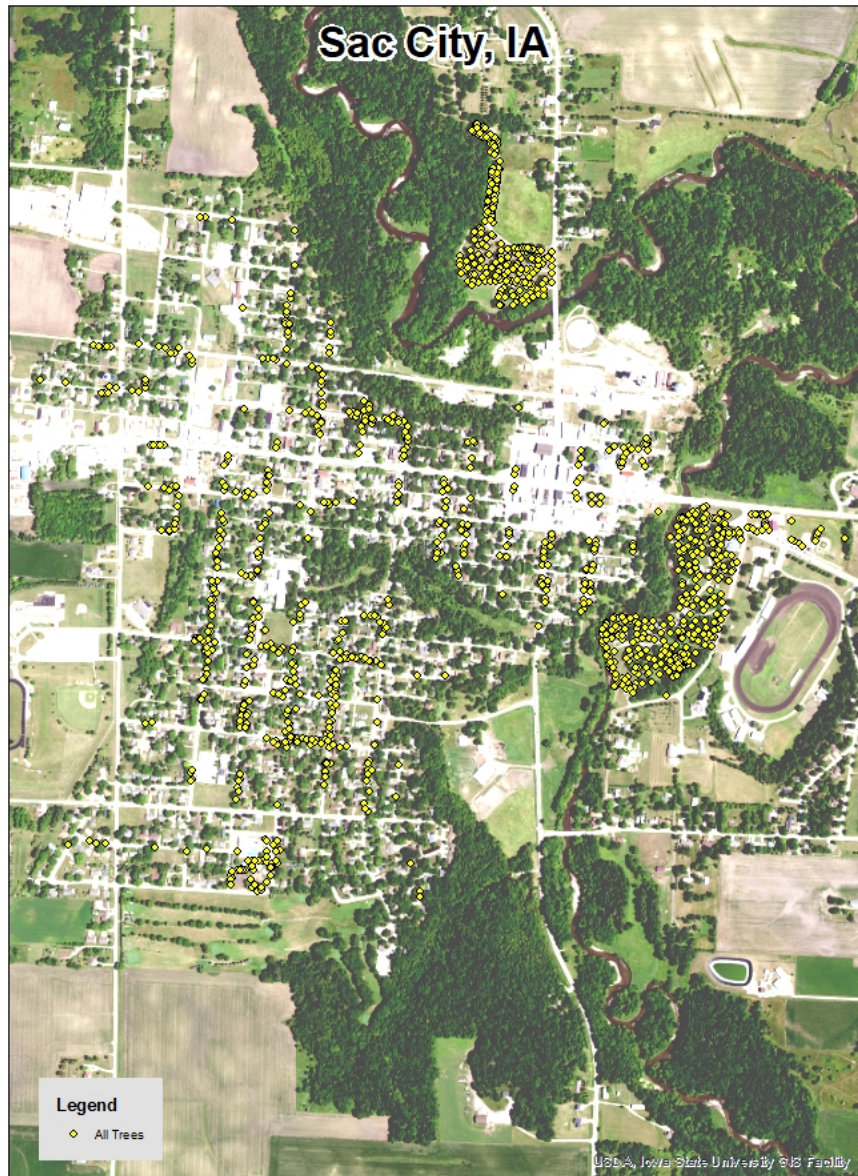


Sac City, IA



2020 Urban Forest Management Plan
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Executive Summary

Overview

This plan was developed to assist the City of Sac City 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 8% of Sac City'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 2018, 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 1162 trees inventoried.

- Sac City's trees provide \$211,232 of benefits annually, an average of \$182.78 a tree
- There were 45 tree species from 27 different genera inventoried.
- The top three genera are: Maple 31%, Oak 16%, and Hackberry 11%
- 4.2% of trees are in need of some type of management other than routine maintenance.
- No data was collected for which trees are recommended for removal or where they are located. Additionally, no data was collected as to the maintenance priority of any given tree.

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.

- EAB was not recorded when the inventory was conducted. There are 95 ash trees within Sac City and it is likely that some are currently displaying symptoms of EAB. It is recommended that a visual inspection of all ash trees be conducted annually.
- All trees should be pruned on a routine schedule - one sixth of the city every year
- Plant a diverse mix of trees that do not include: ash, maple, cottonwood, poplar, box elder, Chinese elm, evergreen, willow or black walnut
- Check ash trees with a visual survey yearly

Introduction

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

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

Inventory

In 2018, 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 1162 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. Fin

Annual Benefits

Annual Energy Benefits

Trees conserve energy by shading buildings and blocking winds. Sac City's trees reduce energy related costs by approximately \$55,933 annually (Appendix A, Table 1). These savings are both in Electricity (266.9 MWh) and in Natural Gas (36,404.2 Therms).

Annual Stormwater Benefits

Sac City's trees intercept about 2,893,008 gallons of rainfall or snow melt a year (Appendix A, Table 2). This interception provides \$78,401 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 Sac City, it is estimated that trees remove 3,438.9 lbs of air pollution (ozone (O₃), particulate matter less than 10 microns (PM₁₀), carbon monoxide (CO), nitrogen dioxide (NO₂), and sulfur dioxide (SO₂)) per year with a net value of \$9,721 (Appendix A, Table 3).

Annual Carbon Benefits

Carbon sequestration and storage reduce the amount of carbon in the atmosphere, mitigating climate change. In Sac City, trees sequester about 639,814 lbs of carbon a year with an associated value of \$4,799 (Appendix A, Table 5). In addition, the trees store 10,536,458 lbs of carbon, with a yearly benefit of \$79,023 (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. Sac City receives \$59,985 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, Sac City's trees provide \$211,232 of benefits annually. Benefits of individual trees vary based on size, species, health and location, but on average each of the 1162 trees in Sac City provide approximately \$181.78 annually (Appendix A, Table 7).

Forest Structure

Species Distribution

Sac City has over 45 different tree species along city streets and parks (Appendix A, Figure 1).

The distribution of trees by genera is as follows:

Genus	Count	Percent
Maple	357	31%
Oak	191	16%
Hackberry	125	11%
Apple	103	9%
Ash	95	8%
Walnut	76	7%
Basswood	50	4%
Honeylocust	40	3%
Spruce	34	3%
Boxelder	15	1%
Cedar	14	1%
Elm	8	1%
Broadleaf S/M/L	8	1%
Pine	7	1%
Kentucky Coffeetree	7	1%
Cottonwood	6	1%
Sycamore	5	<1%
CA	3	<1%
Conifer S/M/L	3	<1%
Ginkgo	3	<1%
Birch	3	<1%
Carya	2	<1%
Mulberry	2	<1%
Pear	2	<1%
Alder	1	<1%
Redbud	1	<1%
Ohio Buckeye	1	<1%

Age Class

Most of Sac City's trees (41%) 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. While Sac City's trees have a downward slope, the middle of the size curb is in between 12 and 24 inches, indicating a slightly older 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 Sac City indicate that 38% of the trees are in good health, with 10% of the foliage in poor health, dead or dying (Appendix A, Figure 3 & Appendix B, Figure 3). Similarly, 38%

of Sac City’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 10% of the population. This 10% is an estimate of trees that need management follow up.

Management Needs

There were no specific management needs recorded for Sac City’s trees.

Canopy Cover

The total canopy with both private and public trees is 23%, 720.37 acres. The canopy cover included in the Sac City inventory includes approximately 30.36 acres, which is about 1% of the total land within Sac City (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 230 trees need to be planted annually on public and private lands.

Land Use and Location

The majority of Sac City’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	Count	Percent
Park/Vacant/Other	599	52%
Single Family Res	529	46%
Small Comm	27	2%
Industrial/Comm	7	1%

Location	Count	Percent
Other Maintained	541	47%
Median	416	36%
Planting Strip	133	11%
Other		
Unmaintained	43	4%
Front Yard	12	1%
Cutout	10	1%
Backyard	7	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

Detailed information was not collected on which trees are potentially hazardous or where they might be located.

