

TREES

ATLANTA

Search

About Us
 staff
 jobs
 mission
 accomplishments
 sponsors

Benefits
 facts
 health
 heat islands
 quotes
 urban forests
 champion trees

Donate
 memorial card
 honorarium card
 holiday
 sponsors
 membership
 merchandise

Planting
 volunteer
 12 steps to planting
 purchase
 suppliers
 neighborwoods

Protect
 ordinances
 contacts
 in your yard
 storms
 elections
 construction
 drought
 arborist
 vines

Resources
 links
 newsletter

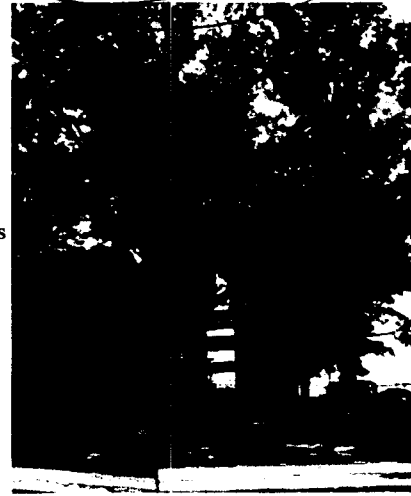
Urban Forestry

The goal of the model urban forest is to enlarge and improve the urban tree canopy to obtain the economic, ecological, and social benefits of trees.

Existing Development Model	Urban Forest Model
Trees have low priority	Trees have equal priority
Trees as ornament	Trees as infrastructure
Individual Trees	Forest
Small and ornamental trees	Large Canopy Trees
Lawn and Paving	Vegative ground cover
Tree maintenance	Forest management
Aesthetics-based design	Soil/Ecological-based design

Principals to Improve the Urban Forest

1. Preserve existing trees and forest
2. Increase space for tree planting
3. Preserve and improve the quality of the tree growing environment
4. Select trees for diversity and suitability.
5. Select efficient planting locations
6. Manage the urban forest as a continuous resource regardless of ownership boundaries



All information above and much more is published in *Georgia Model Urban Forest Book* by the Georgia Forestry Commission. This excellent 80 page document can be accessed at the Georgia Forestry Commission's Web Site at www.gfc.state.ga.us. It is well worth the read if you have any interest in Urban Forestry.

www.treesatlanta.org/urbanforestry-h5m1

Search

About Us
staff
jobs
mission
accomplishments
sponsors

Benefits
facts
health
heat islands
quotes
urban forests
champion trees

Donate
memorial card
honorarium card
holiday
sponsors
membership
merchandise

Planting
volunteer
12 steps to planting
purchase
suppliers
neighborhoods

Protect
ordinances
contacts
in your yard
storms
elections
construction
drought
arborist
vines

Resources
links
newsletter

Facts

- Trees help us breathe by taking carbon dioxide out of the air and producing oxygen. Carbon dioxide, produced from burning fossil fuels, is the greenhouse gas most blamed for trapping heat in the atmosphere and linked to global climate change. One acre of trees produces enough oxygen for 18 people to breathe each day and eliminates as much carbon dioxide from the air as is produced from driving a car 26,000 miles.
- Tree leaves help trap and remove tiny particles of soot and dust which otherwise damages human lungs.
- Tree root networks filter contaminants in soils producing clean water.
- Trees prevent erosion by trapping soil that would otherwise become silt. Silt destroys fish eggs and other aquatic wildlife and makes rivers and streams shallower, causing more frequent and more severe flooding. Trees along streams also hold stream banks in place to protect against flooding.
- In the Chamblee area, the loss of 44% of its tree cover has resulted in storm water runoff problems costing \$129 million.
- To meet state sewer standards, the City of Atlanta is spending \$240 million to counter effects associated with the loss of tree canopy.
- By creating shade, trees moderate temperatures both globally and in the micro-climates of cities and counties.
- Tree loss in Atlanta and neighboring counties has resulted in urban "heat islands" with temperatures 3-10 degrees above the surrounding countryside. The hot weather dome over the Atlanta area has changed local weather patterns including reducing rain in some areas and increasing the intensity of thunderstorms in others.
- "Heat islands," created by tree loss, also exponentially increase air pollutants. When pollutant chemicals are superheated by high air temperatures, they become more volatile and interact with each other to create ground level ozone which would not happen at lower temperatures. That is why Atlanta's most dangerous levels of air pollution occur in the summer.
- Planting 30 trees each year offsets greenhouse gases from your car and home.
- Three trees located strategically around your house can cut air conditioning bills in half. On a larger scale, the cooling effects of trees can save millions of energy dollars.
- Trees create a sense of privacy in urban environments.
- Trees create buffers to reduce noise.
- The presence of trees in urban neighborhoods has been linked to less crime.
- Almost all woodpeckers can dig out holes for nests only in standing dead trees or the dead stubs on live trees and many other wildlife species depend on dead wood for nesting.
- Dead and decaying trees on the ground replenish soils by returning important nutrients, and provide food resources for many types of wildlife.
- Trees provide substances with medicinal values such as the active ingredients used in asthma medications and cough remedies. Aspirin is derived from the bark of a willow tree.
- Trees provide green scenery that has been shown to speed up patient recovery in hospitals and reduce stress.
- Property values of homes with trees in the landscape are 5 - 20% higher than equivalent properties without trees.
- 60% of Atlanta's natural tree cover has been removed over the last 20 years.
- Metro Atlanta is losing trees at the rate of 50 acres a day according to NASA.
- The "State of Our Urban Forests" study recommended that healthy cities aim for a 40% tree cover (equivalent of 20 large trees per acre) to ensure their ecological, economic, and social sustainability.
- Atlanta has an average tree cover of 27%, Boston has tree cover of 21.2, Austin 34%, Baltimore 31%, Milwaukee 18%, Chicago 11 percent, and New York City has 16.6 percent.
- A recent survey by University of Georgia and Valdosta State University researchers shows that 85% percent of Georgians said they would approve some limitations on private property rights if they were necessary to protect the environment.

www.treesatlanta.org/facts.html

cTc

CITIZENS' TREE COALITION

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The Tree Ordinance doesn't make housing unaffordable
Developers argue that the Tree Ordinance increases housing costs, thereby prohibiting home ownership by low-income persons. Let's look at some actual numbers :

- Total costs for residential tree preservation are \$578 to \$991 per house. Tree preservation costs increase a homeowner's loan payments by only \$3.28 to \$5.63/month. By comparison, trees reduce average monthly air conditioning costs by \$5.91. In other words, tree preservation costs are more than offset by savings on utility bills.

Are tree preservation and low-income housing mutually exclusive?

- Consider the Arboretum Apartments at 8100 Huebner. This is a mixed income apartment with 40% of the units set aside with restricted rents. According to the developer, tree preservation costs were minimal. He said that "all it takes is creativity and imagination to preserve trees". During construction of the Arboretum, numerous trees between 12 & 16 ft height, were removed, maintained and replanted for \$100 each. They were all native trees. He said that the footprint on tight projects will require tree removal but that many can be replanted and footprints can be reconfigured to work around trees.
- Also, consider that Infill or re-development within the 1940 City boundaries (approximately that area inside Loop 410) is exempt from the tree ordinance.

