Tree Management Plan

Smithfield City

February 13, 2017

Introduction

Smithfield City's urban forest is a tremendous asset to the community that makes Smithfield a better place to live, work and play. Smithfield's trees provide a number of environmental, financial, social, commercial, architectural, visual, and human health benefits. Healthy, effective urban forests require an investment, but a 2005 study of five western U.S. cities found that benefits from city trees outweighed costs by ratios ranging from 1.37 to 3.09 (McPherson, et al; *Journal of Forestry*). This may make city trees the only infrastructure that increases in value over time. According to iTree software developed by the US Forest Service, the 958 Smithfield trees inventoried in 2016 have a replacement value of $4,181,215, which is an estimate of the hypothetical full cost of replacing these trees. In addition, these trees provide total environmental benefits worth $122,195, or $80.76 per tree, to the city every year. The purpose of this plan is to recommend strategic actions that will optimize the health and benefits accrued from Smithfield's urban forest.

This plan is based on the results of two tree inventories. The first was completed in summer 2015 and included all trees in the Smithfield Cemetery. The second was completed in fall 2016 and included all trees at city parks and facilities, excluding the golf course, and all trees, open planting spots and stumps along the following major streets: Main Street, 100 North west of Main Street, Center Street east of Main Street, and 100 West.

Findings and Recommendations

Species Diversity

The traditional guideline for species diversity levels in urban forests recommends no more than 10% of a single species and no more than 20% of a single genus in the overall tree population. However, in the past two decades the introduction rate of foreign pests and diseases has risen sharply as global trade has increased. For example, the emerald ash borer

was introduced to Michigan in 2002 from Asian packing material. Since then, it has decimated hundreds of millions of native and planted ash trees and has spread to thirty states. It was discovered in Boulder, Colorado in 2013 and most experts feel that it is not a matter of if it migrates to Utah but when. New infestations of this insect usually go undetected for four to five years, which can allow it to infest and kill hundreds or thousands of trees before a community can begin to plan or implement management strategies.

Because of these increasing threats, a new diversity guideline is being promoted to reduce the potential loss of up to 20% of the urban forest that would be possible under the old guideline. The new guideline recommends that no more than 5% of the urban forest population come from a single genus. This is a difficult objective to achieve, but the closer Smithfield city can come to meeting it, the greater protection its urban forest will have. This will require good planning, public education, maintaining an accurate tree inventory, researching and trialing under-utilized tree species, and persistence over time.

The 2016 parks and streets inventory consisted of 413 street trees and 545 park trees for a total of 958. The 2015 cemetery inventory consisted of 190 trees. Of these inventories' combined 1148 trees, there are 64 species, ranked by percentage as follows:

Total Species	
• Norway maple	16.5%
• Green ash	15.9%
• Norway spruce	8.9%
• Honeylocust	7.1%
• Blue spruce	7.0%
• Crabapple	6.6%
• Box-elder	4.8%
• London planetree	3.0%
• Flowering plum	2.4%
• Chokecherry	2.0%
• Remaining 54 Species	25.8%

Note that the six species with levels higher than 5% account for 62% of the total trees.

The total of both inventories consists of 33 genera, ranked by percentage as follows:

Total Genera	
• Maple, *Acer*	24.7%
• Ash, *Fraxinus*	17.2%
• Spruce, *Picea*	17.2%
• Honeylocust, *Gleditsia*	7.1%
• Crabapple, *Malus*	6.6%
• Cherry, *Prunus*	5.2%
• Sycamore, *Platanus*	3.0%
• Linden, *Tilia*	2.6%
• Pine, *Pinus*	2.3%
• Remaining 24 genera	14.1%

Note that the six genera with levels higher than 5% account for 78% of the total trees.

Focusing on just the city-managed trees in the parks, city facilities and cemetery consist of 56 species in the following percentages:

City-Managed Species	
• Norway spruce	13.7%
• Blue spruce	10.2%
• Norway maple	9.5%
• Honeylocust	8.3%
• Box-elder	7.3%
• Crabapple	6.4%
• Green ash	5.7%
• London planetree	4.8%
• Flowering plum	2.6%
• Eastern redcedar	2.3%
• Eastern arborvitae	2.3%
• Littleleaf linden	2.3%
• Remaining 44 species	24.6%

Note that the seven species with levels higher than 5% account for 61.1% of the total trees.