Poor tree species

The data collectors did not collect appropriate data on this, however it was noted that 95 trees in Sac City are ash trees, which is 8% of the total trees inventoried. While the collectors did not gather data on EAB, it is common though out the region and very likely affecting many of the ash trees in Sac City. Visual inspections of ash trees should be conducted annually in order track their conditions. Treatment for EAB is an effective preventative measure that can be taken to prevent the death of healthy ash trees. It is not recommended to be used on ash trees already displaying two or more symptoms of EAB. Since data for EAB was not collected, we will present two separate scenarios regarding ash management versus removal. If all 95 ash trees in Sac City are healthy and could be treated, it would cost an estimated \$31,537 every two years, which is an average of \$331.97 per tree. If all 95 ash trees in Sac City are suffering from EAB, it would cost an estimated \$76,000 to remove them, which is an average of \$800 per tree. These scenarios represent two different extremes and while it is likely that many ash trees within Sac City are displaying signs of EAB, it is also likely that many are not and would therefore be eligible for treatment. It is recommended that Sac City treat many of its larger, healthier ash trees and begin removing dead or dying ash trees, as well as those found to be displaying 2 or more symptoms of EAB.

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 Sac City.

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 (31%) (Appendix A, Figure 1). Maples should not be planted until this percentage can be lowered. Also, ash trees have not been recommended since 2002, due to the threat of EAB. Other species to avoid because they are public nuisances include: cottonwood, poplar, box elder, Chinese elm, evergreen, willow, black walnut or any species of fruit-bearing tree, 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.

Emerald Ash Borer Plan

Ash Tree Removal

Tree removal will be prioritized with dead, dying, hazardous trees to be removed first (Appendix B, Figure 4). Next will be all ash in poor condition and displaying signs and symptoms of EAB (Appendix B, Figure 2 & Appendix B, Figure 3). **City ownership of the tree recommended for removal should be verified prior to any removal**

Treatment of Ash Trees

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

EAB Quarantines

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

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

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

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

Wood Disposal

A very important aspect of planning is determining how wood infested with EAB will be handled, keeping in mind that quarantines will restrict its movement. Consider who will cut and haul the dead and dying trees? Is there an accessible, secured site big enough to store and sort the hundreds of trees and the associated brush and chips? How will wood be disposed of or utilized? Do you have equipment capable of handling the amount and size of ash trees your tree inventory has identified? Once your county is under quarantine for EAB, contact USDA-APHIS-PPQ at 515-251-4083 or visit the website

http://www.aphis.usda.gov/plant_health/plant_pest_info/emerald_ash_b/regulatory.shtml. Wood waste can be disposed of as you normally would if your county is not part of a quarantine.

Canopy Replacement

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

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 fourteen (14) days of said notification. If such owner, occupant or person in charge of said property fails to comply within 14 days of receipt of notice, the Council may cause the condition to be corrected and the cost assessed against the property.

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Appendix A: i-Tree Data

Table 1: Annual Energy Benefits

Sac City

Annual Energy Benefits of Public Trees

12/10/2019

Species	Total Electricity (MWh)	Electricity (\$)	Total Natural Gas (Therms)	Natural Gas (\$)	Total Standar d Error (\$)	% of Total Trees	% of Total \$	Avg. \$/tree
Silver maple	53.9	4,090	7,067.3	6,926	11,016 (N/A)	15.1	19.7	62.59
Bur oak	51.4	3,903	7,057.6	6,916	10,820 (N/A)	14.3	19.3	65.18
Northern hackberry	37.8	2,869	5,354.0	5,247	8,116 (N/A)	10.8	14.5	64.93
Norway maple	21.5	1,633	3,007.2	2,947	4,580 (N/A)	9.3	8.2	42.41
Apple	4.9	375	754.4	739	1,115 (N/A)	8.9	2.0	10.82
Green ash	25.4	1,930	3,450.4	3,381	5,311 (N/A)	8.0	9.5	57.11
Black walnut	17.5	1,329	2,365.1	2,318	3,647 (N/A)	6.5	6.5	47.98
Sugar maple	11.4	863	1,497.4	1,467	2,330 (N/A)	4.0	4.2	50.66
Honeylocust	8.6	651	1,148.2	1,125	1,777 (N/A)	3.4	3.2	44.41
Littleleaf linden	3.3	254	470.0	461	715 (N/A)	2.6	1.3	23.83
Blue spruce	2.0	155	303.2	297	452 (N/A)	2.3	0.8	16.76
American basswood	4.0	303	549.9	539	842 (N/A)	1.7	1.5	42.09
Northern red oak	3.1	233	392.0	384	618 (N/A)	1.3	1.1	41.17
Red maple	1.4	103	202.5	198	302 (N/A)	1.3	0.5	20.12
Boxelder	2.3	176	302.7	297	473 (N/A)	1.3	0.8	31.53
Eastern red cedar	1.3	102	199.2	195	297 (N/A)	1.2	0.5	21.20
Broadleaf Deciduous Large	1.4	104	188.1	184	289 (N/A)	0.9	0.5	26.23
Black maple	2.2	171	286.5	281	451 (N/A)	0.8	0.8	50.15
Kentucky coffeetree	1.6	118	197.9	194	312 (N/A)	0.6	0.6	44.60
Eastern white pine	1.0	77	127.6	125	202 (N/A)	0.6	0.4	28.86
Norway spruce	0.5	41	77.2	76	117 (N/A)	0.5	0.2	19.44
Eastern cottonwood	2.4	180	315.7	309	490 (N/A)	0.5	0.9	81.59
American elm	1.7	131	234.3	230	361 (N/A)	0.4	0.6	72.13
American sycamore	0.8	59	105.0	103	162 (N/A)	0.4	0.3	32.45
Pin oak	1.2	90	157.0	154	243 (N/A)	0.3	0.4	60.86
White oak	1.2	88	161.5	158	247 (N/A)	0.3	0.4	61.68
River birch	0.0	1	2.4	2	3 (N/A)	0.3	0.0	1.10
Catalpa	0.6	47	89.9	88	135 (N/A)	0.3	0.2	45.09
Siberian elm	0.3	26	47.5	47	72 (N/A)	0.3	0.1	24.09
Ginkgo	0.2	15	27.3	27	42 (N/A)	0.3	0.1	13.85
Conifer Evergreen Small	0.1	5	10.4	10	15 (N/A)	0.2	0.0	7.55
Pear	0.1	11	25.7	25	36 (N/A)	0.2	0.1	18.19
White ash	0.4	27	41.7	41	68 (N/A)	0.2	0.1	34.11
Oak	0.0	2	4.2	4	6 (N/A)	0.2	0.0	3.24
Broadleaf Deciduous Medium	0.4	28	56.4	55	83 (N/A)	0.2	0.1	41.58
Alder	0.2	15	31.6	31	46 (N/A)	0.1	0.1	46.14
White mulberry	0.2	15	31.6	31	46 (N/A)	0.1	0.1	46.14
Spruce	0.1	10	14.6	14	24 (N/A)	0.1	0.0	24.14
Eastern redbud	0.0	2	3.8	4	5 (N/A)	0.1	0.0	5.40
Mulberry	0.0	0	0.6	1	1 (N/A)	0.1	0.0	0.87
Conifer Evergreen Medium	0.0	2	4.9	5	7 (N/A)	0.1	0.0	6.94
Ohio buckeye	0.3	20	39.6	39	59 (N/A)	0.1	0.1	58.69
Total	266.9	20,257	36,404.2	35,676	55,933 (N/A)	100.0	100.0	48.13