Trees are valuable infrastructure, they save money

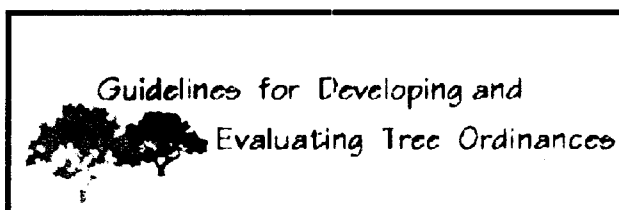
- One acre of trees is worth between \$9,300 and \$30,000 to our community, just in air pollution removal benefits. These benefits are primarily reduced respiratory health care costs.
- Trees reduce stormwater runoff thereby reducing taxpayer expenditures on stormwater detention facilities.
- In San Antonio, stormwater runoff is increased 146% or more by replacing trees and natural ground cover with impervious surfaces. Discharge is increased from 207 cubic feet/minute to 509 cubic feet/minute. Considering that San Antonio charges \$3,000/acre for connection to its regional stormwater system, the trees and grass are worth \$1,800/acre in stormwater runoff reduction. In Houston, where stormwater fees reimburse the City for its actual costs (\$10,000 acre), the trees are worth \$6,000/acre.
- In Houston, trees provide \$1,330,000,000 worth of stormwater management, down from \$1,560,000,000 in 1972 because of deforestation.³
- In Houston, trees remove 83,000,000 pounds of pollutants from the air each year, equivalent to a \$208,000,000 yearly benefit to society.³ This is down from \$247,000,000/year in 1972 because of deforestation. Considering that San Antonio is close to non-attainment of ozone standards, we should carefully weigh the costs of tree destruction to our residents.
- Ultramar Diamond Shamrock saves \$8,000/month in landscaping maintenance at their corporate headquarters on 1604. Saving trees and native vegetation saves \$\$\$ in other ways too:
- Preserved trees don't require two years of watering like newly planted trees do.
- According to homebuilder Gordon Hartmann, he saves money when he's not cutting trees and hauling away the remains.
- Costs of installing and maintaining new landscaping are reduced or eliminated by preservation
- Studies done in Massachusetts and Georgia found that the extra costs incurred by builders to preserve trees were always recovered, according to their own testimony. Studies by the USDA Forest Service show that healthy, mature trees add an average of 10% to a property's value. Green infrastructure on commercial developments increases return-on-investment, increases the long-term value of the project and gives a competitive edge in obtaining tenants and buyers.
- Research indicates that most U.S. communities should strive for an overall tree canopy coverage of 40% (30% in the arid Southwest) to ensure a healthy ecosystem and quality of life. While local conditions vary, researchers recommend achieving the 40% average with: 15% coverage in downtown and industrial areas, 25% in urban residential and light commercial areas, and 50% in suburban residential areas.

Footprint, right of way exclusions encourage tree destruction

These exclusions remove any incentive for developers to design around existing trees.

- The new McDonald's on Bandera is a perfect example... their building was easily reconfigured to save the giant 47 inch heritage oak, but only after the neighbors rose up in outrage. If the current

[Next>](#)



Guidelines for Developing and Evaluating Tree Ordinances

<http://www.isa-arbor.com/tree-ord/>

PDF version Oct 31, 2001

Site Map

Major funding for this web site is provided by the USDA Forest Service through the National Urban and Community Forestry Advisory Council and the International Society of Arboriculture.

About this site

How to use this site

Part 1. Planning for an ordinance

- [Types of ordinances](#)
- [Effectiveness of existing ordinances](#)
- [Developing a community forest management strategy](#)
 - [How to develop a management strategy](#)
 - [What do you have?](#)
 - Step A. Assess the tree resource
 - Step B. Review tree management practices
 - [What do you want?](#)
 - Step C. Identify needs
 - Step D. Establish goals
 - [How do you get what you want?](#)
 - Step E. Select tools and formulate the management strategy
 - Step F. Implement the management strategy
 - [Are you getting what you want?](#)
 - Step G. Evaluate and revise
- [Goals for community forest programs](#)

Part 2. Drafting an ordinance

- Basic ordinance provisions
- Ordinance provisions for specific goals
- View or solar access ordinance provisions

Part 3. Evaluating the urban forest and ordinance performance

Methods for evaluating tree ordinances and the urban forest ecosystem

- Sampling from populations
 - Statistical bias
 - Random sampling and random numbers
 - Stratified sampling
 - Sample size
 - Links to sample size calculators
- Photogrammetry and remote sensing techniques
 - Uses
 - Materials needed
 - Notes
 - Sampling considerations for photogrammetry
 - Estimating tree canopy cover from aerial images
 - Visual (ocular) method for estimating canopy cover
 - Dot grid method of canopy estimation
 - Determining sample size for dot grid estimates
 - Evaluation example: *Overall canopy estimates in permanent plots*
 - Line intercept or transect method
 - Digital image analysis methods
 - Comparison of image analysis and dot grids for calculating tree canopy cover
 - Other resources
- Ground survey
 - Uses
 - Materials needed
 - Notes
 - Sampling considerations for ground surveys
 - The windshield survey
 - Evaluation example: *Windshield survey for tree topping incidence*
 - The foot survey
 - Tree size
 - Evaluation example: *Measurement of canopy cover at the edge of pavement*
 - Evaluation example: *Evaluating parking lot shading*
 - Simplified guide to measuring DBH!
 - Tree condition/health
 - Proximity to infrastructure and hardscape damage

- Rating scales
- Photo points
 - Uses
 - Materials needed
 - Notes
 - Ground level photo point
 - Aerial photo points
- Record keeping and analysis
 - Uses
 - Materials needed
 - Notes
 - Geographic Information Systems (GIS)
 - Evaluation example: *Creating a forest/tree GIS*
 - Evaluation example: *CITYgreen software for ArcView GIS*
 - Tree inventory systems
 - Additional resources
 - Evaluation example: *Street tree inventory as part of a citywide GIS*
 - Evaluation example: *Street tree management*
 - Inventorying regulated private trees
- Public polling
 - Uses
 - Materials needed
 - Notes
 - Interviews
 - Self-completed questionnaires
 - Survey design considerations
 - Sampling considerations for public polling
 - Evaluation example: *Homeowner attitudes toward trees*

Special Topics:

- Defining special trees: heritage, historic, and landmark trees
- Definitions: Tree banks and tree banking
- Concepts: Mitigating for tree loss

Literature Cited

Additional References

- General
- Dot grid estimation
- Public Polling

(c) The director shall condition any permit granted pursuant to this section for the removal of a city street tree, on the permittee removing, and where the director determines to it be appropriate, replacing the tree. In such case, the full cost of removal and replacement shall be borne by the owner and such service shall not be provided by the city.

(d) The director may condition any permit granted pursuant to this section on any such conditions as the director determines to be necessary.

(e) The provisions of Sec. 45.12 shall be complied with whenever a property owner seeks a permit to remove or trim a city street tree to facilitate moving any building or other structure.

[Sacramento, CA: City Code Section 45.7]

As part of the procedure for granting tree removal permits, some communities require that a notice be posted or published in the newspaper.

The city shall post a sign notifying the public of the date and description of a proposed tree removal. The sign shall be posted in a prominent location, visible from a public street, for a period not less than five days before either staff consideration of a tree removal permit or a public hearing on a related development.

[San Luis Obispo, CA: Code Municipal Code Section 12.24.180F]

In some communities, local public utilities may be given a yearly permit that allows them to prune public street trees. In such cases, the local government should set minimum pruning standards and provide for inspection to enforce these standards.

When maintaining street trees, a public utility must observe good arboricultural practices, as specified by the International Society of Arboriculture Western Chapter Pruning Standards and the City of San Luis Obispo Safety Pruning Specifications.

[San Luis Obispo, CA: Municipal Code Section 12.24.140]

...Public utility companies subject to the jurisdiction of the California Public Utilities Commission may perform such pruning as is necessary to comply with the safety regulations of said commission and to maintain a safe operation of their facilities without a permit. However, they shall notify the planning department at least three working days (except in emergencies) prior to taking any action. The planning director shall cause such pruning work to be inspected, when appropriate, to insure that good pruning practices previously referenced are followed. The planning director shall have the authority to stop any tree-pruning performed by a utility if such practices are not being followed...

[Corte Madera, CA: City Code Section 15.50.040]

31. Permit required for activities that may damage protected private trees

Purpose: To protect designated individual trees on private property from indiscriminate removal and damage.

Key elements:

- Classes of trees protected
- Activities subject to regulation
- Criteria and standards for approving regulated activities
- Permit process, including requirements, fees, time limits, and appeals
- Conditions or compensation required to mitigate for adverse impacts
- Monitoring of protected trees and mitigation areas

Notes: This type of provision is typically known as a heritage or landmark tree protection provision. It is best suited to protecting conspicuous individual trees that are of unique historical, ecological, or aesthetic value, and therefore constitute an important community resource. A mature tree is a significant community resource that required many years to develop and can provide community benefits for generations, but can be destroyed in as little as a few minutes. This is the main reason that trees may be provided a higher level of legal protection than is usually afforded to other plants in the urban landscape.

Although trees can be long-lived, the life spans of individual trees are still limited, especially in the urban environment. Hence, this type of provision may not address the long-term sustainability of the urban forest. Furthermore, because of its focus on individual trees, this type of provision may not be appropriate or effective for protecting woodlands and forests. Woodland or forest conservation is addressed in provision 32 (Conservation of forest and woodland resources during development).