Trees in the parks, cemetery and city facilities consist of 31 genera in the following percentages:

City-Managed Genera	
• Spruce, *Picea*	26.0%

- Maple, *Acer* 19.3%
- Ash, *Fraxinus* 7.5%
- Crabapple, *Malus* 6.4%
- Cherry, *Prunus* 5.2%
- Sycamore, *Platanus* 4.8%
- Juniper, *Juniperus* 2.3%
- Arborvitae, *Thuja* 2.3%
- Pine, *Pinus* 2.3%
- Remaining 22 genera 21.2%

Note that the five genera with levels higher than 5% account for 64.4% of the total trees.

Inventoried street trees consist of 35 species in the following percentages:

Street Species

- Green ash 34.1%
- Norway maple 28.8%
- Crabapple 7.0%
- Honeylocust 4.8%
- Silver maple 2.7%
- Chokecherry 2.7%
- Flowering plum 2.2%
- Remaining 28 species 17.7%

Note that the three species with levels higher than 5% account for 69.9% of total trees.

Inventoried street trees consist of 18 genera in the following percentages:

Street Genera

- Ash, *Fraxinus* 34.6%
- Maple, *Acer* 34.4%
- Crabapple, *Malus* 7.0%
- Cherry, *Prunus* 5.3%
- Honeylocust, *Gleditsia* 4.8%
- Pine, *Pinus* 2.7%
- Hawthorn, *Crataegus* 2.4%
- Remaining 11 genera 8.8%

Note that the four genera with levels higher than 5% account for 81.3% of the total trees.

The following chart compares data from all three tree groups:

Group	# of Species	% Species > 5%	# of Genera	% Genera > 5%
All Trees	64	62.0%	33	78.0%
City-Managed	56	61.1%	31	64.4%
Street	35	69.9%	18	81.3%

The total set of trees has the greatest diversity of species and genera, while the city-managed trees have the lowest percentage levels of species and genera comprising more than 5% of the group total. Street trees have the lowest diversity and highest percentage levels of species and genera greater than 5% of the group total. However, it is important to remember that the inventoried street trees are just a sample of the city's total street tree population and therefore these figures may not accurately reflect the street tree population as a whole.

Reducing the levels of city-managed genera and their species can be done through three methods: 1) eliminating future use of any tree genera comprising more than 5% of city-manged trees, 2) increasing future planting of under-utilized and unused genera, and 3) preferential removal of over-planted genera during any renovation or thinning projects. Maintaining an accurate, current inventory is also important to track progress over time and to avoid the over-planting of other species. Many cities plan to update or redo their city inventories every five to ten years as budgets allow.

Reducing the level of street tree genera will be much more difficult since the city does not own or maintain these trees. In this case, public education is the key to promoting the use of desired species and inhibiting the use of over-planted species. Developing tree lists approved by the Smithfield Tree Committee and Parks Department, highlighting desirable or undesirable trees on the city website or newsletter, and posting a list of resources for tree selection on the city website are a few methods that could be used. In addition, continued complete or partial tree inventories of street trees will allow for assessment and evaluation of education methods. Although street trees are privately owned, they contribute greatly to the beauty and attractiveness of the city. A small investment in public education to promote

species diversity and good tree health can have significant returns. The Smithfield Municipal Code states that assisting in educating residents on proper tree planting and care is one of the functions of the tree committee (see Tree Ordinance section on page 14). See Appendix A for a list of under-utilized species that are well-adapted to Smithfield's climate and growing conditions. I recommend that others be researched and trialed as well.

Certification

Although Smithfield City parks personnel have a high level of landscaping competency, some additional training and certification in arboriculture would be very beneficial. All tree work performed on Smithfield trees should be performed or supervised by an ISA certified arborist. The International Society of Arboriculture (ISA) offers the only program that evaluates knowledge and experience of arborists. Having an ISA certified arborist on staff with Smithfield City would increase the effect and benefit of tree management activities, would make Smithfield City a more attractive candidate for tree-care related grants, and would increase public support for Smithfield's urban forestry program. Certification requires three years of experience in arboriculture or related fields or a combination of experience and formal education. Certification is maintained through obtaining continuing education units and is renewed every three years.