Table 2: Annual Stormwater Benefits

Sac City

Annual Stormwater Benefits of Public Trees

12/10/2019

Species	Total rainfall interception (Gal)	Total (\$)	Standard Error	% of Total Trees	% of Total \$	Avg. \$/tree
Silver maple	777,962	21,083	(N/A)	15.1	26.9	119.79
Bur oak	606,530	16,437	(N/A)	14.3	21.0	99.02
Northern hackberry	349,063	9,460	(N/A)	10.8	12.1	75.68
Norway maple	163,883	4,441	(N/A)	9.3	5.7	41.12
Apple	17,856	484	(N/A)	8.9	0.6	4.70
Green ash	294,024	7,968	(N/A)	8.0	10.2	85.68
Black walnut	152,226	4,125	(N/A)	6.5	5.3	54.28
Sugar maple	103,996	2,818	(N/A)	4.0	3.6	61.27
Honeylocust	86,417	2,342	(N/A)	3.4	3.0	58.55
Littleleaf linden	32,122	871	(N/A)	2.6	1.1	29.02
Blue spruce	25,668	696	(N/A)	2.3	0.9	25.76
American basswood	31,079	842	(N/A)	1.7	1.1	42.11
Northern red oak	23,119	627	(N/A)	1.3	0.8	41.77
Red maple	7,427	201	(N/A)	1.3	0.3	13.42
Boxelder	18,617	505	(N/A)	1.3	0.6	33.63
Eastern red cedar	19,482	528	(N/A)	1.2	0.7	37.71
Broadleaf Deciduous Large	17,614	477	(N/A)	0.9	0.6	43.39
Black maple	17,246	467	(N/A)	0.8	0.6	51.93
Kentucky coffeetree	11,651	316	(N/A)	0.6	0.4	45.11
Eastern white pine	18,128	491	(N/A)	0.6	0.6	70.18
Norway spruce	8,525	231	(N/A)	0.5	0.3	38.51
Eastern cottonwood	35,054	950	(N/A)	0.5	1.2	158.33
American elm	16,865	457	(N/A)	0.4	0.6	91.41
American sycamore	6,796	184	(N/A)	0.4	0.2	36.83
Pin oak	11,114	301	(N/A)	0.3	0.4	75.30
White oak	16,489	447	(N/A)	0.3	0.6	111.72
River birch	37	1	(N/A)	0.3	0.0	0.33
Catalpa	5,789	157	(N/A)	0.3	0.2	52.30
Siberian elm	3,375	91	(N/A)	0.3	0.1	30.49
Ginkgo	1,254	34	(N/A)	0.3	0.0	11.33
Conifer Evergreen Small	843	23	(N/A)	0.2	0.0	11.42
Pear	529	14	(N/A)	0.2	0.0	7.17
White ash	2,276	62	(N/A)	0.2	0.1	30.84
Oak	190	5	(N/A)	0.2	0.0	2.57
Broadleaf Deciduous Medium	3,065	83	(N/A)	0.2	0.1	41.53
Alder	1,174	32	(N/A)	0.1	0.0	31.82
White mulberry	1,174	32	(N/A)	0.1	0.0	31.82
Spruce	1,539	42	(N/A)	0.1	0.1	41.70
Eastern redbud	69	2	(N/A)	0.1	0.0	1.86
Mulberry	7	0	(N/A)	0.1	0.0	0.20
Conifer Evergreen Medium	256	7	(N/A)	0.1	0.0	6.95
Ohio buckeye	2,479	67	(N/A)	0.1	0.1	67.19
Citywide total	2,893,008	78,401	(N/A)	100.0	100.0	67.47

Table 3: Annual Air Quality Benefits

Sac City

Annual Air Quality Benefits of Public Trees

12/10/2019

Species	Deposition (lb)				Total Depos. (\$)	Avoided (lb)				Total Avoided (\$)	BVOC Emissions (lb)	BVOC Emissions (\$)	Total (lb)	Total Standard (\$)	Standard Error	% of Total Trees	Avg. \$/tree
	O ₃	NO ₂	PM ₁₀	SO ₂		NO ₂	PM ₁₀	VOC	SO ₂								
Silver maple	135.0	22.9	66.2	6.0	728	253.8	37.2	35.5	243.8	1,589	-71.0	-266	729.4	2,050 (N/A)		15.1	11.65
Bur oak	79.1	12.7	37.2	3.5	419	245.7	35.8	34.1	233.1	1,530	0.0	0	681.1	1,950 (N/A)		14.3	11.75
Northern hackberry	53.3	9.2	27.4	2.4	291	182.4	26.4	25.2	171.4	1,132	0.0	0	497.7	1,423 (N/A)		10.8	11.39
Norway maple	29.4	5.1	15.0	1.3	160	103.5	15.0	14.3	97.7	643	-7.3	-27	274.0	776 (N/A)		9.3	7.19
Apple	4.4	0.7	2.2	0.2	24	24.3	3.5	3.3	22.4	150	0.0	0	61.0	173 (N/A)		8.9	1.68
Green ash	39.7	6.3	18.6	1.8	210	121.1	17.7	16.8	115.2	755	0.0	0	337.3	966 (N/A)		8.0	10.38
Black walnut	14.7	2.3	7.8	0.7	80	83.3	12.2	11.6	79.4	520	0.0	0	211.9	600 (N/A)		6.5	7.90
Sugar maple	12.4	2.1	6.5	0.6	68	53.7	7.9	7.5	51.5	336	-10.0	-38	132.2	367 (N/A)		4.0	7.97
Honeylocust	16.4	2.7	7.6	0.7	87	40.6	5.9	5.7	38.8	254	-12.4	-46	106.2	294 (N/A)		3.4	7.36
Littleleaf linden	5.4	0.9	2.7	0.2	29	16.1	2.3	2.2	15.2	100	-2.6	-10	42.5	119 (N/A)		2.6	3.98
Blue spruce	2.8	0.6	2.6	0.3	19	9.9	1.4	1.4	9.3	61	-8.6	-32	19.7	48 (N/A)		2.3	1.79
American basswood	3.3	0.6	1.8	0.1	19	19.1	2.8	2.7	18.1	119	-3.1	-12	45.4	126 (N/A)		1.7	6.29
Northern red oak	4.5	0.8	2.2	0.2	24	14.4	2.1	2.0	13.9	90	-6.2	-23	34.0	92 (N/A)		1.3	6.10
Red maple	0.9	0.2	0.5	0.0	5	6.6	1.0	0.9	6.2	41	-0.4	-2	15.9	45 (N/A)		1.3	2.97
Bowelder	1.9	0.3	1.0	0.1	10	10.9	1.6	1.5	10.5	69	-0.9	-3	27.0	76 (N/A)		1.3	5.04
Eastern red cedar	3.9	0.8	3.1	0.5	25	6.5	0.9	0.9	6.1	40	-10.7	-40	11.9	25 (N/A)		1.2	1.82
Broadleaf Deciduous Large	2.4	0.4	1.1	0.1	13	6.5	1.0	0.9	6.2	41	0.0	0	18.7	54 (N/A)		0.9	4.87
Black maple	3.9	0.7	1.9	0.2	21	10.5	1.5	1.5	10.2	66	-1.4	-5	29.0	82 (N/A)		0.8	9.11
Kentucky coffeetree	1.0	0.2	0.6	0.0	6	7.3	1.1	1.0	7.1	46	0.0	0	18.2	51 (N/A)		0.6	7.34
Eastern white pine	2.1	0.4	1.7	0.3	14	4.7	0.7	0.7	4.6	30	-8.6	-32	6.6	11 (N/A)		0.6	1.60
Norway spruce	0.9	0.2	0.8	0.1	6	2.6	0.4	0.4	2.4	16	-4.1	-15	3.8	7 (N/A)		0.5	1.19
Eastern cottonwood	6.7	1.1	3.0	0.3	35	11.3	1.6	1.6	10.8	70	0.0	0	36.3	105 (N/A)		0.5	17.56
American elm	3.2	0.5	1.6	0.1	17	8.2	1.2	1.1	7.8	51	0.0	0	23.9	69 (N/A)		0.4	13.72
American sycamore	0.7	0.1	0.3	0.0	4	3.7	0.5	0.5	3.5	23	0.0	0	9.4	27 (N/A)		0.4	5.35
Pin oak	1.8	0.3	0.9	0.1	10	5.6	0.8	0.8	5.3	35	-3.4	-13	12.2	32 (N/A)		0.3	8.00
White oak	2.4	0.4	1.1	0.1	12	5.6	0.8	0.8	5.3	35	0.0	0	16.4	47 (N/A)		0.3	11.81
River birch	0.0	0.0	0.0	0.0	0	0.1	0.0	0.0	0.1	0	0.0	0	0.1	0 (N/A)		0.3	0.14
Catalpa	0.6	0.1	0.3	0.0	3	3.0	0.4	0.4	2.8	19	0.0	0	7.6	22 (N/A)		0.3	7.22
Siberian elm	0.5	0.1	0.3	0.0	3	1.6	0.2	0.2	1.5	10	0.0	0	4.5	13 (N/A)		0.3	4.29
Ginkgo	0.3	0.1	0.1	0.0	2	0.9	0.1	0.1	0.9	6	-0.1	0	2.5	7 (N/A)		0.3	2.35
Conifer Evergreen Small	0.1	0.0	0.1	0.0	0	0.3	0.0	0.0	0.3	2	-0.4	-2	0.4	1 (N/A)		0.2	0.41
Pear	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)		0.2	2.55
White ash	0.1	0.0	0.1	0.0	1	1.7	0.2	0.2	1.6	10	0.0	0	4.0	11 (N/A)		0.2	5.61
Oak	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)		0.2	0.48
Broadleaf Deciduous Medium	0.5	0.1	0.3	0.0	3	1.8	0.3	0.2	1.7	11	-0.1	-1	4.8	14 (N/A)		0.2	6.81
Alder	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
White mulberry	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
Spruce	0.2	0.0	0.1	0.0	1	0.6	0.1	0.1	0.6	4	-0.5	-2	1.2	3 (N/A)		0.1	2.82
Eastern redbud	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
Mulberry	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
Conifer Evergreen Medium	0.0	0.0	0.0	0.0	0	0.1	0.0	0.0	0.1	1	-0.1	0	0.3	1 (N/A)		0.1	0.75
Ohio buckeye	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
Citywide total	436.0	73.0	217.5	20.2	2,359	1,272.7	185.4	176.8	1,209.3	7,931	-152.1	-570	3,438.9	9,721 (N/A)		100.0	8.37