Provisions that regulate private trees are unlikely to be effective without community support. Unless residents strongly support tree protection, it is probably advisable to link tree protection with some sort of benefit or incentive to balance the additional burden imposed by the provision. The local government might provide tree care assistance, consulting, reduce certain assessments, or institute a recognition program to provide a tangible benefit to owners of protected private trees. Education and incentive programs are needed to ensure that protected trees are seen as an asset rather than a liability.

If your community is interested in preserving native trees, you may want to consider options beyond limiting tree removal on private property. For example, you might consider a policy which calls for planting native trees in public places (see provisions: 7 - Policies regarding trees, 24 - Permit required for planting trees in the public right-of-way, and 25 - Planting requirements).

Classes of trees protected. Private tree protection regulations are commonly directed toward desirable, long-lived locally native trees and/or trees of historical significance. Most commonly, protected trees are designated by species, size, and/or location, although other criteria may also be used (see Defining special trees: heritage, historic, and landmark trees). These criteria should take into account differences between species and the influence of local environmental conditions on tree growth rates.

One disadvantage of using a size criterion is that some property owners may elect to remove trees before they grow large enough to come under the protection of the ordinance. This is obviously a counterproductive situation, since it has the effect of destroying future tree resources. Unfortunately, this behavior has been observed in various communities. If the goal of the community is to protect woodlands or forests, rather than individual trees, a forest/woodland protection provision (see provision 32) may be more appropriate. In some communities, both types of provisions may be needed to address the range of situations involved. If both individual tree and woodland protection provisions are used in the same ordinance, ordinance language must

be clear as to which provision applies to a given tree or group of trees.

Some communities apply tree protection provisions only to commercial properties by exempting single-family residential parcels. This may greatly limit the impact of the provision because most of a community's trees are typically located on residential parcels. On the other hand, if tree loss and poor tree care in commercial districts are serious problems in a community, focusing the provision on those problem areas may be appropriate.

In the following example, the various classes of protected trees are clearly stated. Another example is included on the Defining special trees: heritage, historic, and landmark trees page. It is important to grant protected status to trees planted or retained in compliance with the ordinance to establish a basis for long-term protection of tree canopy.

The city hereby declares that the following are protected trees:

(1) Trees planted or retained to meet the Landscape Ordinance (Section 910) requirements;

(2) Wax Myrtles (Myrica cerifera) and Crape-Myrtles (Lagerstroemia indica) designated as "tree forms" or used to fulfill tree requirements on approved landscape plans or greater than 10 feet in height;

(3) Any tree over 3" caliper located on city-owned property including any public right-of-way;

(4) Any Sycamore (Plantanus occidentalis) and Sweet-Gum (Liquidambar styraciflua) with a 12" DBH or greater;

(5) Any Pine (Pinus) with a 18" dbh or greater (except Japanese Black Pine with a caliper of 2" or more);

(6) Indigenous trees, as defined in 903.3(12); and

(7) All other species of trees that are 5" or more in caliper.

[Myrtle Beach, SC: Municipal Code Section 903.5]

Especially in urbanized areas, established trees are commonly threatened whenever property ownership changes. New property owners often do not understand or appreciate how trees on the property function in the landscape. In their zeal to make their mark on their newly-acquired properties, new landowners may quickly remove or inappropriately prune trees, or undertake landscape renovation projects that seriously damage tree roots and lead to the decline of established trees. If trees on only a few parcels each year are impacted by zealous but uninformed new owners, the cumulative effect on the community's mature tree population can be substantial.

The tree protection provision could be used to help reduce unnecessary tree damage by new property owners. The ordinance could extend protected tree status to virtually all trees on a property that has just changed ownership for a limited period, preferably at least one full year. By living with a tree for a full year and seeing how it functions in the landscape, property owners can make better decisions about managing the trees that have been passed down to them by previous owners. Furthermore, establishing a temporary moratorium on tree removal and other damaging activities provides a window of time during which the local government or a community tree group could try to educate new owners about tree values and proper tree care.

Protected trees shall include...

All trees with a caliper of one inch or greater (measured 4.5 feet above grade) on properties for which a change in ownership has been recorded within the previous 15 months.

[Example code by the authors]

Many tree protection provisions also provide specific exceptions that are not covered by the ordinance, as in the following example.

b) Exemptions. A permit is not required to cut or remove a tree(s) under the following circumstances:

(1) Trees that do not exceed two inches (2") in diameter when measured at a point four and a half feet (4.5') above the tree's natural grade.

(2) Trees damaged by thunderstorms, windstorms, floods, earthquakes, fires or other natural disasters and determined to be dangerous by a peace officer, fireman, civil defense official or code enforcement officer in their official capacity. The Department of Planning and Community Development shall be promptly notified of the nature of the emergency and action taken.

(3) When removal is determined necessary by fire department personnel actively engaged in fighting a fire. (4) Trees planted, grown and/or held for sale as part of a licensed nursery business. This exemption is limited to trees with main trunks under ten inches (10") in diameter.

[Thousand Oaks, CA: Municipal Code Section 5-14.04]

A potentially adverse impact of a rigorous tree protection provision is that property owners may be discouraged from planting "temporary" trees for fear that they will later be restricted from removing these trees. "Temporary" trees may be used in the landscape for several legitimate reasons. For example, fast-growing, less desirable trees may be planted to provide shade or visual screening over the short term while more desirable, slower-growing "permanent" trees are developing. Also, areas may be overplanted to achieve more rapid screening or cover. Extra trees in such dense plantings often require thinning at some point to reduce competition between trees and promote good growth. In order to encourage tree planting on private property, it is reasonable to allow an owner to remove any tree on their property that they had planted of their own volition.

Any trees that exceed two inches in diameter when measured at a point four and a half feet above the tree's natural grade shall be exempt from the protection requirements of this ordinance (Section...) under the following circumstances:

(1) The property owner provides evidence acceptable to the Director that the tree has been planted by the owner during the period of his or her ownership of the property, and that the planting was not required by the city under Sections.... Evidence may consist of dated photographs, dated receipts, and/or other documentation acceptable to the Director. At the Director's discretion, the Director or authorized agent may inspect the tree to verify information provided by the property owner.

[Example text by the authors]

Activities subject to regulation. In many jurisdictions, protection of trees on private property is limited to situations involving development or construction on a parcel. In these situations, tree protection is tied to the issuance of construction-related permits, a process over which the local government can readily exercise some control. However, if protection is provided only during construction, long-term tree survival may not be guaranteed. In many instances, considerable efforts have been made to protect trees during the development process, including project redesign, only to have "protected" trees removed or seriously damaged by the subsequent property owner.

To avoid this pitfall, some communities extend protection generally to certain classes of trees whether or not construction permits are involved. In the following example, a permit is required to perform any activity that may damage protected trees. Relatively few local governments actually allocate the resources necessary to monitor and cite violators that illegally damage or remove trees on private properties. More commonly, such provisions rely on education of the public and are largely enforced on a complaint basis. Hence, such provisions normally require a high level of community support and voluntary compliance to be successful.

a) No person shall cut, remove, encroach in the protected zone, or relocate any oak tree on any public or private property within the City unless a valid oak tree permit has been issued by the City pursuant to the provisions of this chapter and the Oak Tree Preservation and Protection Guidelines. The status of limbs or trees as deadwood or dead trees must be confirmed by the City's Oak Tree Preservation Consultant.

[Thousand Oaks, CA: Municipal Code Section 5-14.04]

For the example above, the intended meanings of words such as "cut", "remove", "encroach", "protected zone" and "oak tree", should be defined in the definitions section (see [provision 4](#)). In this example, "cut" includes pruning. Poor pruning practices such as topping (a.k.a. "hatracking") may also be addressed in a separate provision (see [provision 23](#)).

Rather than requiring a permit for pruning, the city of Visalia, CA, requires filing of an "intent to prune notice". The purpose of this provision is to avert improper pruning of oak trees (see also [provision 22 - Help for citizens performing tree maintenance](#)):

Except in cases of emergencies as described in Section 2344, no person shall prune or cause to be pruned any Oak Tree limb of a diameter of 2" or greater within the City of Visalia without first submitting a completed Oak Tree Intent To Prune Notice with the Director, as provided herein.

