

**ATTACHMENT A**

**A RESOLUTION RECEIVING THE REPORT ON TREE REPLACEMENT  
REQUIREMENTS AND OPTIONS  
Draft Resolution No. 83/2012-13**

WHEREAS, after approving The Butler Mixed-Use Building Conditional Use District/Conditional Use Permit on August 26, 2008, the Board requested that staff look into a program for tree replacement as a result of development; and

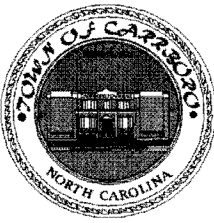
WHEREAS, Town staff presented a report on tree replacement requirements and options.

NOW, THEREFORE, BE IT RESOLVED by the Carrboro Board of Aldermen that the Board receives the report.

BE IT FURTHER RESOLVED that the Board directs staff to:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

This is the 22<sup>nd</sup> day of January in the year 2013.



## TOWN OF CARRBORO

NORTH CAROLINA

## TRANSMITTAL

## PLANNING DEPARTMENT

DELIVERED VIA:  HAND  MAIL  FAX  EMAIL

**To:** David Andrews, Town Manager  
Mayor and Board of Aldermen

**From:** Christina R. Moon, Planning Administrator

**Date:** January 18, 2013

**Subject:** Report on Tree Replacement Requirements and Options

**BACKGROUND**

In April of 1999, at the request of the Board of Aldermen, staff prepared a report evaluating the Town's tree protection and replanting requirements (*Attachment C*). The report was a follow up to a memo by the Zoning Administrator on the effectiveness of the Town's tree protection regulations that was presented to the Board two years earlier. Research included in the 1999 report documents the Town's early and consistent effort through policies and regulations incorporated into the Land Use Ordinance (LUO) to protect trees and to replace trees lost through the development process, including trees lost within a certain number of years after the development had been completed. The report concludes with a comprehensive table outlining nine observations from staff and the Appearance Commission along with possible changes to the LUO. Item #6 from that list is relevant to the discussion that follows, and is provided below.

**Additions/Changes to the Town's Tree-related Regulations and Policies**

	<b>Issue</b>	<b>Possible Action</b>
6	Tree cover/replanting requirements	The desire to maintain a certain level of tree cover may also be addressed through specific landscaping provisions in the text or in an appendix. These provisions could be based on mandatory tree cover ratios for lots developed for various purposes or site-specific ratios that would need to be maintained or restored.

**CURRENT REGULATIONS**

Current provisions in the Land Use Ordinance related to trees and other vegetation are found in Article XIX, Screening and Trees. Regulations focus on three particular areas:

- 1) Protecting trees during construction, particularly large and/or rare specimen trees,
- 2) Using trees for visual screens to separate different classes of land uses, and

### 3) Installing trees for shade within parking areas.

Provisions in Section 15-318 of the LUO, Protection of Trees During Construction, speak to required measures to protect trees during construction and to replace trees greater than 18 inches in diameter, identified on the plans as being retained, which have subsequently died. Subsection 15-318(b) includes more specific requirements as to how a replacement tree must be the equivalent of the tree that it replaces. Section 15-318 was amended in 1985, 1987 and 1989. Comments following the approval of The Butler Mixed Use Building conditional use district rezoning/conditional use permit at the August 26, 2008 public hearing suggest that it may be time to reexamine sections of Article XIX and to consider if new approaches toward tree protection, and replacement may be warranted.

Today's tree ordinances typically use tree canopy cover approach as the measurement for tree replacement, and often include a table of desired canopy cover percentage based on land use. For example: 20,000 sq. ft. residential lots might require 20% canopy cover; 80,000 sq. ft. residential lots might require 60% canopy cover. Commercial lots, by contrast might only require 10% canopy cover. Developers in Carrboro could continue to plant street trees and parking lot shade trees as currently required but might also have to plant additional trees to comply with the tree canopy cover ratio.

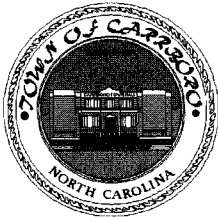
Another element of more recent tree ordinances is to create an option, or requirement, to replace trees through mitigation also known as a tree banking program. The term "tree bank" typically refers to off-site mitigation. If it is not possible, or desired, to replant trees lost on site to development, then trees can be planted elsewhere, such as a target receiving area—often on public land. In some cases, developers handle the planting of trees themselves, in other arrangements developers pay into a dedicated fund in lieu of planting the required trees. The fund may be set up in a very specific way to plant trees for certain situations or locations, or it may be set up more broadly to support a general tree planting program.

The Town of Chapel Hill recently updated its tree protection program using the canopy percentage approach. Information from that process, including presentations and frequently asked questions are available on the Town's website and may offer helpful background along with more specific details on the mechanics of the canopy approach. <http://www.townofchapelhill.org/index.aspx?page=879>

## **SUMMARY**

For a tree ordinance to be successful it must be tailored to the specifics of the particular jurisdiction. The Town of Carrboro is a relatively small jurisdiction in terms of land area. Publically owned lands are few in number, and the greater part of the Town's parkland is used for active recreation. Should the Town wish to consider a mitigation program a "receiver" location (or locations) for tree banking would need to be identified. Existing provisions in Section 15-319 of the LUO outline situations where the Town may require a developer to post a security to cover the potential replacement of certain large or rare species trees, but these provisions are not often used. The Town may wish to explore another mechanism to provide funding for tree replacement in a setting, public or private that would encourage long-term tree preservation and its associated benefits.