Table 4: Annual Carbon Stored

Sac City

Stored CO2 Benefits of Public Trees

7/10/2020

Species	Total Stored CO2 (lbs)	Total (\$)	Standard Error	% of Total Trees	% of Total \$	Avg. \$/tree
Silver maple	3,125,935	23,445	(N/A)	15.1	29.7	133.21
Bur oak	2,592,339	19,443	(N/A)	14.3	24.6	117.12
Northern hackberry	797,400	5,981	(N/A)	10.8	7.6	47.84
Norway maple	487,897	3,659	(N/A)	9.3	4.6	33.88
Apple	72,935	547	(N/A)	8.9	0.7	5.31
Green ash	1,323,442	9,926	(N/A)	8.0	12.6	106.73
Black walnut	475,313	3,565	(N/A)	6.5	4.5	46.91
Sugar maple	355,072	2,663	(N/A)	4.0	3.4	57.89
Honeylocust	209,453	1,571	(N/A)	3.4	2.0	39.27
Littleleaf linden	115,750	868	(N/A)	2.6	1.1	28.94
Blue spruce	15,281	115	(N/A)	2.3	0.1	4.24
American basswood	122,012	915	(N/A)	1.7	1.2	45.75
Boxelder	50,219	377	(N/A)	1.3	0.5	25.11
Red maple	12,981	97	(N/A)	1.3	0.1	6.49
Northern red oak	84,061	630	(N/A)	1.3	0.8	42.03
Eastern red cedar	12,720	95	(N/A)	1.2	0.1	6.81
Black maple	43,057	323	(N/A)	0.8	0.4	35.88
Kentucky coffeetree	32,637	245	(N/A)	0.6	0.3	34.97
Eastern white pine	21,029	158	(N/A)	0.6	0.2	22.53
Norway spruce	9,687	73	(N/A)	0.5	0.1	12.11
American elm	68,977	517	(N/A)	0.4	0.7	103.46
Broadleaf Deciduous	3,079	23	(N/A)	0.4	0.0	4.62
American sycamore	21,699	163	(N/A)	0.4	0.2	32.55
White oak	77,842	584	(N/A)	0.3	0.7	145.95
Cottonwood	122,218	917	(N/A)	0.3	1.2	229.16
Pin oak	44,983	337	(N/A)	0.3	0.4	84.34
Siberian elm	12,272	92	(N/A)	0.3	0.1	30.68
CA	0	0	(N/A)	0.3	0.0	0.00
Ginkgo	4,212	32	(N/A)	0.3	0.0	10.53
Broadleaf Deciduous	78,529	589	(N/A)	0.3	0.7	196.32
River birch	51	0	(N/A)	0.3	0.0	0.13
Maple	1,538	12	(N/A)	0.3	0.0	3.84
Conifer Evergreen Sn	320	2	(N/A)	0.2	0.0	1.20
CARYA	0	0	(N/A)	0.2	0.0	0.00
Pear	1,816	14	(N/A)	0.2	0.0	6.81
White ash	4,706	35	(N/A)	0.2	0.0	17.65
Oak	198	1	(N/A)	0.2	0.0	0.74
Eastern cottonwood	111,964	840	(N/A)	0.2	1.1	419.86
Eastern redbud	178	1	(N/A)	0.1	0.0	1.33
Alder	6,743	51	(N/A)	0.1	0.1	50.57
Mulberry	14	0	(N/A)	0.1	0.0	0.10
Ohio buckeye	7,945	60	(N/A)	0.1	0.1	59.59
Spruce	1,170	9	(N/A)	0.1	0.0	8.78
Conifer Evergreen Mt	43	0	(N/A)	0.1	0.0	0.32
White mulberry	6,743	51	(N/A)	0.1	0.1	50.57
Citywide total	10,536,458	79,023	(N/A)	100.0	100.0	68.01