[Visalia, CA: Ordinance Code Section 2345]

Criteria and standards for approving regulated activities. The criteria for approving tree removal or damage will vary somewhat between locations, due to the predominant tree species present or other site-specific details. The example below is typical of criteria used in many ordinances.

The intended decision of the Director shall be based upon reasonable standards, including, but not limited to, the following:

(a) The condition of the Oak Tree with respect to its general health, damage, status as a public nuisance, danger of falling, proximity to existing or proposed structures, interface with utility services, and its status as host for [parasitic] plant[s], pest[s], or disease[s] endangering other species of trees or plants with infection or infestations.

(b) The necessity of the requested action to allow construction of improvements or otherwise allow economic or other reasonable enjoyment of property.

(c) The topography of the land and the effect of the requested action on soil retention, water retention, and diversion or increased flow of surface water

(d) The number, species, size and location of existing trees in the area and the effect of the requested action on shade areas, air pollution, historic values, scenic beauty, and the general welfare of the City as a whole. (e) Good forestry practices such as, but not limited to, the number of healthy trees a given parcel of land will support.

[Visalia, CA: Ordinance Code Section 2342]

In the example above, the permitting authority essentially weighs various tree-related factors, such as tree health and growing conditions, potential hazard, and local environmental impacts, against the needs or desires of the property owner. Unfortunately, this can easily become a contest to see who has more clout - the property owner or the tree. More often than not, the tree loses the contest, largely because the tangible economic interests of the property owner (e.g., potential income, value of property improvements) are pitted against the less tangible and/or poorly quantified community-wide values provided by the tree (e.g., aesthetics, erosion protection, heat island mitigation).

Most heritage or landmark tree provisions set criteria for approving regulated activities such as tree removal, but few actually set minimum performance standards for approval. Although the criteria for approving regulated activities may be similar in many communities, appropriate performance standards will vary between jurisdictions. Standards should take into account factors such as the number and type of trees that are regulated by the ordinance, characteristics of the local community forest, and the amount of community

support for tree protection. The following example sets standards for disallowing tree removal, but the use of terms such as "substantially alter", "reasonable accommodations", and "significant adverse effect" are vague and subject to diverse interpretations. Explicit minimum standards (e.g., "loss of more than 2.5% in property values") would be preferable.

Removal of trees - Conditions and exceptions

(1) Tree removal shall be disallowed in the following circumstances:

(a) Soil erosion or runoff problems will result due to topography, soil type, or proximity to flood plain or river protection areas; and the removal will substantially alter the existing soils adversely with regard to runoff and erosion. Information submitted by the City Engineer or other environmental specialist may be used by the Arborist in his evaluation.

(b) Specimen trees are located on site and cannot be adequately protected or replaced. Additionally, removal may be disallowed if reasonable accommodations can be made to alter the proposed project to save specimen trees and have not been made.

(c) Property degradation – the removal will have a significant adverse effect on property values of any adjoining property. ...

(2) Exceptions. Tree removal from a site may be allowed if:

(a) The tree is located in an area where a structure or improvement will be placed and the tree cannot be relocated on the site because of age, type or size of tree.

(b) The tree is diseased or structurally unsound...

[Roswell, GA: Municipal code Article XIX, Section 1900.13]

Standards do not necessarily have to pose absolute limits on tree removal. They could serve to establish a set of thresholds; as each threshold is exceeded, permit requirements would become more stringent. A tiered system could provide an incentive for landowners to minimize the removal of protected trees. The example below illustrates how such standards might be established and related to the community benefits that trees provide. Minimum standards are explicitly stated in the example.

Requests for removal of protected trees shall be subject to the additional permit and mitigation requirements listed in Section... if any of the following conditions exist:

(1) Tree removal would result in more than a 25 percent reduction of the tree canopy cover on the subject parcel over the most recent three-year period.

(2) The ground slope within the drip line of the protected tree exceeds:

- 15 percent for soils with a soil K value of 0.3 or greater;*
- 20 percent for soils with a soil K value less than 0.3.*

(3) Tree removal would remove midsummer shade (as defined in Section ...) from more than 700 square feet of pavement or other nonvegetated improved surface.

[Example text by the authors]

The standards may also be listed in a separate document which is referenced in the ordinance as in the following example.

Notwithstanding any of the other requirements of these regulations, it shall be unlawful to remove a specimen tree without the express written permission of the County Arborist or authorized agent(s). [The decision of the the County Arborist or authorized agent(s) shall be consistent with the] Administrative standards [that] have been established by the Director of the Department of Environment and Community Development for the identification, preservation and protection of specimen trees.

[Fulton Co, GA: Tree Preservation Ordinance Sec. 1.V.C]

Most individual tree protection provisions are poorly suited to protecting groups or stands of trees because they lack performance standards that adequately account for the cumulative effect of tree loss. Evaluations are normally made on a tree-by-tree basis in individual tree protection provisions. If we look at any single tree closely enough, it is usually possible to find some reason to permit its removal - it may be relatively small, or in less than perfect condition, or located in an inconvenient portion of the parcel. By focusing on each individual tree, a heritage tree provision can allow a landowner or developer to "divide and conquer" a stand of trees, sometimes reducing a functional stand to one or two token heritage trees. Better protection of tree resources in wooded or forested areas can generally be achieved by utilizing strategies discussed under provision 32.

Permit process requirements. Permit applicants are normally required to provide the information necessary to decide if the proposed action meets the established standards for approval. Depending upon the criteria used to judge tree removal applications, this may include plot maps, data on tree size and condition, and the anticipated visual or environmental effects of removal. As a general rule, the information required should be limited to that which is needed to determine whether the permit should be granted and what mitigation (if any) should be required to offset the impacts of a permitted action. Many cities have standard forms listing the types of information to be submitted. Some communities exempt their municipal departments from the permit process, although this is not the case in the following example. Requiring city departments to meet the same requirements as private property owners assures more uniform implementation, and may provide beneficial public relations value as well.

Any person desiring to cut, move or remove a tree or protected tree within the city of Belmont shall apply to the Superintendent for a permit. A permit is not required for pruning as herein defined. The application for the permit shall be made on the form provided by the Superintendent for this purpose and shall include the number, location and type(s) of the tree(s), to be cut, moved or removed and the reason for such action. The applicant may submit an arborist's report or other expert evidence for consideration. The application shall be accompanied by any required fee to cover the cost of processing as set in the current City fee schedule. Fees shall be waived for applications made by a department of the City of Belmont on its own behalf.

[Belmont, CA: City Code Section 25-5]

While permit fees are normally collected from developers, some communities do not charge fees to homeowners who are required to get permits for pruning or removing private trees. This may help boost voluntary compliance, since homeowners may incur various costs simply to meet requirements for the permit application.

Many provisions that regulate tree removal during development require a report by a qualified professional on the condition of the trees. The professional may either be the city arborist or a qualified outside consultant. Because the applicant typically has a vested interest in removing trees that may conflict with development plans, a clear conflict of interest exists whenever an arborist or other consultant is retained by the applicant. The city or county can essentially eliminate such conflicts of interest by contracting for the services of any outside consultants that may be needed. The consultant is then responsible to and paid by the local government, which in turn recovers the charges from the applicant.

The permitting authority may also require the applicant to submit a tree condition report prepared by a qualified tree expert selected and retained by the City. The applicant shall reimburse the City for all costs related to the preparation of the report.

[Example text by the authors]

Some communities also include in this section a requirement that prior to removal, the tree be posted with a notice stating that the tree will be removed within a specified time, and describing the appeals process. Others require public notification before a permit is granted.

1. Tree Removal Notice Required. Except only as provided in Paragraph 10-11-4F5 of this Chapter, no Person shall cause or undertake any activity that anticipates or involves the actual or reasonably likely Damage or Removal of any Tree on a Lot that has a DBH greater than or equal to 10 inches without first having (a) been issued a valid Tree Removal Notice by the Village Forester pursuant to the requirements of Paragraph 10-11-4F2 and Paragraph 10-11-4F3 of this Chapter, and (b) displayed the Tree Removal Notice pursuant to the requirements of Paragraph 10-11-4F4 of this Chapter.

2. Tree Removal Notice Application. Any Person desiring, or required to obtain, a Tree Removal Notice shall submit to the Village Forester a Tree Removal Notice Application on a form provided by the Village.

