



Martin Elementary School
Post Oak, *Quercus stellata*. 31.7 inch diameter, 75' wide, 62' high, excellent.

Urban Forestry Management Plan
City of Crossville
Tree Board

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History of Crossville's Trees

Crossville was incorporated in 1901. It is located in the midst of the Cumberland Plateau, a heavily wooded area with adequate rainfall. Its elevation makes it slightly cooler than most of the rest of Tennessee allowing northern tree species to be intermixed with the normal southern varieties. This is a great area for tree cultivation. The Cumberland Plateau timberland has many different species but the dominant forest type is Red Oak-White Oak-Hickory with 2.25 million acres. The plateau is made up of 16 counties and the woodland area as a whole has decreased by 2% since 1989. Although 140,500 acres were diverted from timberland to other uses, 70,100 acres were added from previous non-forest use, resulting in 70,300 acres net loss. Forestland still covers 71 % of the Plateau region and hardwoods make up a whopping 88% of that.

Many of the dominant local species are considered high maintenance for urban settings, and are not encouraged because of their greater hazard potential due to weak structure, short life spans, and consistent production of large volumes of dead wood.

City Green Spaces, Parks and Tree Projects

Garrison Park was established in 1922 and Meadow Park Lake (or City Lake) was established in 1937. The City Cemetery has burials dating back to the 19th century, and the Top Town Garden Club received support from the City in 1991 to do a beautification project at the cemetery. The Main Street Memorial Linden Trees project was coordinated by Cumberland County Beautiful in mid-1970.

The Obed River Park started as a City/County park in 1983-84, but shortly thereafter became strictly a County park. It covers approximately 75 acres bordered on the south by Hwy 70N, the west by the river, the north by an abandoned railroad, and the east by the Cumberland County Fairgrounds. No tree inventory has been conducted, but the dominant trees have been identified and labeled to qualify in 2005 as a Level I Arboretum recognized by the Tennessee Division of Forestry. The native woods are dominated by *Pinus virginiana*, *Quercus alba*, *Q. coccinea*, *Q. falcate*, *Carya glabra*, *C. tomentosa*, *Acer rubrum*, *Betula nigra*, *Cornus florida*, and *Oxydendrum arborea*. The area away from the river and natural area is open grassland with scattered oaks present, and both cultivated and native trees have been planted near a walking trail. More than 30 different species of trees are planted here, including 75 Gymnosperms, which are intended in part to screen an apartment complex.

The City established the Beautification Committee in 1990 to devise guidelines for property evaluation and warnings of problems. It also made recommendations to the City Manager about issuance of fines or legal action to enforce the provisions of the code regarding overgrown and dirty lots and buildings.

Centennial Park (originally called Crossville Recreational Park) was established in 1992. This park is the site of the most recent project to establish additional shade trees, and more tree planting is planned when funding is secured.

In October 1997 the City Council enacted a resolution that designated the Sugar Maple (*Acer saccharum*) as the official City of Crossville Tree. This resolution was forwarded to the County Mayor, and the County Commission approved a resolution designating the Sugar Maple as the Tree of Cumberland County.

Tree Board History and Urban Forestry Development

1. Tree Ordinance (incorporated into this MP as Addendum Item 1)

In 1989 the City Council enacted a TREES AND WOODY VEGETATION ordinance as City Code 1989, Chapter 7, Section 14 that created a Tree Board (TB). This ordinance has these features:

Definitions of terms, Administration of the TB, Protection of trees, Removal of protected trees, Tree removal, Protection and replacement of trees, Protection of trees during development activities, Parking reduction for preservation of protected trees, Prohibited trees, and Appeal and penalties.

The ordinance was devised to apply only to city owned land and public right-of-ways within the jurisdiction of the City, except for Section 14-705, tree removal that applies to both public and private trees.

The 1989 ordinance was amended in October 2003 by Ordinance #1011 to strengthen some of the statements for preserving and replacing trees. Protected trees are defined as twelve (12) inches DBH or greater.