Table 5: Annual Carbon Sequestered

Sac City

Annual CO₂ Benefits of Public Trees

12/10/2019

Species	Sequestered (lb)	Sequestered (\$)	Decomposition Release (lb)	Maintenance Release (lb)	Total Released (\$)	Avoided (lb)	Avoided (\$)	Net Total (lb)	Total Standard (\$)	% of Total Trees	% of Total \$	Avg. \$/tree
Silver maple	227,675	1,708	-15,009	-599	-117	90,384	678	302,451	2,268 (N/A)	15.1	29.3	12.89
Bur oak	121,382	910	-12,443	-541	-97	86,258	647	194,656	1,460 (N/A)	14.3	18.8	8.79
Northern hackberry	45,917	344	-3,828	-351	-31	63,406	476	105,143	789 (N/A)	10.8	10.2	6.31
Norway maple	35,520	266	-2,346	-209	-19	36,098	271	69,064	518 (N/A)	9.3	6.7	4.80
Apple	7,323	55	-352	-76	-3	8,292	62	15,187	114 (N/A)	8.9	1.5	1.11
Green ash	56,305	422	-6,353	-271	-50	42,652	320	92,333	692 (N/A)	8.0	8.9	7.45
Black walnut	40,313	302	-2,282	-173	-18	29,372	220	67,231	504 (N/A)	6.5	6.5	6.63
Sugar maple	21,888	164	-1,704	-115	-14	19,068	143	39,137	294 (N/A)	4.0	3.8	6.38
Honeylocust	21,552	162	-1,009	-71	-8	14,393	108	34,864	261 (N/A)	3.4	3.4	6.54
Littleleaf linden	8,859	66	-559	-44	-5	5,618	42	13,874	104 (N/A)	2.6	1.3	3.47
Blue spruce	1,415	11	-73	-37	-1	3,431	26	4,736	36 (N/A)	2.3	0.5	1.32
American basswood	8,581	64	-586	-43	-5	6,692	50	14,644	110 (N/A)	1.7	1.4	5.49
Northern red oak	4,341	33	-403	-34	-3	5,158	39	9,061	68 (N/A)	1.3	0.9	4.53
Red maple	1,973	15	-62	-15	-1	2,283	17	4,178	31 (N/A)	1.3	0.4	2.09
Bonsai	5,388	40	-242	-25	-2	3,897	29	9,018	68 (N/A)	1.3	0.9	4.51
Eastern red cedar	522	4	-61	-24	-1	2,246	17	2,682	20 (N/A)	1.2	0.3	1.44
Broadleaf Deciduous Large	2,959	22	-400	-17	-3	2,303	17	4,844	36 (N/A)	0.9	0.5	3.30
Black maple	2,581	19	-207	-19	-2	3,771	28	6,126	46 (N/A)	0.8	0.6	5.11
Kentucky coffeetree	3,310	25	-157	-14	-1	2,613	20	5,751	43 (N/A)	0.6	0.6	6.16
Eastern white pine	1,165	9	-101	-18	-1	1,700	13	2,746	21 (N/A)	0.6	0.3	2.94
Norway spruce	326	2	-46	-12	0	905	7	1,173	9 (N/A)	0.5	0.1	1.47
Eastern cottonwood	3,517	26	-1,124	-28	-9	3,982	30	6,347	48 (N/A)	0.5	0.6	7.93
American elm	2,128	16	-331	-17	-3	2,896	22	4,676	35 (N/A)	0.4	0.5	7.01
American sycamore	1,794	13	-104	-8	-1	1,311	10	2,993	22 (N/A)	0.4	0.3	4.49
Pin oak	4,429	33	-216	-12	-2	1,979	15	6,180	46 (N/A)	0.3	0.6	11.59
White oak	2,881	22	-374	-13	-3	1,954	15	4,449	33 (N/A)	0.3	0.4	8.34
River birch	16	0	0	-1	0	22	0	37	0 (N/A)	0.3	0.0	0.09
Catalpa	1,528	11	-86	-7	-1	1,042	8	2,477	19 (N/A)	0.3	0.2	6.19
Siberian elm	669	5	-59	-4	0	569	4	1,176	9 (N/A)	0.3	0.1	2.94
Ginkgo	230	2	-20	-3	0	326	2	533	4 (N/A)	0.3	0.1	1.33
Conifer Evergreen Small	53	0	-2	-2	0	108	1	138	1 (N/A)	0.2	0.0	0.59
Pear	228	2	-9	-2	0	248	2	465	3 (N/A)	0.2	0.0	1.74
White ash	676	5	-23	-3	0	604	5	1,254	9 (N/A)	0.2	0.1	4.70
Oak	77	1	-1	-1	0	53	0	128	1 (N/A)	0.2	0.0	0.48
Broadleaf Deciduous Medi	694	5	-43	-4	0	616	5	1,262	9 (N/A)	0.2	0.1	4.73
Alder	478	4	-32	-3	0	335	3	778	6 (N/A)	0.1	0.1	5.84
White mulberry	478	4	-32	-3	0	335	3	778	6 (N/A)	0.1	0.1	5.84
Spruce	116	1	-6	-2	0	216	2	324	2 (N/A)	0.1	0.0	2.43
Eastern redbud	38	0	-1	-1	0	37	0	74	1 (N/A)	0.1	0.0	0.55
Mulberry	9	0	0	0	0	6	0	14	0 (N/A)	0.1	0.0	0.10
Conifer Evergreen Medium	12	0	0	-1	0	48	0	60	0 (N/A)	0.1	0.0	0.45
Ohio buckeye	470	4	-38	-3	0	440	3	869	7 (N/A)	0.1	0.1	6.52
Citywide total	639,814	4,799	-30,724	-2,824	-402	447,666	3,357	1,033,931	7,754 (N/A)	100.0	100.0	6.67

Table 6: Annual Social and Aesthetic Benefits

Sac City

Annual Aesthetic/Other Benefits of Public Trees

12/10/2019

Species	Total (\$)	Standard Error	% of Total Trees	% of Total \$	Avg. \$/tree
Silver maple	17,655	(N/A)	15.1	29.3	100.31
Bur oak	9,614	(N/A)	14.3	15.9	57.91
Northern hackberry	6,355	(N/A)	10.8	10.5	50.84
Norway maple	3,580	(N/A)	9.3	5.9	33.15
Apple	394	(N/A)	8.9	0.7	3.83
Green ash	4,676	(N/A)	8.0	7.8	50.28
Black walnut	3,769	(N/A)	6.5	6.2	49.59
Sugar maple	2,426	(N/A)	4.0	4.0	52.74
Honeylocust	4,918	(N/A)	3.4	8.2	122.94
Littleleaf linden	959	(N/A)	2.6	1.6	31.95
Blue spruce	566	(N/A)	2.3	0.9	20.97
American basswood	706	(N/A)	1.7	1.2	35.32
Northern red oak	351	(N/A)	1.3	0.6	23.38
Red maple	357	(N/A)	1.3	0.6	23.82
Boxelder	534	(N/A)	1.3	0.9	35.60
Eastern red cedar	193	(N/A)	1.2	0.3	13.78
Broadleaf Deciduous Large	295	(N/A)	0.9	0.5	26.83
Black maple	359	(N/A)	0.8	0.6	39.92
Kentucky coffeetree	327	(N/A)	0.6	0.5	46.76
Eastern white pine	264	(N/A)	0.6	0.4	37.78
Norway spruce	94	(N/A)	0.5	0.2	15.67
Eastern cottonwood	239	(N/A)	0.5	0.4	39.87
American elm	292	(N/A)	0.4	0.5	58.41
American sycamore	183	(N/A)	0.4	0.3	36.66
Pin oak	371	(N/A)	0.3	0.6	92.70
White oak	205	(N/A)	0.3	0.3	51.27
River birch	8	(N/A)	0.3	0.0	2.74
Catalpa	144	(N/A)	0.3	0.2	47.98
Siberian elm	69	(N/A)	0.3	0.1	22.95
Ginkgo	18	(N/A)	0.3	0.0	6.07
Conifer Evergreen Small	35	(N/A)	0.2	0.1	17.36
Pear	13	(N/A)	0.2	0.0	6.40
White ash	97	(N/A)	0.2	0.2	48.58
Oak	20	(N/A)	0.2	0.0	10.00
Broadleaf Deciduous Medium	69	(N/A)	0.2	0.1	34.64
Alder	29	(N/A)	0.1	0.0	28.80
White mulberry	29	(N/A)	0.1	0.0	28.80
Spruce	32	(N/A)	0.1	0.1	32.32
Eastern redbud	2	(N/A)	0.1	0.0	2.06
Mulberry	0	(N/A)	0.1	0.0	0.03
Conifer Evergreen Medium	12	(N/A)	0.1	0.0	12.31
Ohio buckeye	43	(N/A)	0.1	0.1	43.05
Citywide total	60,304	(N/A)	100.0	100.0	51.90