3. Action on Tree Removal Notice Application. Within 72 hours after receipt of a Tree Removal Notice Application, the Village Forester shall approve the Tree Removal Notice Application and issue a Tree Removal Notice if the Village

Forester determines that all of the information required by the Tree Removal Notice Application is true and correct. The Village Forester shall not approve or issue a Tree Removal Notice, if the Village Forester determines that the proposed activity constitutes a Regulated Activity. In such event, the regulations of this Chapter applicable to Regulated Activities shall apply in lieu of the regulations of this Subsection 10-11-4F.

4. Form and Display of Tree Removal Notice. At least 48 hours immediately prior to undertaking the activity for which a Tree Removal Notice is sought, the Tree Removal Notice shall be posted on the Lot on which the proposed activity is to take place in a manner so as to be clearly and prominently visible from at least one Public Right-of-way abutting such Lot.

[Lake Bluff, IL: Village Code Section 10-11-4F]

In the case of removal of any heritage tree...the director shall not act on such an application until a hearing is held thereon. Notice of the time and place of the hearing shall be posted in a conspicuous place on the real property upon which the heritage tree is located and shall be mailed to the applicant and all owners of real property within a five hundred (500) foot radius of the real property upon which the heritage tree is located...

[Sacramento, CA: City Code Section 45.217]

Conditions required for approval. Trees that are nominally "preserved" in the project design process can be lethally damaged during the construction phases of a project. Trees in constructed areas can be seriously damaged by alterations in the rootzone that destroy roots directly (e.g., trenching, lowering of soil grade) or indirectly kill roots by creating adverse soil conditions (e.g., addition of fill soil, soil compaction, impermeable pavement). Many publications have described how trees are damaged in the construction process and techniques for avoiding or minimizing damage through proper planning and construction techniques (e.g., Coder 1996a,b, Harris et al 1999, Johnson 1999, Matheny and Clark 1998, Schrock 1996, Sydnor, Sydnor and Heiligmann, WFC and Morgan 1989b).

To address this issue, some tree protection ordinances include specifics on how trees are to be protected during construction. However, details of tree protection in construction sites are highly technical and subject to revision and modification based on both local experience and new research. Site-specific tree protection specifications developed by a qualified professional are likely to be more effective than general "cookbook" standards. Hence, it is preferable to set a performance standard for tree protection in the ordinance but to avoid including the actual technical specifications. The provision should authorize the tree program manager to prepare, enforce, evaluate, and revise the actual specifications for tree protection. Although some communities have developed quite extensive tree protection guidelines which are separate from the ordinance itself, even highly detailed guidelines cannot substitute for a case-by-case analysis by a qualified professional.

...Tree protection shall comply with the guidelines in the Tree Protection Guide for Builders and Developers by the Florida Division of Forestry and any other reasonable requirements deemed appropriate by the Chief to implement this part.

[Jacksonville, FL: City Ordinance Sec.656.1207a]

Unless a site is carefully monitored throughout the entire construction period, damage inflicted to tree roots may not be apparent. Furthermore, aboveground symptoms related to root damage may not become obvious

for a number of years after the damage is done. Some communities require developers to post performance bonds for trees that are to be retained so that the developer can be held accountable for tree damage that occurs during construction. A relatively long bonding period, preferably 5 years or more, should be used so that the impacts of construction on tree health can be adequately evaluated. The fact that a retained tree is still alive is not an adequate performance standard; performance bonds should not be released if retained trees show any decline in vigor or condition. In order to document changes in tree condition, tree ratings should be made prior to construction and shortly before the end of the bonding period.

Bonds, as required by this section, shall be in the form of letters of credit, certificates of deposit, cash bond, bonds issued by an insurance company legally doing business in the State of Florida, or other acceptable means agreeable to the city attorney. The letters of credit and certificates of deposit shall be drawn upon banks or savings and loans legally and actually doing business in Florida. Such bonds must meet the approval of the city attorney's office. This bond shall be in addition to any other bond required by any other governmental entity.

(1) Bonds shall be required for licenses involving the replacement of ten (10) or more trees, or the relocation of five (5) or more trees, or the relocation of any tree with a DBH of ten (10) inches or greater.

(2) Calculation for the amount of bonds shall be computed based upon the equivalent canopy replacement criteria applied to each street to be relocated or replaced, as provided in section 26-20 and upon the cost of installation and maintenance. The fair market value of the cost of trees that would be required to compensate for the canopy to be [relocated] or replaced shall be posted. The bond period shall be for the tree replacement performance period, as stated in the license or as extended or released, plus an additional sixty (60) days. The form of security shall be reviewed by the city attorney's office for legal sufficiency and may not be accepted until approved.

(3) Release of bonds:

a. Upon successful tree relocation and replacement as determined by this article and written approval by the city bonds required for tree relocation and replacement shall be released. Where possible, bonds shall be partially released for partially successful relocation/replacement projects, with the amount retained equal to the value of the additional replacement trees required, plus installation and maintenance.

b. Bonds may be released by the city when fee simple title is transferred. The city may condition the release of the bond upon the establishment of a new bond by the new owner in fee simple.

(4) Where the licensee plants fifty (50) percent more than the required number of replacement trees and establishes a suitable maintenance plan to ensure the viability of the replacement trees, the city may recognize the additional replacement trees as suitable security in lieu of a bond.

[Dania, FL:City Ordinance Sec. 26-25]

Compensation required for approval. The highest priority for a heritage tree provision is avoiding or preventing damage to or removal of protected trees. However, adverse impacts cannot be avoided, a local government may permit tree damage or removal under the condition that the applicant mitigates for the loss or damage. Mitigation generally comes down to the four basic options as shown below.

Mitigation method	Location
1. Protect existing trees	A. On-site
	B. Off-site
2. Plant new trees	A. On-site
	B. Off-site

The mitigation may be carried out directly by the applicant as a condition of approval, or the applicant may be required to pay fees to the city or county in lieu of mitigating directly. In-lieu fees normally paid into a special account used for mitigation planting or protection and the local government becomes responsible for carrying out the mitigation. Some communities refer to the use of in-lieu fees or off-site mitigation in general as tree banking.

Mitigation may appear to be a simple process, but as with many things, the devil is in the details. We explore a number of the options and issues in a separate mitigation page. If tree loss associated with urban development or other discretionary projects is substantial, the mitigation techniques used can have far-reaching consequences on the condition and form of the community forest. Hence, the community's long-term goals for its urban forest should be considered before determining how to structure the mitigation portion of this provision.

In many ordinances, a formula or standard is provided for calculating the amount of compensation that will be required for trees that are removed or injured. If planting of new trees is the mitigation method used, several different standards are commonly used to determine the amount of replanting that may be required. Common replanting standards include:

- ratios based on the number of trees removed (e.g., one or more new trees for each tree removed)
- ratios based on the diameter or cross-sectional area (or basal area) of trees removed (e.g., one inch of replacement tree caliper for each inch of diameter of removed trees)
- planting standards based on overall canopy cover, density, or basal area standards for a given land use category (e.g., a residential zoning has a standard of 35% canopy cover, replacement planting must be sufficient to provide 35% canopy cover for the parcel within 10 years)

In some instances, it may be appropriate to use the value of the removed trees, as calculated from published tree appraisal standards (e.g., Guide for Plant Appraisal) as the replacement standard.

Typically, replacement plantings are required to be composed of the same species as those removed if native

species are removed. For nonnative protected tree species, replacements must usually be selected from a list of approved species (or be approved by the city or county arborist or urban forester). In general, replacements are required to have the same mature size as the trees that have been removed, although the city/county arborist should have some discretion in this area to ensure that selected trees are compatible with the planting site.

Trunk caliper (diameter) is used as the standard in the following example, and mitigation standards are more stringent for removal of native live oaks.

(h) Protected trees identified for removal on the site clearing or tree removal permit application shall be replaced with new planted trees, unprotected trees or transplanted trees. Protected live oaks (Quercus virginiana) removed shall be replaced only with live oaks. The total caliper inches of replacement live oaks shall equal the total caliper inches of protected live oaks removed; for other removed protected trees, the total caliper inches of replacement trees shall equal one-third the total caliper inches removed, unless otherwise approved by the Chief. When there is significant loss of mature tree canopy or specimen trees on a particular site, the size [and/or number] of replacement trees may be increased by up to twice the minimum...by the Chief in order to compensate for that loss. If multi-trunked trees are used as replacement trees, then the total caliper of the four largest trunks shall equal the replacement caliper. New palms may be used only to replace protected palms removed. Replacement species used shall be approved by the Chief...