Planting

A detrimental condition that many urban trees have is that they have been planted too deeply. Trees grow and perform best when planted with the root flare at or slightly above finish grade. Although most Smithfield city-managed trees are planted correctly, many street trees are planted deep with the root flare below ground so that the trunk enters the soil straight like a telephone pole instead of flaring at the bottom. Deeply planted trees can develop basal decay, stem girdling roots, and have generally slower growth and poorer health than trees planted at the proper level.

Another common problem that can be easily remedied at planting is the presence of circling

roots around the outer edge of the root ball and next to the trunk. Most containerized and some balled-in-burlap nursery stock are allowed to grow in their containers too long and develop sizable roots that grow in a circle around the perimeter of the root ball. If not removed at planting, these roots do not straighten but retain their circling form. As the tree grows and the roots and trunk increase in diameter, these circling roots eventually contact the trunk and partially or completely strangle the tree by cutting off the movement of water and food between the canopy and roots. The easiest method for removing circling roots is to cut the outer, circling portion of the root ball with a sharp tool. Although this removes some of the root mass, it gives the trees a much better chance for optimal growth and long term survival. Additionally, any roots circling near the trunk should be removed. For more information on correct planting techniques, please refer to the Utah State University Extension publication Planting Landscape Trees and ISA's Best Management Practices- Tree Planting. Proper planting specifications for use in new development are available on the ISA website, www.isa-arbor.com.

Trees planted by Smithfield City personnel, contractors and volunteer groups should have any planting media above the root flare removed before planting, should be placed so that the exposed root flare is at the proper depth, and should have circling roots around the periphery of the root ball removed. Making this information available to Smithfield City residents would be very beneficial and could have a significant impact on the long-term health of Smithfield's urban forest.

Maintenance

The most common maintenance need, found on 272 or 24% of inventoried trees, is structural training. This is specialized pruning performed on young trees that establishes a strong form, corrects existing and potential defects while they are small, plans for future pedestrian and vehicle clearance, and reduces the amount and severity of future pruning. In terms of return on investment, structural training is the best maintenance investment made in trees besides irrigation. Correct structural pruning performed at the right stage of a tree's

life costs a fraction of what the same pruning would cost later and results in a greater improvement to the structural integrity of the tree. Smithfield City is fortunate to have an opportunity to eliminate future problems and costs by implementing a structural training program on its young trees. Structural training can be performed at any time of the year but is often best done in winter since the tree structure is visible and city staff are free from other landscaping duties. Structural training is best done soon after tree establishment and repeated every three to five years until the tree has reached half of its mature size. For more information and specific guidelines on structural training, please refer to An Illustrated Guide to Pruning by Edward F. Gilman.

The other trees needed the following maintenance:

- Crown cleaning on 234 trees or 20%. This involves the removal of crossing, crowded, diseased and dead branches. This is considered basic pruning and should be performed every five to ten years on mature trees.
- Crown raising on 177 trees, or 15.4%, that have low branches interfering with vehicle or pedestrian clearance.
- Removal of 28 trees, or 2.4%, mostly due to extensive die-back or death.
- Removal of stakes from 25 trees or 2.1%. Stakes should be removed from newly planted trees within the first year after planting or as soon as the root balls are stable.
- Fertilization on 15 trees, or 1.3%, to correct iron deficiency, or chlorosis, mostly in silver maples. Chelated forms of iron such as Miller's Ferriplus, Sequestar and Sprint added as a soil drench in spring produce the best results for small to medium trees, while large mature trees may require injections. Iron fertilization is usually required every 1 to 3 years throughout a tree's life after chlorosis symptoms appear.
- Hazard mitigation on 16 trees or 1.4% These trees have a hazardous condition such as cracked or broken branches hanging in the canopy, large dead branches that are likely to break, included bark or splits between leaders or branches and trunk that

could lead to failure, or large areas of decay in the trunks or large branches that could lead to failure. Mitigation can be performed by removing the hazardous branches, reducing the length of branches to reduce leverage, installing cabling and bracing for added structural support, or removing the trees.