2. Tree Board

The TB consists of 8 members appointed by the mayor to a 3-year term, and who may serve successive terms. The majority must be citizens and residents of Crossville. The TB meets monthly and members are compensated \$15 per meeting. The effectiveness of the TB was improved by the appointment of one Engineering Dept. staff member as liaison member, and by assignment of a secretary to prepare minutes of the meetings. The main objective of the TB and its urban forestry program is to improve the quality of life for its citizens by preserving and enhancing its urban forest. The TB advises the City Manager, the Mayor and the City Council, and has the major responsibility for enforcing the ordinance.

Crossville and its TB have been recognized by the National Arbor Day Foundation, receiving Tree City USA status every year since 2000, and awarded the Growth Award every year since 2003. The TB was named Tree Board of the Year by the Tennessee Urban Forestry Council in 2004, and hosted the State Arbor Day Ceremony in 2005. Some of the major accomplishments of the TB are:

- Celebrated Arbor Days with official proclamations and various tree giveaway projects
- Established three categories of tree awards for local business properties: for new tree planting, for established trees, and for best use of trees in the downtown area
- Participated in the ReLeaf program for 4th Graders in 2004 to 2005
- Held an Arbor Day Poster contest for 5th Graders
- Wrote and printed brochures on proper planting of trees and why not to top trees.
- Helped organize and establish the Obed River Arboretum Board, and assisted with application for its first USFS Challenge grant
- Distributed materials about trees at the Cumberland County Master Gardeners Flower and Garden show in 2003, 2004 and 2005
- Organized the exhibit of Notable Trees of Tennessee in City Hall in 2006
- Participate in the Mayor's Sustainability Fair Annually
- Recognize a "Tree of Distinction" quarterly in the local newspaper
- Yearly attendance at the Tennessee Urban Forestry Conference

3. Grant History

The City of Crossville has been fortunate to receive grants to plant trees, and has become a proud and grateful participant in the Tennessee urban and community forestry (UCF) grants program, as described below:

1993- \$9,250 America the Beautiful grant for planting linden trees on Industrial Boulevard;
1993- \$5,000 Small Business Administration grant for planting 55 sugar maples on Hwy 127, Elmore Road to Little Obed River;

- 2003- \$5,000 UCF grant for planting 92 Red Sunset maples on Hwy 127, Little Obed River to Obed River;
- 2004- \$3,553 UCF grant to plant 42 trees of various species in two groupings along SR 392 at Martin Elementary and Cumberland County High schools;
- 2006- \$4,075 UCF grant to plant 71 trees of various species within Centennial Park;
- 2006- \$3,420 UCF grant to initiate a Tree Inventory and Management Plan, awarded through Tennessee Tech University; and
- 2007 \$4,500 UCF grant request to continue tree inventory, implement management plan and contrast urban forester services. (Not Funded).
- 2007- \$4,945 Community Enhancement Grant request to replace 33 trees from previous grants and 10 new trees in Centennial Park. (Not Funded).
- 2008-\$5,000 TAEP Community Tree Planting Program request to provide trees to six, new soccer fields and replace trees at a city-owned campground damaged in a tornado
- 2009-\$3,000 UCF grant request to continue tree inventory and implementation of management plan
- 2009-\$3,880 TAEP Community Enhancement grant request for replacement trees
- 2011-\$1,500 UCF grant for educational brochures
- 2012-\$3,000 UCF grant to update management plan

4. Urban Forestry Development

The urban forest of Crossville consists of all the trees in the city limits, including those on private and commercial properties, parking strips, vacant lots, and public parks/open spaces and public/civic properties, but the Ordinance affects only public/civic trees. Until this project initiated there was no inventory system in use and no forestry plan beyond the basics of street clean up of storm damage and residential debris.

In December 2005 the TB contracted a Certified Arborist to obtain training at the inaugural Municipal Forestry Institute sponsored by the Society of Municipal Arborists. In exchange, he prepared a grant application to initiate a Tree Inventory Program and write this Management Plan, which was approved in 2006 and funded through Tennessee Tech University beginning January 2007 and updated in 2010 and 2012. These two features plus the Tree Board and tree ordinance allowed the City to be classified as a Managing Program by the State Division of Forestry. The City now has an International Society of Arboriculture Certified Arborist on staff. This is a great benefit to the Tree Board and the City overall.