(1) New replacement trees shall meet the minimum standards for landscape materials established by [the administrative standards].

(2) Existing trees, two inch caliper or greater, which are not protected trees but which are preserved or transplanted, except those trees located in preserve areas, may be utilized to satisfy tree replacement requirements, subject to the conditions stated in ss. 656.1207 and 656.1213(b) and (d).

[Jacksonville, FL: City Code Section 656.1206]

The following example uses basal area as the replacement standard, and allows for the use of in-lieu fees if all required trees cannot be planted at the applicant's site.

(1) All protected trees removed in accordance with 903.8(1) k. through 903.8(1) h. shall be replaced in accordance with the following criteria. The replacement standards shall be listed on the permit...

(2) Any tree removed without a permit must be replaced with trees (not necessarily the same species) whose total basal area equals the basal area of the tree removed. All replacement trees shall be...considered required trees as part of a required landscape plan. As many trees as possible will be replaced [on the project site]. The tree(s) must be ... maintained in good health.

(3) When replacement of trees [on the project site] is not possible, the equivalent value of the tree as well as projected costs for installation and maintenance will be assessed by the Zoning Administrator and cash received from the property owner will be placed in the City of Myrtle Beach Tree Preservation Account for planting trees on public property.

[Myrtle Beach, SC: Municipal Code Section 903.10]

The example code below lays out a number of options for mitigating tree loss, including the use of in-lieu fees. These options provide the approving authority a high degree of flexibility in selecting appropriate mitigation.

Prior to any tree removal, the applicant shall demonstrate through a Tree Protection and Replacement Plan, Sensitive Area Mitigation Plan or other plans acceptable to the Administrator that tree replacement will meet the minimum standards of this section.

*(1) **Replacement Required.** A significant tree to be removed shall be replaced by one new tree in accordance with subsection (5)...*

*(2) **On-Site Replacement.** Replacement trees shall be planted on the site from which significant trees are removed unless the Administrator accepts one or more of the alternatives set forth in subsection (3).*

*(3) **Alternatives to On-Site Replacement:** When on-site replacement cannot be achieved, the Administrator may consider the following alternatives:*

(a) Off-Site Tree Replacement.

(i) The number of replacement trees shall be the same as described in section 20D.80.20-080(1), Replacement Required. Replacement costs (material plus labor) shall be at the applicant's expense.

(ii) Allowable sites for receiving off-site replacement plantings

(A) City owned properties identified on...[list of maps];

(B) Other City or County-owned open space areas, native growth protection areas (NGPA), or river and stream corridors within Redmond City Limits, or lands controlled by the City;

(C) Private open space which is permanently protected and maintained, such as a native growth protection area (NGPA).

(iii) All trees to be replaced off-site shall meet the replacement standards of this section.

(b) Tree Replacement Fee. A fee in lieu of tree replacement may be allowed, subject to approval by the Administrator after careful consideration of all other options. A tree replacement fee shall be required for each replacement tree required but not planted on the application site.

(i) The amount of the fee shall be the Tree Base Fee times the number of trees necessary to satisfy the tree replacement requirements of section 20D.80.20-080. The Tree Base Fee shall cover the cost of a tree, installation (labor and equipment), maintenance for two years, and fund administration.

(ii) The fee shall be paid to the City prior to the issuance of a Tree Removal Permit.

(iii) A separate account shall be established by the City for fees collected. Tree Replacement fee receipts shall be earmarked specifically for this account. Funds withdrawn from this account shall be expended only for the planting of new trees in City owned parks, open spaces or rights-of way.

(c) Landscape Restoration. Where appropriate, the Administrator may consider other measures designed to mitigate the loss of trees by restoring all or parts of the forest landscape and its associated benefits. Measures may include, but are not limited to:

(i) Creation of wildlife snags from trees which would otherwise be removed;

(ii) Replacement of certain ornamental trees with native shrubs and groundcover;

(iii) Replacement of hazardous or short-lived trees with healthy new trees more likely to survive;

(iv) "Daylighting" and restoration of stream corridors with native vegetation;

(v) Protection of non-significant trees to provide for the successional stages of forest development.

Monitoring of protected trees and mitigation areas. A shortcoming that exists in almost every tree protection ordinance that we have reviewed to date is the lack of a long-term monitoring element. In general, after construction is completed or after a short bonding period (usually two years or less), no further follow-up is required for protected trees or new plantings. The city or county may have no further recourse if protected trees or replacements subsequently decline and die as a result of inadequate protection measures during construction, poor maintenance during or after the bonding period, or removal by new owners. Without continuing efforts to monitor protected trees, a community can continue to lose tree canopy over time even though many trees have nominally been protected or replaced.

We have recommended that all tree ordinances contain a provision to require that ordinance performance be assessed regularly (see provision 13). However, an additional monitoring provision may be necessary as part of the tree protection code to ensure that the applicant can be assigned a fair share of cost of monitoring long-term compliance. In-lieu fees and other permit approval fees should be sufficient to offset long-term monitoring costs. Monitoring methods are described and discussed in part 3.

INSPECTIONS: The Village Forester shall, on a regular basis, conduct such inspections and surveys as are necessary to monitor the Trees in the Village and to determine the existence, nature, and extent of violations of this Chapter.
[Lake Bluff, IL: Village Code Section 10-11-15]

32. Conservation of forest and woodland resources during development

Purpose: To promote the conservation of functional forests and woodlands during development.

Key elements:

- Types of woodland or forest land subject to regulation
- Activities regulated on lands covered with woodlands or forests
- Criteria and standards for approving regulated activities, including mitigation requirements
- Permit process, including requirements, fees, time limits, and appeals
- Monitoring

Notes: The purpose of this provision is to establish a process for conserving woodland and forest resources that is invoked when land use is intensified to the degree that a discretionary permit is required. A provision that seeks to conserve functional forest or woodland systems must at minimum include the following features:

- natural stands or groups of trees are given priority over individual specimens;
- activities that fragment the woodland into small units are minimized;
- meaningful standards for tree canopy retention and reforestation are set;
- provisions are made to allow for natural regeneration of woodland/forest species;
- components of forests and woodlands other than trees are taken into consideration.



The City of
Myrtle Beach
Local Government Page

[Home](#)
[Tourism Info](#)
[City Services](#)
[Government Info](#)
[Current Meetings](#)
[Employment Info](#)
[Events & News](#)
[Weather Info](#)
[Hurricane Plans](#)
[Chapin Library](#)
[Police Dept. Info](#)
[City Laws and Ordinances](#)
[Convention Center](#)
[Whispering Pines Golf Course](#)

Tree Protection Ordinance

903 Tree protection

903.1. Intent.

Pursuant to authority conferred by the South Carolina Code of Laws, to promote the public health, safety and general welfare; to reduce noise, heat and glare; to reduce air pollution; to prevent soil erosion; to improve surface drainage and minimize flooding; to ensure that noise, glare and other distractions of movement on one area not adversely affect activity within other adjacent areas; to beautify and enhance improved and undeveloped land; to provide a protective physical and psychological barrier between pedestrians and traffic; to create special places that are inviting; to create a civic identity; to counteract the heat stand effect; to encourage energy and water conservation; to protect the wildlife habitat and sensitive ecosystems; to enhance real estate and economic values; to ensure that excessive tree cutting does not reduce property values; to minimize the cost of construction and maintenance of drainage systems necessitated by the increased flow and diversion of surface waters; to encourage the proliferation and replacement of trees on public and private property; and to allow trees to attain their natural shape and size while growing to maturity, the city council does hereby ordain and enact into law this tree protection chapter. The provisions herein shall not be interpreted to prohibit or unduly inhibit development of private property.

903.2. Applicability.

This ordinance applies to protected and landmark trees located on public and private property. On lots containing one single family residence in any R, RM, or residential PUD, this ordinance protects only those trees defined as indigenous trees or landmark trees. *

903.3. Definitions.

All words in these standards have their customary dictionary definition except as specifically defined herein. The words "shall" and "must" are mandatory, and the words "may" and "should" are permissive. Technical terms used are defined as follows:

- (1) 1995 ANSI A300 - Pruning standards set forth in the Standard Practices for Trees, Shrubs, and Other Woody Plant Maintenance.