Table 7: Summary of Benefits in Dollars

Sac City								
Total Annual Benefits of Public Trees by Species (\$)								
6/29/2020								
Species	Energy	CO ₂	Air Quality	Stormwater	Aesthetic/Other	Total (\$)	Standard Error	% of Total \$
Silver maple	11,016	2,268	2,050	21,083	17,655	54,072	(N/A)	25.6
Bur oak	10,820	1,460	1,950	16,437	9,614	40,280	(N/A)	19.1
Northern hackberry	8,116	789	1,423	9,460	6,355	26,143	(N/A)	12.4
Norway maple	4,580	518	776	4,441	3,580	13,896	(N/A)	6.6
Apple	1,115	114	173	484	394	2,280	(N/A)	1.1
Green ash	5,311	692	966	7,968	4,676	19,613	(N/A)	9.3
Black walnut	3,647	504	600	4,125	3,769	12,645	(N/A)	6.0
Sugar maple	2,330	294	367	2,818	2,426	8,235	(N/A)	3.9
Honeylocust	1,777	261	294	2,342	4,918	9,592	(N/A)	4.5
Littleleaf linden	715	104	119	871	959	2,767	(N/A)	1.3
Blue spruce	452	36	48	696	566	1,798	(N/A)	0.9
American basswood	842	110	126	842	706	2,626	(N/A)	1.2
Red maple	302	31	45	201	357	936	(N/A)	0.4
Boxelder	473	68	76	505	534	1,655	(N/A)	0.8
Northern red oak	618	68	92	627	351	1,754	(N/A)	0.8
Eastern red cedar	297	20	25	528	193	1,063	(N/A)	0.5
Black maple	451	46	82	467	359	1,406	(N/A)	0.7
Kentucky coffeetree	312	43	51	316	327	1,050	(N/A)	0.5
Eastern white pine	202	21	11	491	264	990	(N/A)	0.5
Norway spruce	117	9	7	231	94	458	(N/A)	0.2
American elm	361	35	69	457	292	1,213	(N/A)	0.6
Broadleaf Deciduous Sm	65	6	9	25	23	129	(N/A)	0.1
American sycamore	162	22	27	184	183	579	(N/A)	0.3
Pin oak	243	46	32	301	371	994	(N/A)	0.5
Cottonwood	292	32	60	558	182	1,125	(N/A)	0.5
White oak	247	33	47	447	205	979	(N/A)	0.5
Siberian elm	72	9	13	91	69	254	(N/A)	0.1
Maple	40	4	6	24	44	119	(N/A)	0.1
Ginkgo	42	4	7	34	18	105	(N/A)	0.0
River birch	3	0	0	1	8	13	(N/A)	0.0
Broadleaf Deciduous La	183	22	38	393	122	757	(N/A)	0.4
Pear	36	3	5	14	13	72	(N/A)	0.0
White ash	68	9	11	62	97	248	(N/A)	0.1
Oak	6	1	1	5	20	34	(N/A)	0.0
Conifer Evergreen Smal	15	1	1	23	35	75	(N/A)	0.0
Eastern cottonwood	197	15	45	392	57	707	(N/A)	0.3
Mulberry	1	0	0	0	0	1	(N/A)	0.0
Alder	46	6	8	32	29	121	(N/A)	0.1
White mulberry	46	6	8	32	29	121	(N/A)	0.1
Spruce	24	2	3	42	32	103	(N/A)	0.0
Conifer Evergreen Medi	7	0	1	7	12	27	(N/A)	0.0
Eastern redbud	5	1	1	2	2	11	(N/A)	0.0
Ohio buckeye	59	7	10	67	43	186	(N/A)	0.1
Citywide Total	55,714	7,722	9,685	78,126	59,985	211,232	(N/A)	100.0

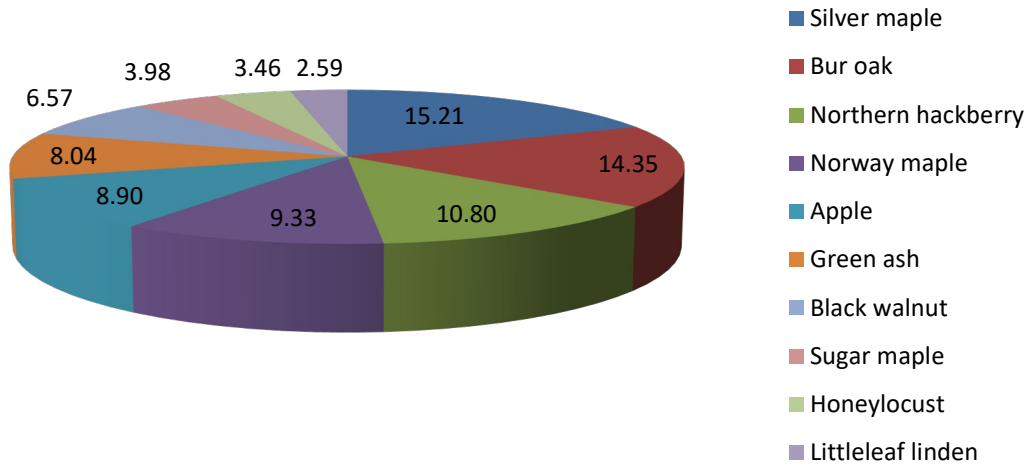


Figure 1: Species Distribution

Relative Age Distribution of Public Tree Species for All Zones (%)