- Pest or disease control on 4 trees or .3%. Three American elms at Forrester Acres have European elm scale, which can be treated with a soil drench of imidacloprid in fall. This insect can cause extensive die-back and should be treated regularly. One mountain-ash on Main Street has borers, which may not be worth treating considering how susceptible this species is to diseases, pests and chlorosis.
- Root collar excavations on 4 trees or .3%. This procedure removes soil above the root flare to find and correct stem-girdling roots and to inspect for root decay that could make the tree a hazard.
- Safety pruning on 4 trees, or .3%, to clear lines-of-sight for drivers, and to remove branches that obstruct traffic signs or street lights.
- Create tree rings on 3 trees or .3%. Tree rings are very beneficial by reducing competition from turf for water and nutrients, by keeping lawn mowing from damaging the crucial cambium layer of cells just beneath a tree's bark, and by introducing organic matter into the soil when mulch is used in the rings. Young trees benefit the most from tree rings and grow significantly faster with them.

Thirty-six large trees require immediate maintenance: 12 need hazard mitigation, 11 need removal, six need crown raising, three need safety pruning, two need pest or disease control, one needs crown cleaning, and one needs a root collar excavation. Seventeen small trees require immediate maintenance: 16 need stakes removed and one needs to be removed. For more information about crown cleaning, crown raising, and crown reduction please refer to the ISA's Best Management Practices- Tree Pruning.

Other Conditions

Some other tree conditions require management. These conditions, along with the number

of affected trees, are:

Co-dominant stems in 297 trees or 36%. Co-dominant stems are roughly equal in size and result in a weaker branch union than a branch that is less than half the diameter of its parent stem. Additionally, included bark was found in 11 trees, or 1%, in unions between branches or between a branch and trunk. This condition results when bark develops insides of a union and prevents wood fibers from knitting together. It can result in a much weaker branch union and is often associated with co-dominant stems. Structural training can correct these problems in young trees, while cabling and bracing may be necessary to provide extra structural support in mature trees.

Canopy die-back in 167 trees, or 14.5%. The amount of die-back ranges from slight to extensive, but in each case enough to be worth noting. This percentage of trees with canopy die-back is a relatively small compared to many cities.

Root suckers or crown watersprouts in 60 trees, or 5.2%, that should be pruned off every season to prevent them from overtaking the trees and to maintain tree appearance.

Stem-girdling roots (SGRs) on 55 trees, or 4.8%, although many more trees likely have SGRs that are not visible. As discussed earlier, SGRs can limit growth and health of a tree and may cause eventual death. SGRs are best managed through preventive care since canopy symptoms usually don't appear until the tree is too damaged to respond. SGRs can be removed by carefully removing soil around the base of the tree and removing any girdling roots as close as possible to their point of origin or to a lateral root that is growing away from the trunk. When cutting SGRs, it is important to be moderate, trying not to sever more than 25% of total root mass in a single season. Many trees that do not have a visible root flare are at risk for SGRs, but it may be beyond Smithfield City's resources to proactively examine every deeply planted tree.

Trunk wounds in 47 trees, or 4.1%, mostly caused by winter sun scald. The best

approach to helping these trees is to maintain good tree health and allow new tissue to seal over the wound. Sun scald is most common on newly planted, smooth-barked trees, especially maple and linden. Wrapping the trunk with white material during winter may help to prevent sun scald, but the best management techniques are to avoid planting susceptible species and provide extra irrigation during the first several years following planting.

Powdery mildew on 22 trees, or 1.9%, mostly red leaf varieties of Norway maple planted along streets. Powdery mildew is an intermittent disease the occurs during years when spring weather conditions are favorable. In most cases control is not warranted, although for extreme infections early summer fungicide sprays can help prevent canopy die-back.

Previous topping cuts on 21 trees or 1.8%. Topping significantly increases the likelihood of branch failure for several years following and permanently results in a weaker and disfigured tree. Previously topped trees should be pruned to carefully thin and reduce leverage in the canopies.