(2) Basal Area = Caliper $\div 4 \times 3.142$

(3) Caliper; Single Stem - The thickness of trees measured in inches. A caliper measurement for trees shall be measured 12 inches above the soil line, or across the stump if the tree has been severed at less than 12 inches above the soil line.

(4) Caliper; multi-stem - The equivalent area of the multi-stem shall be made by use of a circumference to diameter conversion tape and is calculated as follows:

a. Square the diameters of each stem;

b. Multiply each of the numbers from Step 1 by 0.7854;

c. Add all the products determined by Step 2 and multiply total by 1.2732;

d. Take the square root of the product from Step 3.

(5) City-Owned Property - Rights-of-way and other property owned by the City of Myrtle Beach.

(6) Clearing – The removal of vegetation of 2" DBH or less.

(7) Crown - The above ground parts of the tree that give the tree its normal shape at maturity. The basic tree shapes are: umbrella, horizontal oval, vase, round, round, broad triangle, upright oval, narrow triangle, narrow upright, weeping, columnar, and palm.

(8) Diameter-At-Breast-Height (DBH) - The tree trunk diameter measured in inches at a height 4.5 feet above the ground. If a tree forks into multiple trunks below 4.5 feet, the trunk is measured at its most narrow point beneath the forks. Measurements shall be made by use of a circumference to diameter conversion tape.

(9) Dripline - The vertical line extending from the outermost edge of the tree canopy to the ground.

(10) Grubbing – The removal of tree stumps, roots, and the like.

(11) Hazardous tree - A tree that is unsafe due to a structural defect and constitutes a threat of injury to persons or damage to property.

(12) Indigenous trees - Live Oak (*Quercus virginiana*), Eastern Red Cedar (*Juniperus virginiana*), Southern Magnolia (*Magnolia grandiflora*), and Bald Cypress (*Taxodium distichum*) trees with a 4" caliper or more.

(13) Proper Pruning - As defined by the 1995 ANSI A300 standards.

(14) Protected Tree Removal Permit - An official written

city authorization issued by the zoning administrator to allow removal of any tree that is regulated within this section.

(15) Pruning - The cutting or removing any part of the branching structure of a tree in either the crown, trunk or root areas.

(16) Timber harvest – The removal of trees from a lot for the commercial purpose of converting them into lumber, wood pulp or other wood products.

(17) Topping - Also known as stubbing, dehorning, or lopping refers to cutting back of the leader stem or limbs into stubs larger than three inches in diameter within the tree's crown so as to remove the normal canopy and disfigure the tree.

(18) Tree Removal - The cutting or removing of 50 percent or more of the crown, trunk or root system of a tree, or causing the death of a tree through damaging, poisoning or other direct or indirect action.

(19) Tree--See definition section 204.

(20) Tree Survey - A survey plan sealed by a registered surveyor indicating location, size, and species of all protected trees on a property.

(21) Unnatural Pruning Techniques - Any pruning that prohibits the tree's natural growth process.

903.4. *Licensing.*

It shall be unlawful for any person who is being paid a fee for the business of planting, cutting, trimming, pruning, removing, or otherwise modifying trees within the City of Myrtle Beach to conduct such business without first signing an affidavit stating that he/she has received and read the Tree Protection Ordinance and 1995 ANSI A300 Standards. Such affidavit shall be completed and submitted when making application for or renewing a City of Myrtle Beach business license.

903.5. *Protected Trees.*

The city hereby declares that the following are protected trees:

(1) Trees planted or retained to meet the Landscape Ordinance (Section 910) requirements;

(2) Wax Myrtles (*Myrica cerifera*) and Crape Myrtles (*Lagerstromia indica*) designated as "tree forms" on an approved landscape plan and which on the effective date of the ordinance which amended this subsection (October 12, 1999) have a minimum height of at least twelve feet. All other Wax Myrtles and Crape Myrtles that have a height of ten feet or more on the effective date of the ordinance which amended this subsection (October 12, 1999). Furthermore, these Wax Myrtles and Crape Myrtles shall hereafter be maintained at a height of no less than

that specified hereinabove.

(3) Any tree over three inches caliper located on city-owned property including any public right-of-way;

(4) Any Sycamore (*Plantanus occidentalis*) and Sweet-Gum (*Liquidambar styraciflua*) with a 12-inch DBH or greater;

(5) Any Pine (*Pinus*) with a 18-inch DBH or greater (except Japanese Black Pine with a caliper of two inches or more);

(6) Indigenous trees, as defined in 903.3(12); and

(7) All other species of trees that are five inches or more in caliper.

903.6. Landmark Trees.

The City hereby declares the following trees to be landmark trees in all zoning districts which equal or exceed the stated diameter at breast height (DBH):

SPECIES	COMMON NAME	DBH
<i>Juniperus virginiana</i>	Eastern Red Cedar	30"
<i>Magnolia grandiflora</i>	Southern Magnolia	30"
<i>Quercus virginiana</i>	Live Oak	30"
<i>Quercus laurifolia</i>	Laurel Oak	36"
<i>Quercus phellos</i>	Willow Oak	36"
<i>Acer rubrum</i>	Red Maple	36"
<i>Taxodium distichum</i>	Bald Cypress	30"
<i>Ilex opaca</i>	American Holly	20"
<i>Cornus florida</i>	Flowering Dogwood	15"
<i>Carya</i>	Hickory (except Pecan)	36"

903.7. Preservation of protected trees/landmark trees.

(1) It shall be unlawful to cut or otherwise destroy a protected tree or landmark tree without first obtaining a protected tree or landmark tree removal permit;

(2) Unless specifically authorized by the zoning administrator, no person shall intentionally damage, cut, carve, transplant, or remove any protected or landmark tree; attach any signs with rope, wire, nails, or other contrivance to any protected or landmark tree; allow any substance which is harmful to such trees to come in contact with them or be placed within their dripline over pervious areas; or intentionally set fire or permit any fire to burn when such fire or the heat thereof will injure any portion of any protected tree or landmark tree.

903.8. Criteria for issuance of protected tree removal permits.

(1) No person shall remove, cut above ground, or otherwise disturb any protected tree without first procuring a permit. Protected trees may be



removed for the following reasons:

- a. Trees that are hazardous;
- b. Diseased or infectious trees and trees in decline as certified by a registered forester or certified arborist.
- c. Trees or their root systems causing visible damage to structures, and or areas used for pedestrian and vehicular traffic;
- d. Trees or their root systems causing damage to structures, as certified by a structural engineer;
- e. Trees or their root systems causing damage to areas used for pedestrians, vehicular movement, or underground utility lines, as certified by a structural engineer;
- f. Trees within power lines easements that cannot be properly pruned by the local utility company;
- g. Trees, after proper pruning, which cause safety-related problems;
- h. Trees to be removed, cut, or disturbed on plans approved by the Community Appearance Board or the Planning Commission whichever has final review responsibility and after all other applicable permits for construction have been issued;
- i. Trees to be removed, cut, or disturbed within the footprint or within ten feet of the footprint of buildings in single family residential districts.
- j. Trees to be removed for commercial timbering purposes.

(2) Application for permits must be made at the office of the zoning administrator in advance of the time the work is to be done. The zoning administrator shall issue the permit, if, the proposed work meets the criteria for tree removal. Any permit granted shall contain a definite date of expiration and the work shall be completed in the time allowed on the permit. Any permit shall be void if its terms are violated. Within five days after tree removal, notice of completion shall be given to the zoning administrator.

903.9 Criteria for issuance of landmark tree removal permits.

(1) Landmark trees may only be removed for the following reasons:

- a. Trees that are hazardous and in decline.
- b. Diseased or infectious trees or trees in decline as certified by a registered forester or certified arborist.

(2) Application of permits must be made at the office of the zoning administrator not less than 72 hours in advance of the time the work is to be done. The zoning administrator shall issue the permit, if, the proposed work meets the criteria for tree removal. Any permit granted shall contain a definite date of expiration which shall be 30 days after issuance and the work shall be completed in the time allowed on the permit. Any permit shall be void if its terms are violated. Within five

days after tree removal, notice of completion shall be given to the zoning administrator.

(3) Special Exception. The Board of Zoning Appeals may authorize the issuance of a landmark tree removal permit provided they determine that removal of the tree(s) is necessary to develop the property in a reasonable and prudent manner. The Board may attach any conditions to the permit they deem necessary to assure compliance with the intent of the ordinance.