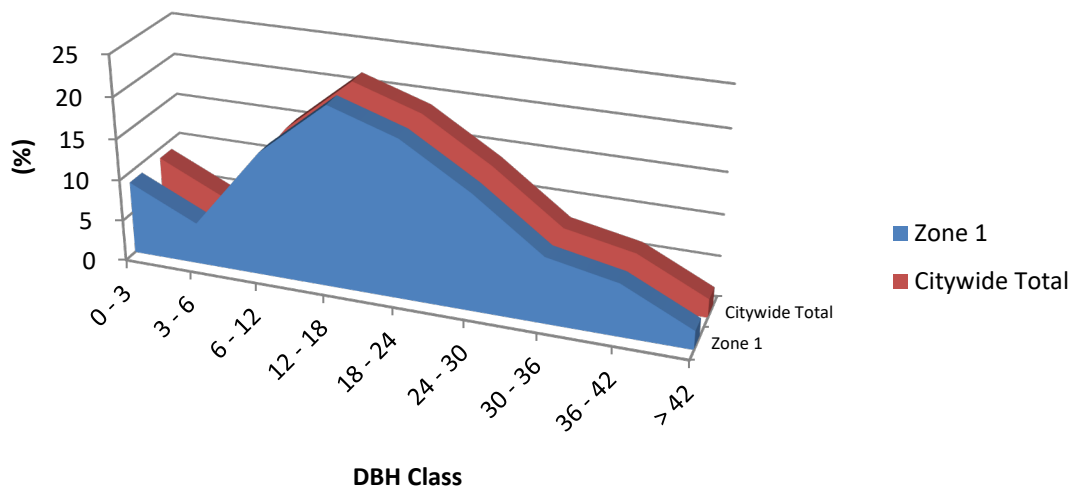


Figure 2: Relative Age Class

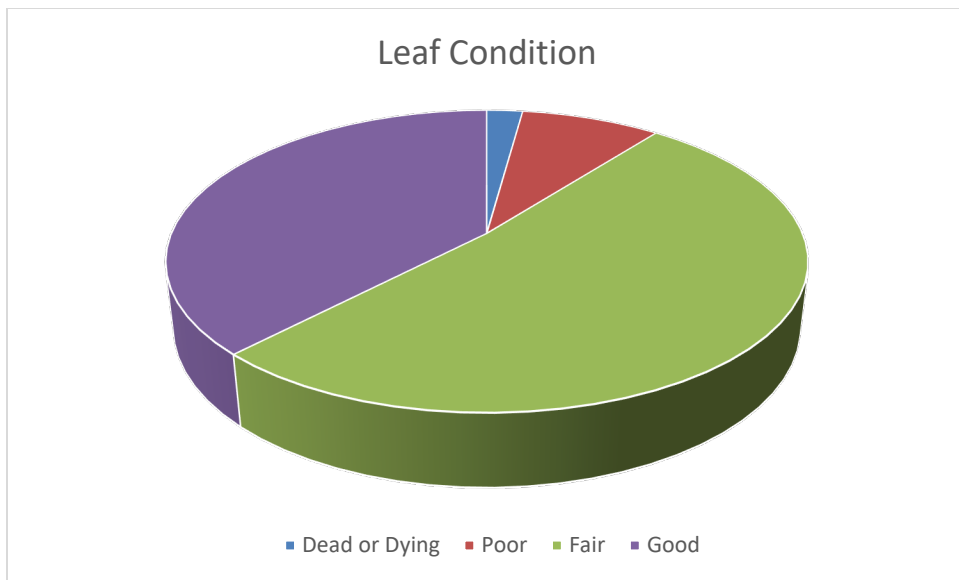


Figure 3: Foliage Condition

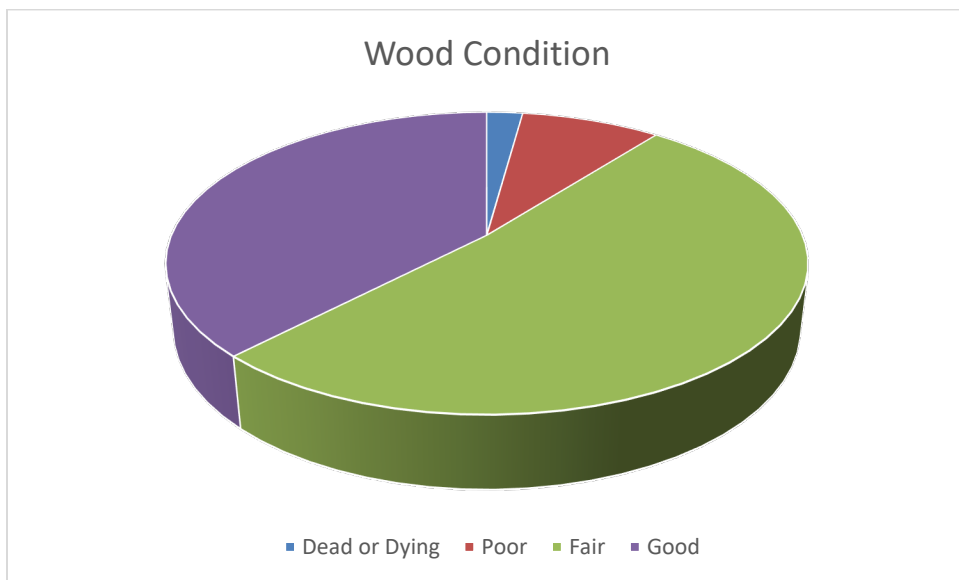


Figure 4: Wood Condition

Canopy Cover of Public Trees (Acres)