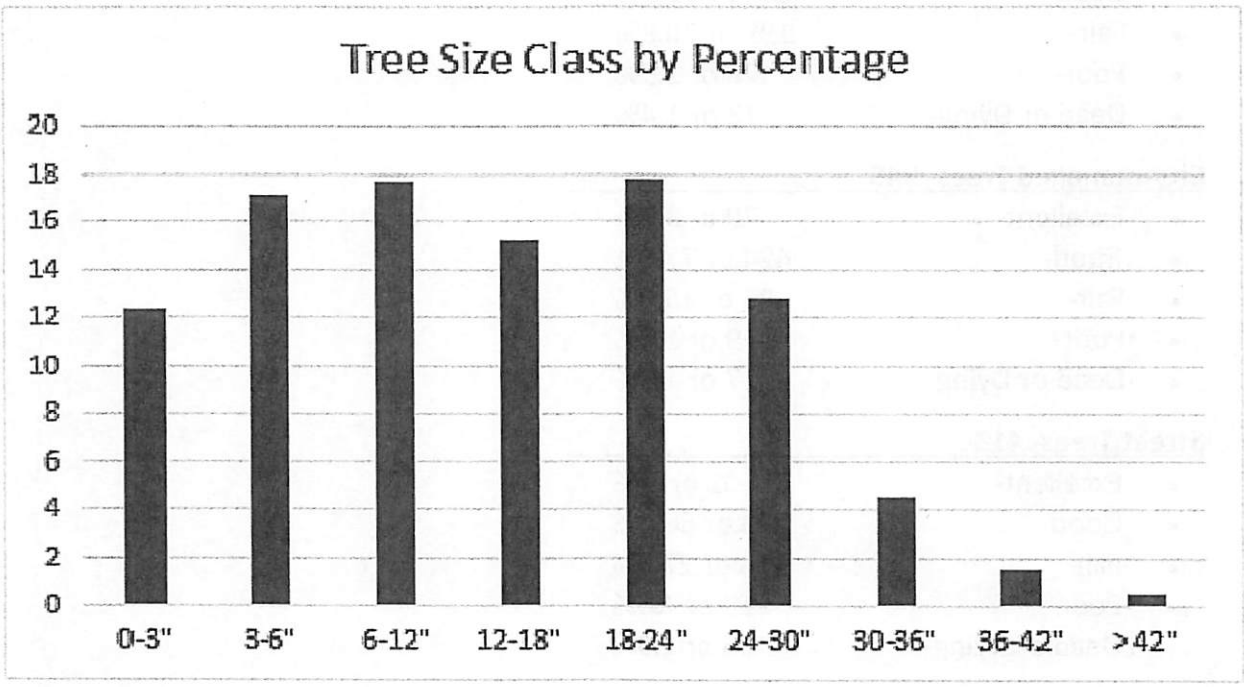
Fungal canker infections on 15 trees, or 1.3%, that cause bark die-back around a portion of the trunk or branch die-back in the canopy. There are no effective controls for this condition other than removing affected branches and maintaining tree health to allow time for new wood tissue to seal over canker wounds. Severe infestations usually require removal.

Mower damage on one tree, caused by lawn mowing equipment. Like trunk wounds, the only way to manage these wounds is to keep trees healthy and allow for regrowth. A better approach is to prevent mower damage by installing and maintaining mulch rings around every tree, which is currently being done very well in Smithfield parks.

Age Distribution

This chart shows the age distribution of all inventoried trees. Tree size measured in inches of

trunk diameter at breast height is shown along the bottom axis. The percentage of trees in each size class is shown along the vertical axis.



The trees show a relatively even distribution across most size classes, indicating a corresponding even distribution of tree ages. The distribution drops off sharply in the top three size classes. This is undoubtedly due to few trees living old enough to become this large, but is also due to having few species that reach these sizes in maturity. Large trees provide the majority of the urban forests benefits so it is well worth planting and caring for trees that will fill these largest size classes. Planting should be done frequently enough and in enough quantity to maintain even size class distributions in the future. Ideally the 0-3" column in this chart would be greater than the others to maintain even size class distributions after losses from young tree mortality.