The city has been working to plant trees along all four-lane streets: 1) Highway 127 from I-40 into downtown; 2) Miller Bypass (SR 392) along Cumberland County High School and Martin Elementary School, and 3) Industrial Drive in the Centennial Park vicinity. Existing trees have been inventoried and evaluated for condition and maintenance needs.

5. Tree Inventory

The City of Crossville's Engineering Department in cooperation with the TB and urban forester conducted an inaugural 2007 tree inventory of the TB plantings. These trees are prominently located along arterial streets in the city. The inventory is part of the effort to create this MP, and is designed to be immediately useful in tree maintenance.

The TB has been instrumental in planting over 400 trees inside the city limits and a database of the trees was necessary. The inventory uses Global Position System (GPS) coordinates for each tree and a digital photo, with data including species, size (diameter at breast height, spread and height), condition rating and reasons, and appropriate maintenance needs. This information helps assess the health of the tree, and has identified trees needing replacement or being hazardous. It also identified possible sites for new trees.

The information was imported into ARCGIS, a computer-mapping program used for capturing, managing, analyzing and displaying all forms of geographically referenced information. This software was recently purchased for this project. With GIS (global information system) each tree is spatially represented as a point on a map with all data tied to that point. When a point is selected, the feature information is displayed. These locations include existing trees, trees needing replacement, and areas suitable for future trees.

The inaugural 2007 inventory includes 524 trees, most of which have been planted by the efforts of the TB along Main Street (Highway 127) and the Bypass (Rte 392). Trees from County Square, Memorial Park and the City Hall vicinity, the new trees planted in Centennial Park this year, and some trees that were creating problems at City Lake Park are included. The inventory has identified more than 50 different tree species, but the number and variety of species can and should be increased.

The Tree Inventory Sheets are incorporated into this MP as Addendum Item 5.

Status and Goals

The primary goal of a well-developed municipal forestry program is to provide the residents of the community a healthy, safe and pleasant canopy of trees to improve livability and enhance the environment. This environment includes all property within the city limits, but especially street trees, the green spaces in the parks, municipal cemetery and golf courses; arboretum and conservation lands; and other public lands. This Urban Forestry Management Plan (MP) has no jurisdiction over private land, but includes in its considerations the education and involvement of the community to ensure that private land also meets the criteria of a healthy, safe and pleasant environment. This education focuses on stewardship of our urban forest.

Mission & Strategic Goals of Urban Forestry Programming

The Mission of the Urban Forestry Program is to improve community livability with a diversity of trees maintained in healthy condition with professional tree maintenance. The Vision of the TB is to become the hallmark Urban Forestry Program in the Upper Cumberland.

The goals of the MP include:

- Maintain National Arbor Day Foundation status as Tree City USA
- Maintain National Arbor Day Foundation activities for Growth Award status
- Develop and keep current the street and park tree inventories
- Develop and implement a comprehensive tree inspection and maintenance program
- Educate the community, city staff and public officials about the values trees provide
- Report on Urban Forestry activities regularly to City Manager and City Council
- Encourage and assist Volunteer Electric Cooperative to attain Tree Line USA status
- Report to City Officials on May 1, annually, see enclosed example

Tree Board Recommendations

Using the inventory data collected and employing standard urban forestry principles, the Tree Board developed a strategy for improving the quality, size and diversity of Crossville's urban forest. This strategy is included in the following recommendations:

1. Develop a clear hazard tree mitigation policy

There are a number of potential hazard trees in Crossville. Hazard mitigation should guarantee the timely removal of hazardous or potentially hazardous trees, as well as heighten staff and public awareness of hazard abatement procedures. This is critical for the maintenance of safe

public areas, and would significantly reduce the number of potentially hazardous trees and the liability associated with them. The removal of dead and declining hazardous trees also provides room for new diverse plantings that will increase the overall health of the urban forest. Additionally, spending on the maintenance of healthy trees is far more efficient, effective and responsible than the maintenance of dead and declining trees.

A Hazard Tree Evaluation Form to consider is incorporated in this MP as Addendum Item 7.

2. Develop a cyclic pruning program

A regular pruning cycle is a critical component of an effective MP. The recommended pruning cycle should be a five or seven year rotation. Crossville would benefit from an ongoing cyclic maintenance program by:

- Guaranteeing every public tree in the plan is regularly reviewed by staff and contractors.
- Shifting from reactive to proactive urban forestry management.
- Improving the condition of a large number of trees.
- Raising the overall value of city trees due to demonstrating “reasonable care” and proper (ANSI A300) standards in maintaining its urban forest.