903.10. Mitigation Policy.

(1) All protected trees removed in accordance with subsections 930.8(1)c. through 903.8(1)f. shall be replaced in accordance with the following criteria:

Each Exiting Tree...	Will Be Replaced By...	Replacement Number...
Any tree with less than 6" DBH	1	2 1/2" in Caliper planted to meet the landscape ordinance
2 1/2" in caliper to 6" DBH Oak Tree	1	3" in Caliper
1 tree, over 6-9" DBH	2	4" in Caliper
1 tree, over 9-12" DBH	3	4" in Caliper
1 tree, over 12-15" DBH*	5	4" in Caliper
1 tree, over 15"+ DBH*	7	4" in Caliper
1 Sycamore or Sweet-Gum tree 12" or Greater DBH or 1 Pine Tree (excluding Japanese Black Pine) 18" or greater DBH	1	4" in Caliper

*Sycamore, Sweet-Gum and Pine trees are not included in this replacement criterion; their replacement criterion is listed separately in the schedule.

(2) Any protected tree, except a Sycamore, Sweet-Gum or pine tree, removed without a permit must be replaced with at least four inch caliper trees (not necessarily the same species) whose total basal area equals the basal area of the tree removed. All replacement trees shall be at least four inches caliper and shall be considered required trees as part of a required landscape plan. Sycamore and Sweet-Gum Trees will be replaced with at least four inch caliper trees whose combined caliper equals, at a minimum, the caliper of the tree removed. Pine trees will be replaced on a one for one basis with four inches caliper trees of other than pine species. As many trees as possible, in the zoning administrator's opinion, will be replaced. The tree(s) must be placed in the same location as where the tree(s) was removed (unless imposing an unreasonable hazard) and be maintained in good health.

903.11. Community tree planting plan.

The City of Myrtle Beach has developed and instituted a Community Tree Planting Plan to encompass all public right-of-ways. The purpose of the Community Tree Planting Plan will be to develop tree themes for the area and to serve as guidelines for the expenditure of the tree preservation account funds for planting, maintenance, and the replacement of trees in the public right-of-ways.

903.12. Pruning.

Maintenance pruning allows for the healthy uniform growth of a tree. Tree pruning shall promote the health and natural growth of the tree. A tree's habit of growth must be considered ahead of time and pruning must not interfere with the design intent at the original installation.

(1) Tree pruning shall be accomplished in accordance with the procedures set forth in the 1995 ANSI A300 standards.

(2) It shall be the duty of any person or persons owning or occupying real property bordering on any street upon which property there may be protected trees, to prune such trees in such manner that they will not obstruct or shade the street lights, obstruct the passage of pedestrians on sidewalks, obstruct vision of traffic signs, or obstruct view of any street or alley intersection. The minimum clearance of any overhanging portion thereof or tree form shall be ten feet over sidewalks, and 12 feet over all streets except truck thoroughfares which shall have a clearance of 16 feet.

a. Notice to prune. Should any person or persons owning real property bordering on any street fail to prune trees as herein above provided, the zoning administrator shall order such person, or persons, within three days after receipt of written notice, to prune such trees.

b. Order required. The order required herein shall be served by mailing a copy of the order to the last known address of the property owner, by certified mail.

c. Failure to comply. When a person to whom an order is directed fails to comply within the specified time, the City Manager may have such trees pruned in the interest of public safety, and the exact cost thereof shall be assessed to the owner.

(3) The use of unnatural pruning techniques will be considered an unauthorized removal of a tree unless the tree is designated on approved landscape plan to be shaped or formed in an unnatural pattern or to be maintained at a certain height. Examples of unnatural pruning are topping, stubbing, dehorning, or lopping. See diagram in Section 903.3(13).

903.13. Exceptions.

(1) A permit shall not be required in order to remove palm fronds nor to do pruning.

(2) A permit shall not be required to remove a protected tree from any building site or paved area shown on a site plan approved by the zoning administrator and for which a building permit has been issued.

(3) Utility companies may be annually issued a written permit

exempting them from the provisions of this chapter after consultation with the zoning administrator or his/her designee but tree-trimming practices shall nevertheless conform to the 1995 ANSI A300 Standards.

903.14 Tree Protection During Clearing, Grubbing, and Development.

Prior to the commencement of any site clearing or vegetation alteration, other than mowing, a clearing/grubbing permit shall be obtained from the Construction Services Department. During any type of clearing/grubbing and development the following measures will be utilized to protect any tree on site that is not designated for removal.

(1) Soil disturbance under the canopy of each tree will be limited to six inches removed or six inches added. Any soil added under the canopy of the tree must be a loamy soil mix to ensure compaction is minimized.

(2) Protect designated existing trees scheduled to remain against:

- a. Unnecessary cutting, breaking, or skinning of roots.
- b. Skinning and bruising of bark.
- c. Smothering of trees by stockpiling construction or excavation materials within drip-line.
- d. Excessive foot or vehicular traffic.
- e. Parking vehicles within drip line.

(3) Erect temporary wooden barricades or orange fencing as shown in the diagrams following this paragraph before commencement of any site clearing and grading. The fence is to be four feet high minimum with 4" X 4" posts and 22" X 4" rails at two feet and four feet above grade and shall be set deep enough in the ground to be stable without additional support. For protected trees four inches in caliper or more, protective barricades shall be placed a minimum distance of ten feet from the base of each protected tree. For protected trees greater than ten inches DBH and Landmark Trees, protective barricades shall provide a diameter of protection around the tree equal in feet to the DBH of the tree (i.e. a 24-inch diameter tree would require a 24-foot diameter protective barrier.) Nothing shall be placed inside of protective barricades, including but not limited to construction material, machinery, chemical, or temporary soil deposits. When paving, excavation, or hardscape must be done within barricades, barricades shall be moved back to a secondary location at edge of work. Extra care must be taken at this time by the contractor to insure that no damage to the tree or its roots occurs.

INSET:

(4) All tree protection zones shall be designated as such with "Tree Protection Area--Caution Do Not Enter" signs posted visibly on all sides of the fenced area.

(5) Utilities shall not be installed in this tree protection area. All roots outside the protective barricade to be removed during development shall be severed clean and a two-inch layer of mulch shall be applied over the surface of exposed roots during development.

- a. Trenching shall be no closer than six times the diameter

at breast height (DBH) to the effected tree nor disrupt more than 30 percent of the drip line root area.

b. No other types of disturbance or construction shall be allowed under the drip line of any tree without prior approval by the Zoning Administrator.

(6) Designate one corridor for site access, preferably where the driveway or parking area will be located. Limit construction equipment access, material storage, fuel tanks, chemical or cement rinsing, vehicle parking and site office locations to nontree areas.

(7) Do not allow trash or debris to be burned beneath trees.

(8) Grading, filling, and ditching in the tree protection zone is prohibited.

(9) Provide water and fertilize to trees as required to maintain their health during construction work.

(10) If trees are wounded or stressed during construction, any wounds to the bark should be cleaned to sound wood by removing loose bark and wood, leaving a smooth edge around the wound. Do not apply a wound dressing.

903.15. City of Myrtle Beach Tree Preservation Account.

All tree removal fees, penalties and fines collected pursuant to this subsection 910.15 shall be recorded and maintained in a special account to be known as the City of Myrtle Beach Tree Preservation Account. Monies maintained in this account shall accrue interest at the short term rates prevailing in the market. All such funds and accrued interest shall be used, when appropriated by City Council, only for the purpose of funding the installation and maintenance of trees on public property within the City of Myrtle Beach. Funds may be used to obtain trees, other landscaping associated with tree plantings, sprinklers and other items or materials necessary and proper for the preservation, maintenance, relocation and restoration of tree ecosystems on public land.

903.16 Trees on Public Property.

The proper installation, preservation, maintenance, relocation and restoration of all trees on city owned property and public right-of-ways are the responsibility of the City of Myrtle Beach's Superintendent of Parks Division. Any agreements or contracts between the City of Myrtle Beach and other agencies to install, preserve, maintain or relocate trees on city owned property and public right-of-ways shall be monitored by the Superintendent of Parks Division and cessation of the agreements or contracts will occur if any portions of this ordinance are violated.

(Ord. No. 990427-21, 4-27-99; Ord. No. 991012-41, 10-12-99; Ord. No. 20000425-19, 4-25-00)

FOR FURTHER INFORMATION:

Construction Services Department, 843-918-1111

Planning Department, 843-918-1050