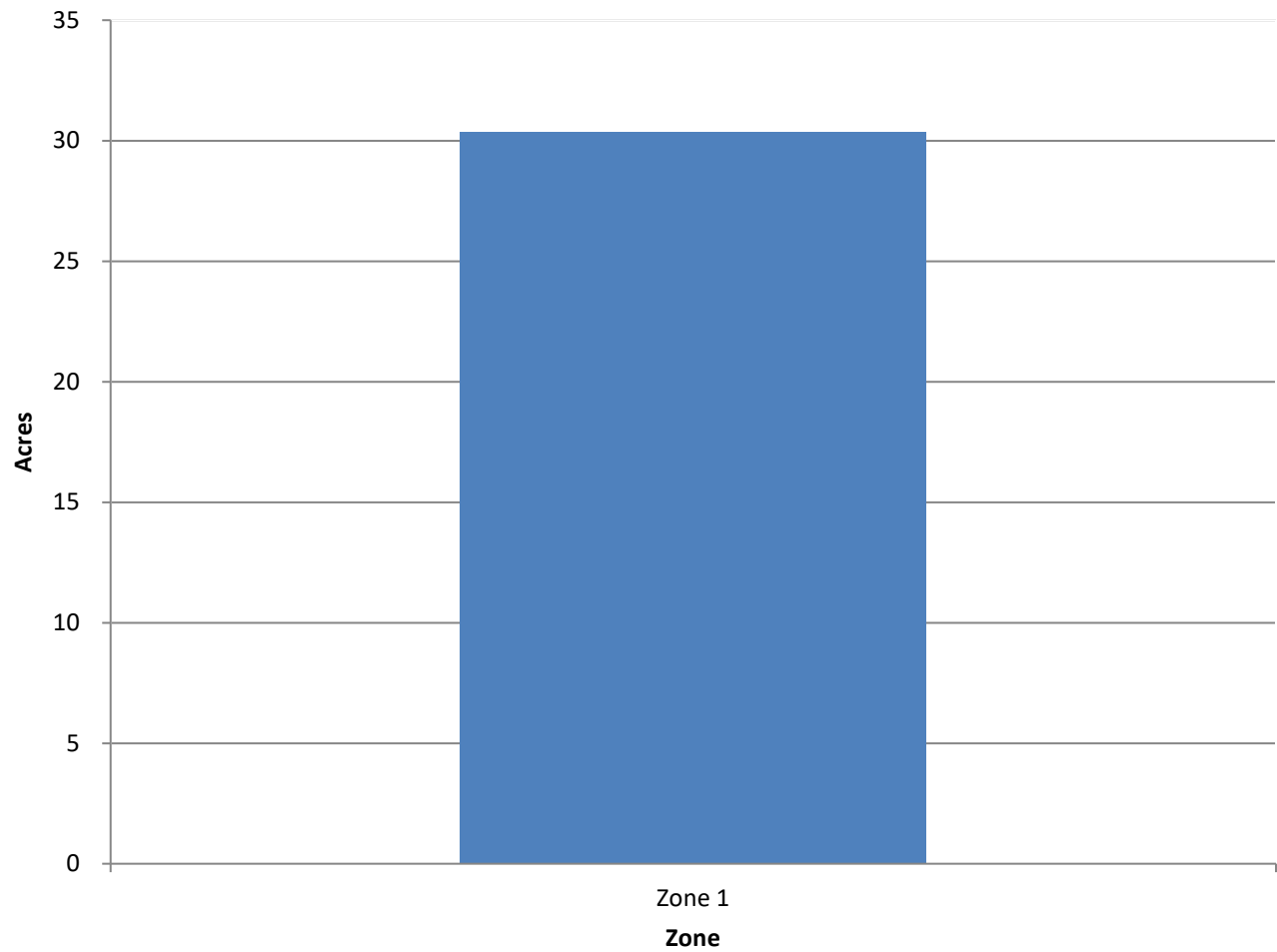


Figure 5: Canopy Cover in Acres

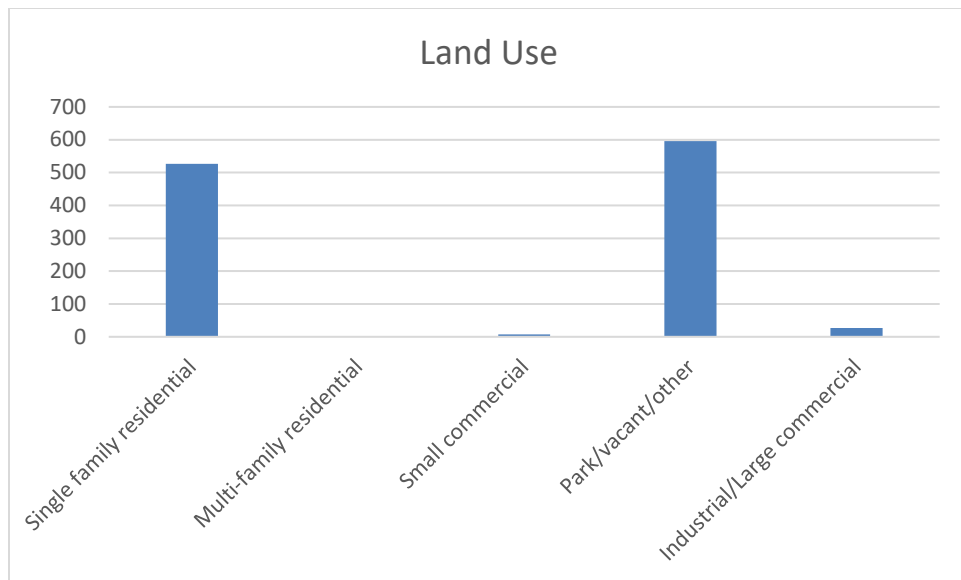


Figure 6: Land Use of city/park trees

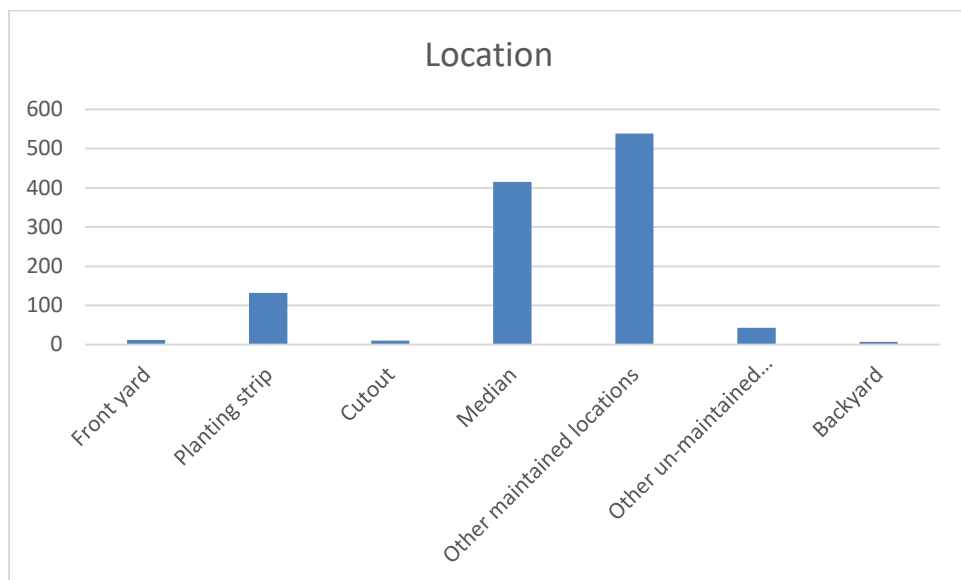


Figure 7: Location of city/park trees

Appendix B: ArcGIS Mapping



Figure 1: Location of Ash Trees

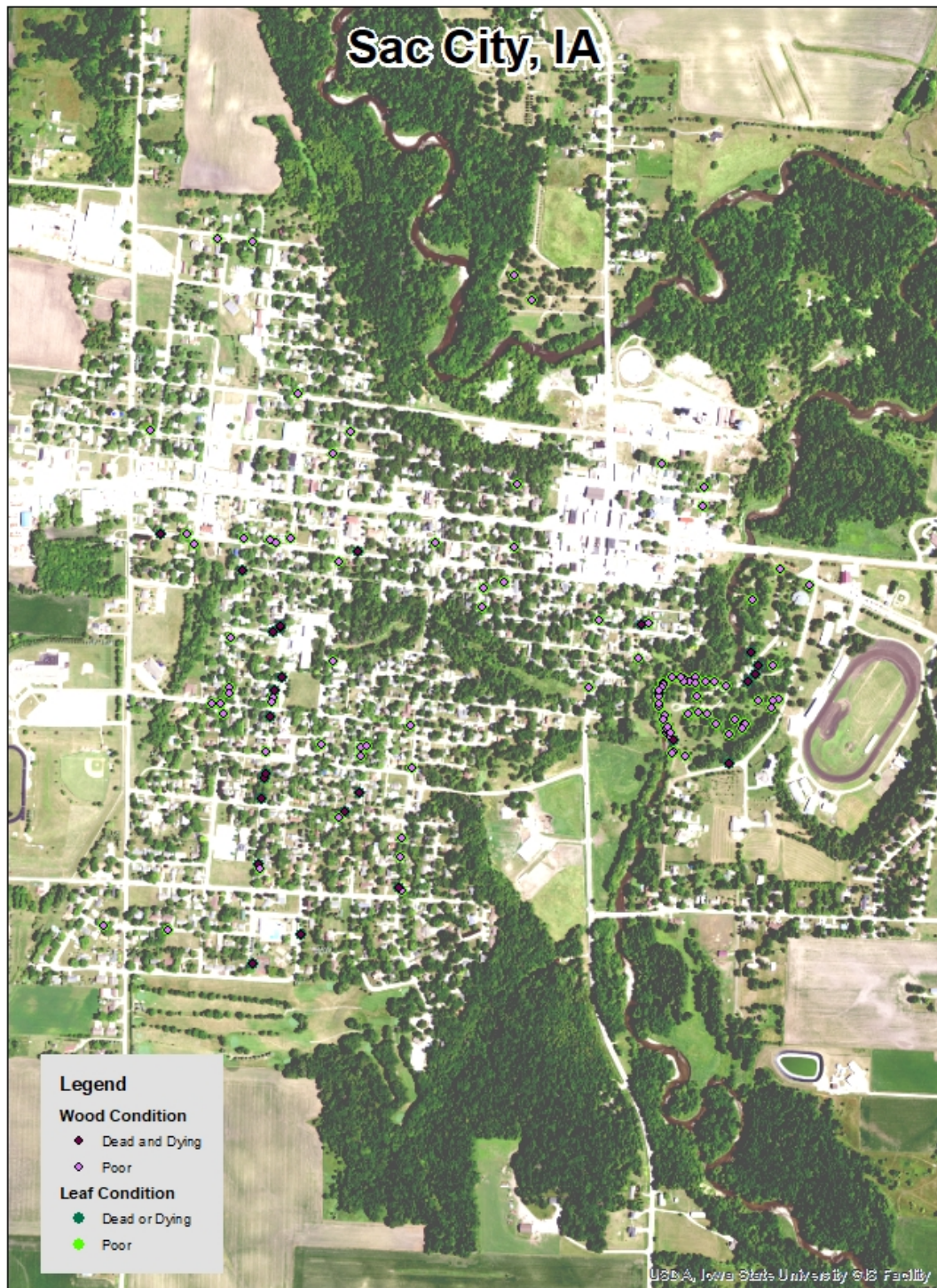


Figure 3: Location of Poor Condition Trees



Figure 4: Location of Trees with Recommended Maintenance

Appendix C: Sac City Tree Ordinances

CHAPTER 151

TREES

151.01 Definition 151.04 Trimming Trees to be Supervised

151.02 Planting Restrictions 151.05 Disease Control

151.03 Duty to Trim Trees 151.06 Inspection and Removal

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

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

1. **Alignment.** All trees planted in any street shall be planted in the parking midway between the outer line of the sidewalk and the curb. In the event a curb line is not established, trees shall be planted on a line ten (10) feet from the property line.
2. **Spacing.** Trees shall not be planted on any parking which is less than nine (9) feet in width, or contains less than eighty-one (81) square feet of exposed soil surface per tree. Trees shall not be planted closer than twenty (20) feet from street intersections (property lines extended) and ten (10) feet from driveways. If it is at all possible trees should be planted inside the property lines and not between the sidewalk and the curb.
3. **Prohibited Trees.** No person shall plant in any street any fruit-bearing tree or any tree of the kinds commonly known as cottonwood, poplar, box elder, Chinese elm, evergreen, willow or black walnut.

151.03 DUTY TO TRIM TREES. The owner or agent of the abutting property shall keep the trees on, or overhanging the street, trimmed so that all branches will be at least sixteen (16) feet above the surface of the street and eight (8) feet above the sidewalks. If the abutting property owner fails to trim the trees, the City may serve notice on the abutting property owner requiring that such action be taken within five (5) days. If such action is not taken within that time, the City may perform the required action and assess the costs against the abutting property for collection in the same manner as a property tax.

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

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

151.03, it is unlawful for any person to trim or cut any tree in a street or public place unless the work is done under the supervision of the City.

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

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

1. City Property. If it is determined that any such condition exists on any public property, including the strip between the curb and the lot line of private property, the Council may cause such condition to be corrected by treatment or removal. The Council may also order the removal of any trees on the streets of the City which interfere with the making of improvements or with travel thereon.
2. Private Property. If it is determined with reasonable certainty that any such condition exists on private property and that danger to other trees or to adjoining property or passing motorists or pedestrians is imminent, the Council shall notify by certified mail the owner, occupant or person in charge of such property to correct such condition by treatment or removal within fourteen (14) days of said notification. If such owner, occupant or person in charge of said property fails to comply within 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.