3. Seek permanent funding to continue an aggressive tree planting program

The City should actively pursue tree planting as a major component of community enhancement, including neighborhood and citywide tree revitalization. The inventory has identified approximately 112 tree replacements and at least 57 available planting spaces on the current tree-lined City streets. The Tree Board’s goal is to have trees planted in all available sites adjacent to 4-lane streets.

This is an elusive goal due to development, budget constraints, maintenance costs, improper tree planting sites and unexpected tree mortality. It is important to plant incrementally on a regular basis to avoid creating an even-age stand of any species. The optimum distribution of any species in a population has the largest number of trees in the smallest diameter sizes. This allows the species to perpetuate itself for some time in the future as older trees mature and require replacement.

The challenge the City faces is how to permanently fund this expense, given available funds. The Division of Forestry Tree Planting grants are decreasing, thus other funding options must be determined. Until stable funding becomes available in the future, the schedule for planting and the approach to planting new trees will need to continue through other innovative sources.

4. Increase Urban Forestry education and outreach

a. Community

The urban forest program must be linked to the community, because their collective decisions have a cumulative impact on the vitality of the urban forest. Educating and involving as much of the community as possible in enhancement and maintenance increases community awareness of the benefits of trees while encouraging the urban forests’ long-term health and growth. This recommendation includes working with appropriate city staff, licensed developers, and local realtors, landscapers, and nurseries to help promote and educate the public on tree planting and proper maintenance.

- Expand and strengthen partnerships between departments and with the county
- Continue Arbor Day celebration and tree distribution projects.
- Offer an annual symposium to promote proper tree care, including planting and maintenance.
- Expand education opportunities that promote the value of trees to the community.
- Plan and develop new programs to enlist volunteers to support tree projects.

b. City Staff

Staff requires the expertise and information to make informed decisions in the field and provide information requested by the public. Appropriate training in conflict resolution / mediation and risk management can minimize problems which arise if an individual objects to the enforcement of policies regarding tree removal or pruning. An interoffice policy is incorporated for consideration into this MP as Addendum Item 2.

c. Public Officials

Public officials must understand, support and encourage the value of trees provide to community livability and sustainability, but their priority is often public safety and services. The goal of a municipal tree-risk-reduction program is to minimize potential hazards for all users of public space where street and park trees are located. Elected officials have the responsibility of approving policies that guarantee the safety of our public rights-of-way. This becomes sensitive when it involves tree removals, and is difficult to enforce.

5. Maintain Tree City USA, earn Growth Awards

Tree City USA is a national award program recognizing communities that achieve a certain level of urban forestry management. Tree City USA status is often a requirement for being awarded state and federal urban forestry assistance grants. There are four criteria for receiving Tree City USA status:

- Have an urban forestry advisory committee (Crossville Tree Board).
- Have a tree ordinance in place.
- Hold an annual Arbor Day celebration.
- Spend a minimum of two dollars per year per capita on urban forestry.

The City and TB should strive to continue earning recognition annually through the Growth Award program that recognizes even higher levels of community tree care programs;

Total expenditures on projects and activities need to be increased yearly for Growth Awards.

6. Ensure cooperation of all city departments

Activities by City departments like Public Works, Planning, and Engineering have a great effect on the urban forest. An interdisciplinary approach to management is necessary to preempt complications and allow for mitigation of negative impacts before they occur. This will ensure that the overall health and condition of the urban forest is not compromised and service to the public is maximized.

A temporary objective is that the responsibility of Parks & Recreation with respect to Centennial Park trees needs clarification. The assignment of a city liaison and secretary to the Tree Board is an excellent initiation.

7. Promote urban forestry planning in new developments

The Tree Board recommends the development and implementation of Landscape & Parking Lot Ordinances. Planners and developers of new subdivisions should be urged to adhere to ‘Green Print’, ‘Green Building’ and sustainable building practices, including acceptable tree species lists, and to vary plantings to coordinate with the Tree Board to ensure species diversity. All departmental staff, but especially Engineering and Planning staff and the Tree Board will need to continue working together to improve existing requirements for developers to include tree preservation, tree protection and tree selection and planting specifications to ensure sustainability.