Other Findings

Tree Health

Of the trees inventoried in 2016 (health data was not collected on cemetery trees), tree

health was classified as follows:

Total Population- 958

- Excellent- 21 or 2.2%
- Good- 697 or 72.8%
- Fair- 199 or 20.8%
- Poor- 28 or 2.9%
- Dead or Dying- 13 or 1.4%

City-managed Trees- 545

- Excellent- 20 or 3.7%
- Good- 424 or 77.8%
- Fair- 85 or 15.6%
- Poor- 9 or 1.7%
- Dead or Dying- 7 or 1.3%

Street Trees- 413

- Excellent- 1 or .2%
- Good- 273 or 66.1%
- Fair- 114 or 27.6%
- Poor- 19 or 4.6%
- Dead or Dying- 6 or 1.5%

City-managed trees had higher percentages of trees in excellent or good health while street trees had higher percentages of trees in fair, poor or no health. This is not surprising considering that city-manged trees have better growing conditions and receive better maintenance than street trees. The high number of trees in good and fair health among both groups is a very good indicator of the vitality and value of Smithfield's urban forest.

Infrastructure Conflicts

Among inventoried street trees, 79 trees or stumps were causing sidewalk lifting. Forty-nine had lifted the sidewalk less than .75 inches, 18 had lifted the sidewalk between .75 and 1.5 inches, and 12 had lifted the sidewalk more than 1.5 inches. No city-managed trees were raising sidewalks. In addition, 51 street trees and 25 city-managed trees were near overhead power lines but were not conflicting, whereas 5 street trees and 8 city-managed trees were conflicting with overhead power lines. Most conflicts involving city-managed trees were with a low-voltage power line leading to a park structure or light.

Tree Ordinance

The recently revised Smithfield Municipal Code (SMC) places supervisory control and responsibility over the urban forest with the tree committee. Section 12.24.040 authorizes the tree commission, or tree committee, whose duties include "to assist in the dissemination of news and information regarding selection, planting and maintenance of trees within the corporation limits whether they be on public or private property," an important function that would greatly help to improve species diversity and tree health throughout the city. Another important function of the tree committee defined in this section is to write, update and administer a written plan for the care of city trees, including a list of approved species for planting in park strips. Section 12.24.050 states that "street tree plantings must conform in species and location with the Smithfield City community forest plan" and that street and park tree species must be selected from the master tree list unless written permission is granted from the tree committee.

For a small community like Smithfield, placing management responsibility on the tree committee works very well as long as there are dedicated volunteers willing to serve on the committee and as long as their responsibilities are within a manageable scope. The responsibilities of the tree committee should be prioritized to ensure that critical issues are managed sufficiently and time and resources are not wasted on less important tasks. The tree committee should also work closely with city personnel to ensure that tree work is performed properly and that tree care priorities are met. One city position, preferably the tree warden described in SMC 12.24.060, should be designated as the primary liaison with the tree committee in order to ensure efficient and consistent communication. This city position should also be prepared to assume temporary management responsibility for tree management programs if the tree committee is understaffed or otherwise incapacitated.

The municipal code also clarifies that the responsibility of maintaining street trees rests with the adjacent property owners (SMC 12.40) and that they have a duty to prune street trees to keep roads, walks and lines of sight clear (SMC 12.24.090). However, the city maintains a level of oversight since street tree plantings must conform to the ordinance regarding species selection and planting location (SMC 12.24.050, 12.24.070), removal of street trees is prohibited without a permit (SMC 12.24.110), and the city has the right to manage street trees according as needed for the public good (SMC 12.24.080). Additionally, the city has the right to remove or order to be removed any tree on private property that constitutes a hazard to life or property (SMC 12.24.100). It may also be in the city's best interest to initiate street tree planting projects to ensure that planting levels remain consistent, that diversity level objectives are met, and to have a greater degree of control over the appearance of major roads. Leaving all plantings on all street trees completely to the residents will result in increasingly fewer trees over time and haphazard appearance and diversity.

The value of specific and thorough tree ordinances such as these cannot be overstated. They will protect the city from liability, help the city prioritize and allocate its limited resources, provide a framework for future management, and will encourage citizens to accept the responsibility of care for their street trees. The tree committee and city employees should periodically review and update the tree ordinances as needed.