The TB recommends purchasing copies of Chattanooga’s Tree Protection BMP’s During Construction booklet to distribute to appropriate city staff, developers and contractors. A comprehensive “crosswalk” of the ordinance is incorporated for consideration into this MP as Addendum Item 1.

8. Problems and prospects for Crossville's urban forest

The two most evident problems actually affecting trees in the city are: 1) improper mulching around most young trees and some of the older ones, and most evident is 2) tree topping under the power lines by the local electric company and in residential yards. The tree board has had articles in the paper and distributed reprints on the proper way to prune, but much more has to be done to educate the home owners and tree service companies. The electric company needs encouragement to accept suggestions and training from the TB on their methods of clearing under the power lines.

Even with its accomplishments, development of suitable funds to accomplish the previous objectives of the TB has been intermittent and only partly successful. The goals and recommendations stated in this MP will require more funds and hard working individuals to be accomplished in a timely fashion. The City Council has been responsive to irregular requests for funds for special projects, but a permanent fund allocation would be more appropriate. These MP recommendations will also require the understanding and cooperation of city staff and related departments to be enacted.

The County has responsibility for trees on its properties, and is not included in the planning, policies, procedures and operation of the TB or its projects. The TB should initiate communication and interaction concerning the maintenance of trees on county properties within city limits.

The TB has the respect of the City Council, the Mayor and the City Manager. Most of the developers know that they are expected to inform and involve the TB about construction and development projects that will affect trees on city property. In 2007, precedent was set to allow cutting of Main Street trees due to a sign conflict. An acceptable planning & development statement is needed to inform current and potential businesses that the City has designated certain thoroughfares for tree plantings, and respects its trees.

The Tree Board recommends that all new commercial construction be expected to account for existing trees and their growth. Thus, business signage and utilities must account for existing trees, not vice versa. A representative policy concerning preservation of specimen or heritage trees is suggested.

Lack of a permanent staff responsible for Urban Forestry programming is a serious impediment to attaining the recommendations of this MP. The City should facilitate a staff position and allot funds to hire a person to be responsible for implementing this MP. When city staff positions come open, job descriptions should include expectation for understanding and experience with urban forestry and Green City programming.

The following items are important to approach solutions to the problems and attain the prospects and recommendations:

- A funding plan needs to be available for the purchase of replacement trees when trees are removed from tree planting strips.
- A funding plan needs to be available for providing urban forester services, either permanent full or part-time positions, and to continue part-time contractual services of the current urban forester on retainer until such time as an Urban Forester position is established.
- Suggestions for appropriate species of tree should be made available to anyone replacing or planting new trees.
- Topping of trees, although common, is known to be destructive to trees, shortening their lifespan and creating hazard liabilities. The Tree Board recommends that topping should be outlawed in the city limits, on both public and private trees. Outlawing topping on private trees is required on behalf of community attractiveness, and the liability threat associated with topped trees. Public education is needed to implement an "anti-topping" campaign.

- The relationship with VEC utility service must be developed. The goal of developing the city tree canopy must be communicated to the utility, and training of pruning crews will be required. Current trimming practices are ruining the canopy possibility in many areas of the city. The city and utility must develop compatible tree removal and replacement policies.
- Any new housing, business or public building should be landscaped with large-growing trees where possible. It should be the goal that all properties have trees. Incentives could be developed to encourage this goal.
- It is hoped that citizens in both residential and commercial areas will become more aware of the positive impact of trees on the appearance of an area and their value in keeping a house or business cooler in hot summer months.
- Residents and businesses need to be made aware of proper maintenance of trees through watering and pruning. Just planting trees is not enough; they must be nurtured to assure sustainability.
- The city and county need to develop compatible tree removal and replacement policies. County areas adjacent to the city need to have similar policies in effect for the overall appearance of those areas, as well as for the preservation of the urban forest.
- Our city parks have inadequate funding for tree maintenance. New funding sources need to be developed.
- The City needs to employ or continue to retain a certified arborist to implement these Urban Forest Management Plan findings and recommendations.

Program and Policy Recommendations

This section of the MP details a set of goals for continuing an urban forestry program.

1. Maintain, Preserve, Conserve and Improve Existing Tree Canopy in Crossville.
 - Maintain the current tree inventory and address the suggested maintenance tasks, as practical.
 - Expand inventory annually, eventually to include all trees on all public lands.
 - Develop maps that clearly identify all public jurisdictional urban forest areas.
 - Promote tree spacing in parking lots to achieve a 20% canopy at tree maturity.
 - Due to the loss of urban canopy resulting from utility line conflicts, the City needs to formulate policies that will promote expanding the canopy through tree longevity and large species plantings.
 - After approval, review and revise the Urban Forestry Management Plan every five years.
 - Remove trees only in accordance with objective tree-removal criteria, and by following a clear process of evaluation, consultation and public notice.
 - Develop municipal contract specifications to ensure only Certified Arborists are use to prescribe tree work, and to supervise all bids and contracted work.
 - Require tree care contractors to be duly qualified according to ISA standards, and enforce ANSI Z133.1 Safety Standards and A300 Pruning Standards.
 - Assure a diversity of tree species and age.
 - Formulate hazard tree mitigation policies.
 - Set priorities for cyclic pruning.
 - Establish a no net loss street and park tree policy for all public agencies.
2. Maintain Tree City USA status, continue to earn Growth Awards, expand funding options
 - Meet required standards and criteria for consideration.
 - Continue to seek sufficient and ongoing funding.

3. Identify, preserve and protect native, significant and historical trees
 - Establish a Specimen (>12” dbh) and Legacy (>30” dbh) Tree designation.
 - Plant potential trees or groves to attain significant historical and aesthetic value.
 - Promote memorial and honorary tree groves.
4. Coordinate construction activities related to trees with the Urban Forestry Program
 - Enforce the current Tree and Woody Vegetation Ordinance.
 - Communicate with and encourage developers to conserve as many trees as possible on new developments.
 - Develop appropriate suggestions for Landscaping and Parking Lot requirements for new business developments.
 - Inform developers about the species of trees best suited to their site.
 - Coordinate with Planning and Codes staff to review existing and proposed new regulations for landscaping and tree plantings.
5. Review the MP annually, and update as appropriate to track progress and implementation.

Maintenance Recommendations

Introduction

Trees should be a major component of Crossville’s infrastructure, as they are critical to urban ecosystems. Good urban forestry management involves setting goals and objectives and developing specific management strategies.

Fundamental to a community forestry program is the inventory. The inventory can be an effective, efficient management tool, supplying the TB with data tables and summaries to be used for planting, maintenance and removal schedules; service requests, budgeting, project bidding, and contract reports; and establishing a systematic maintenance program.

The management and maintenance recommendations are based on the current inventory data collected, and will include subsequent updated information.

1. Urban Forestry Funding Program

- The conditions of the inventoried trees range from 12 excellent to 12 dead, and approximately 20% are below fair condition.
- Develop budget for Urban Forestry: Community trees should be maintained as a community asset with funding directly from the City’s general fund. The criteria for remaining a Tree City USA require the City spend a minimum of \$2 per capita per tree. This amount can include volunteer and in-kind labor and donations. The City budget format does not currently include a separate budget line item for urban forestry or tree maintenance funding as part of any Department budget.
- Tree maintenance funding should eventually become separate budget line items in the appropriate department. This will enable the department to identify dollars spent per capita and the amount of general fund expenditures invested in our urban forest.

The annual “bubble” of financial commitment will need to initiate in the \$2000 range until such time as all the street and park/cemetery trees have been pruned of dead and hazardous limbs, and any trees designated as ‘hazardous’ have been removed. Once the “bubble” of tree maintenance is addressed, a cyclic pruning schedule will need to be developed and funded if Crossville is going to protect its urban forest.

- Utilize waste wood: The City should provide opportunities to avoid taking waste wood to the landfill. A partnership with public works might implement batch grinding to create wood chips for public mulch in parks and playgrounds.
- Promote monetary value of the urban forest: Trees are the sole infrastructure component of the City that increases in value with age. Proper care and maintenance of existing trees increases the appraised value of our urban forest. The selection of high quality species plays a critical role in increasing the monetary value of an urban forest.