City officials should be careful to clearly document occasions when they notify owners of nuisance or hazard private trees in case an attempt is ever made to shift liability for private tree damage to the city. Furthermore, the city's right to order the removal or care of hazardous private trees could be construed as a duty to identify hazards in private trees, especially if a city official acting in his or her official capacity sees a hazardous tree situation but fails to notify the tree owner.

Summary

Smithfield's urban forest is a tremendous community asset that provides many benefits. Some specific management actions should be implemented to ensure the long-term health and vitality of the urban forest. These are, in order of priority:

1. Schedule maintenance on trees designated as immediate priority and mitigate all hazardous tree conditions identified in the tree inventories.
2. Increase species diversity through eliminating planting of over-used genera, preferentially removing over-used genera during renovation and thinning projects, and increasing planting of under-utilized genera.
3. Educate Smithfield citizens about species diversity and desirable species as well as proper tree planting and care techniques.
4. Update and maintain a tree inventory as needed to track progress toward species diversity goals and identify tree hazards.
5. Have at least one Smithfield City employee become an ISA certified arborist who can function as the tree warden and tree committee liaison.
6. Assure that proper tree planting practices are used in all new tree plantings performed by city personnel, contractors and volunteers so that trees are planted at the correct depth and without circling roots.
7. Establishing a pruning program to provide recurring structural training on all young trees.
8. Create, maintain and update an annual tree care plan for city-managed trees and private and street trees that require the city's involvement.
9. Perform routine maintenance tasks as needed, including fertilization, pruning, insect and disease control, removal, hazard mitigation and SGR removal.
10. Plan annual new plantings in sufficient quantity to maintain a consistent tree population in all size classes.

11. Prioritize tree committee responsibilities.

These actions will allow Smithfield City to optimize the benefits of its urban forest, decrease maintenance costs over time, and make Smithfield a better, more beautiful place to live and work.

Appendix A

Large Deciduous

American elm	*Ulmus americana* (newer cultivars)
Bur oak	*Quercus macrocarpa*
Chinkapin oak	*Quercus muehlenbergii*
English oak	*Quercus robur*
European beech	*Fagus sylvatica*
Ginkgo	*Ginkgo biloba* (male cultivars only)
Hackberry	*Celtis occidentalis*
Hardy Rubber Tree	*Eucommia ulmoides*
Horsechestnut	*Aesculus hippocastanum* (male cultivars only)
Katsuratree	*Cercidiphyllum japonicum*
Kentucky coffeetree	*Gymnocladus dioicus* (male cultivars only)
Littleleaf linden	*Tilia cordata*
London planetree	*Platanus x acerifolia*
Paper birch	*Betula papyrifera*
Silver linden	*Tilia tomentosa*
Swamp white oak	*Quercus bicolor*
Turkey oak	*Quercus cerris*
Turkish filbert	*Corylus colurna*
White oak	*Quercus alba*

Small Deciduous

American hornbeam	*Carpinus caroliniana*
American smoketree	*Cotinus obovatus*
Amur corktree	*Phellodendron amurense* (male cultivars only)
Amur maackia	*Maackia amurensis*
Cockspur hawthorn	*Crataegus crusgalli inermis*
Gambel oak	*Quercus gambelii*
Italian alder	*Alnus cordata*
Japanese tree lilac	*Syringa reticulata*
Saucer magnolia	*Magnolia x soulangiana*
Serviceberry	*Amelanchier x grandiflora*
Star magnolia	*Magnolia stellata*
Yellowwood	*Cladastris kentukea*
Zelkova	*Zelkova serrata*

Large Conifer

Austrian pine	*Pinus nigra*
Corkbark fir	*Abies lasiocarpa arizonica*
Dawn redwood	*Metasequoia glyptostroboides*
Eastern redcedar	*Juniperus virginiana*
European larch	*Larix decidua*
Ponderosa pine	*Pinus ponderosa*
White fir	*Abies concolor*

Small Conifer

Bosnian pine	*Pinus heldreichii leucodermis*
Bristlecone pine	*Pinus aristata*
Pinyon pine	*Pinus edulis*
Weeping Alaskan cedar	*Chamaecyparis nootkatensis pendula*