A brief listing of tree benefits includes: Value of Shade (heat island effect, HVAC cost reduction, comfortable parking); Air Quality Abatement (Carbon sequestration and air purification); Storm Water Mitigation (erosion prevention, runoff reduction); Business Income (comfortable parking, shopper loitering, tourism); Aesthetics (attractive gateways, sound/sight barrier). All of these attribute to Community Livability.

2. Risk Management Program and Reduction of High-Risk Trees

A top management priority for City is the implementation of a risk assessment program and the reduction of high-risk trees on the public rights of ways and in parks. Such a program establishes strategies for continually evaluating and monitoring trees that pose risk and defines what level of care is reasonable. It will increase the safety of the public rights of way through mitigation of potential problems. The program will identify high-risk trees, initiate their timely removal, and heighten general awareness of the care required by our urban forest.

Mitigation of high-risk trees is accomplished by regular inspections of street, park, cemetery, and golf course trees to identify structural faults and defects, and coordinate their timely removal. Cyclic pruning and progressive planting programs are also important components of a risk management program. The primary focus of establishing a strong risk management program is demonstrating “reasonable care” for public safety.

- Minimize number of poor quality species. A focus of the risk management program is to gradually replace inappropriate or poor quality trees. A tree may be considered “poor” for a variety of reasons: growth characteristics, life span; failure patterns; poor form; forked trunk; and susceptibility to disease, insects and decay. If several of these features are present, the tree may be considered a maintenance and hazard liability.
- These species should not be planted along public right of ways because as they mature there is a high-risk of structural failure associated with them. A risk-reduction program is not just the removal of trees that are in imminent threat of falling, but the removal of high risk trees before they become a problem. By removing these trees when the opportunity arises, the City effectively reduces risks. In cases of historical value, funding for mitigating arboricultural techniques may be implemented, such as renovation pruning with bracing or cabling.
- Recognize high risk tree characteristics: A high-risk tree is any tree or tree part that demonstrates a high risk of failure or fractures that would result in damage or injury to persons or property. The level of risk present is determined from an assessment by the urban forester.

One task is to anticipate tree failures before they occur. There are no absolutes in determining hazards - only professional judgment based on experience recognizing structurally unsound trees. The hazard tree appraisal guide (See Addendum Item 7) will be the assessment that the City will use to evaluate street and park trees.

- Implement a risk assessment program: To reduce liability, the City will need to carry out a regular program of monitoring potentially high-risk trees. The City must identify areas that will be more of a problem in years to come, and locate the most problematic trees. By

reviewing the inventory data on a section-by-section basis for each of the high-risk species, it is possible to target areas that may need more attention than others.

- Educate City staff and public officials to enhance collaboration: in order to make good risk management decisions, staff and public officials must be kept informed on the topic. The general public must also be made aware of risk management policies.

3. Community Outreach and Education

Community at Large:

- Develop educational materials for local realtors, landscapers and nurseries to provide to their clients on how to select the correct tree for the planting area, correct pruning methods, and street tree regulations to help promote and educate the public. An annual symposium is suggested.
- The possibility of cooperation with Volunteer Electric Cooperative should be pursued. VEC should be encouraged to initiate working with the City to educate citizens on planting the right tree in the right place.
- Develop a portable educational display for groups to present at large special events.
- Consider a tree steward training program for maintaining young trees.

Encourage staff training in the following areas:

- Communication and listening skills, conflict resolution and negotiations.
- Tree risk management.
- Circulation of current trade and professional journals to appropriate staff.
- Use of the tree inventory software to facilitate management of the urban forest.
- Ongoing field training for operations staff.

Public Officials:

- Encourage elected and appointed officials to attend annual Urban Forestry programs.
- Develop private and permanent funding to support such training.

4. Cyclic Pruning Program (a proactive approach, not reactive)

It is recommended the City maintain a 5- to 7-year cyclic pruning program. Pruning to rid trees of dead, damaged, deformed, dying or diseased wood not only improves the appearance, but also prolongs the life of trees and reduces replacement costs. The benefits of cyclic pruning are:

- Every street and park tree is inspected regularly.
- Condition ratings of City trees will be upgraded simply by pruning street and park trees.
- Service requests, storm damage repairs, personnel risk and program costs will be reduced.
- The economic value of the urban forest will rise. Time and cost to maintain trees will decline.
- Avoid appearance of negligence in court by demonstrating “reasonable care” in maintaining city trees.

5. Planting Program

The key to maintaining a healthy, sustainable urban forest is the implementation of regular, annual tree plantings, regardless of grant money or catastrophic events. Consistent annual additions of trees to the urban forests are important in order to maintain a perpetual canopy. It is imperative that to improve the planting program, the City must make tree plantings a major component of residential and business development and citywide revitalization.

The TB will evaluate inventory data to determine a street tree stocking level to attain within the next ten to fifteen years, and will suggest the annual tree planting rate to meet that goal.

- Locate planting sites: The 2007 tree inventory identified 112 trees needing replacement, and designated sites missing 57 trees. The inventory will continue to be updated as trees are removed and/or planted.
- Choose from recommended street trees: The City should emphasize trees listed as native and appropriate for this area. The list should be divided into four size categories based on planting strip width and overhead power lines or obstacles. Business sign conflicts should be considered to the benefit of trees, but not without regard for business aspects of placements. In landscaped areas such as parks or City entrances, large group plantings can be incorporated. Conifers and ornamental shrubs should be considered subject to view and sight requirements. A Street Trees List is incorporated for consideration into this MP as Addendum Item 4.
- Avoid some species: A number of species should be avoided when selecting street trees. The primary reasons for avoiding these species are they have a high maintenance cost; high storm damage potential, and a high hazard potential. These species are an economic and hazard liability to the City (See Appendices).
- Monitor urban forest: the first step toward diversifying the composition of an urban forest is to monitor the number of trees within each species. The tree inventory is the main tool to track this information. When population imbalance occurs, a strategy should be devised to correct it by planting diverse species. Over-present species should be planted sparingly. As a general rule, any given species should represent no more than eight percent of the total population. Diversity should be monitored for the City in general and for neighborhoods.
- Plant compatible species: Some urban planners and landscape professionals argue in favor of monoculture to achieve a more uniform and organized streetscape. In some degree this may be allowed, taking total City diversity into consideration. The municipal arborist may create more even appearances without compromising diversity, by selecting a variety of species that have similar forms. When selecting trees for their visual effect, one must consider the size, texture, form and coloring.
- Recognize longevity and maintenance requirements: All trees have a ‘useful’ life expectancy. After a certain age, all trees exhibit signs of decline. As the trees get older and their potential hazards increase, the cost of maintaining them becomes prohibitive.

Multiple-aged stands are more desirable because they will disperse maintenance costs. A relatively predictable distribution of maintenance expenses each year helps make the annual cost of managing the forest attainable, and simplifies the budgeting process.

A tree’s life expectancy is a function of age, tree care, size, and species. A common misconception is that a tree of a certain species with a 30-inch diameter is approximately the same age as any other 30-inch diameter tree. But an oak of one size may be three times older than a maple of the same size. Willows, box elders and silver maples have fast growth rates and get large and dangerous in shorter periods. Age is not the most primary factor when determining hazard potential.

Slower-growing, but longer-lived trees are important in minimizing maintenance costs because the most costly and time-intensive tree work is removal. Planting longer-lived trees reduces costs and liabilities for the future, and these trees usually require less pruning over their lifetimes. Slower growing trees are generally better quality trees.
- Mitigate tree-sidewalk and tree-business sign conflicts: The best way to resolve this issue in the future is to avoid such conflicts by selecting the right tree for the planting site, or to prepare larger planting root zones prior to applying final surfaces. Space for tree planting and root zones must be addressed during the plan review stage just like streets and sewers, lighting and utilities.

Creative design along with proper tree species selection can often resolve conflict between street trees and developments. Where existing trees are within the development area of a sidewalk the design of a serpentine sidewalk can provide adequate tree spacing that will not impact the health of the tree and still allow transport.

Addendum Items

Ordinance/Crosswalk of Ordinance

Interoffice Policy

Example of Annual Report

Species Diversity Table

Tree Data Form

Examples of Trees for Middle Tennessee

Hazard Tree Assessment