It may be time for the Town to consider a review of Article XIX of the LUO, with a particular focus on the tree protection and replacement provisions. While developers currently identify large and rare species trees on their site plans and install tree protection fencing during construction, important trees can still be lost. Landscaping designs for street trees and parking shade trees introduce new trees



# TOWN OF CARRBORO

NORTH CAROLINA

## STAFF REPORT

**TO:** Robert W. Morgan, Town Manager  
Mayor and Board of Aldermen

**FROM:** Patricia J. McGuire, Land Use Planner

**DATE:** April 23, 1999

**SUBJECT:** Trees: Protection, Planting and Replanting Requirements

### Background

At the request of the Board of Aldermen, an evaluation of the Town's tree protection and replanting requirements was placed on the Action Agenda for 1998 and assigned to staff of the Planning Department.

Staff reviewed a summary report on existing ordinance provisions with the Appearance Commission in February and March of this year. The report included a copy of a memo by Keith Lankford, Zoning Administrator, on the effectiveness of the Town's tree protection regulations that was presented to the Board of Aldermen in 1997. The Appearance Commission discussed those materials and identified several areas where adjustments to procedures and/or regulations might be beneficial.

This report presents the policy context and regulations associated with tree protection and replanting in Carrboro, followed by an evaluation of the strengths and weaknesses of the existing tree protection strategy. The report concludes with an overview of possible areas of improvement.

Should the Board of Aldermen decide to proceed with additions or deletions to the Land Use Ordinance on the basis of this report, it should be noted that particular analysis of selected options would be necessary.

### Context: Carrboro in the Eastern Woodlands

The Town of Carrboro is located in a region referred to in early historic references as the "jewel of the Carolinas" where mature forests blanketed the landscape and herds of deer and flocks of wild turkey roamed the parklike expanses beneath their canopies. Only the floodplains bore clear evidence of any human presence, where, in rich, alluvial soils, native Americans grew crops to supplement the diet of wild plants and animals that had sustained them for at least ten thousand years.

At the time of European contact, trees were the elemental characteristic of this area. By the American Revolution, forests were still in evidence among and between the farms and towns. By the Civil War, the trees that had not been removed for fields, fuel, homes, and ships would soon be called upon as the foundation for a new transportation system - railroads.

The earliest available aerial photographs for Carrboro, taken in 1938 by the U.S. Department of Agriculture, reveal the land use pattern associated with the Town during the time when textile mills were the primary force in the local economy. Mill buildings and associated residences were arranged in a fairly regular, compact fashion, fanning out from the railroad line along a broad, flat ridge. Garden plots and hog lots gave way to larger clearings for agricultural fields and orchards interspersed with woods, resulting in a fairly open landscape. Within the core area of the Town, there appear to have been fewer trees and less forest cover than there is today. In terms of total land area, agriculture appears to have been the primary activity.

### **Policies: Land Use and Development**

In 1978, the Land Use Plan, Carrboro, N.C., 1977-2000 was adopted by the Board of Aldermen. In association with several findings on development standards, the plan included a policy objective stating that "existing vegetation and natural drainage patterns should be preserved wherever possible." This statement appears to be the first reference to tree protection in the Town's land use policy documents.

In 1980, the Board of Aldermen adopted a unified development ordinance, the amended version of which governs land use and development activity today. This Town of Carrboro Land Use Ordinance expanded considerably the regulations affecting tree protection, planting and replacement. In summary, the Land Use Ordinance presently

- Finds that trees are important to the health, safety, and welfare of persons in the community;
- Declares that it is not only desirable, but essential for certain trees to be protected and for new trees to be planted under certain circumstances;
- Requires trees along public streets;
- Protects large and rare trees;
- Requires shade trees in certain parking areas;
- Protects all large and rare trees during construction and establishes a replanting requirement;
- Allows performance security to be posted if tree protection plan has been violated.

In 1987, the planning jurisdiction for Carrboro was expanded by joint agreement with Orange County and Chapel Hill to include approximately 12.1 square miles (7,744 acres). An analysis of aerial photos from 1985 revealed that the planning jurisdiction contained over 900 acres of hardwood forests at that time approximately 12 percent of the total area. 2,589 acres of mixed hardwood and pine forests were identified as well, resulting in total "forest cover" of 3,759 acres –approximately 49 percent of the planning area.

### **Regulation: Tree Protection, Separation of Uses and Shading**

Regulations included in the Carrboro Land Use Ordinance affect trees and other vegetation in three primary ways. First, large and rare trees are protected during construction. Second, visual screens, which may consist of vegetated and/or visual barriers, are required between different classes of land use. And third, shade trees must be planted in any parking area which, due to size or heavy traffic, must be paved. A summary of the section references for specific ordinance requirements, in the order they appear in the Land Use Ordinance, is presented in the table below.

#### **Tree-related Regulations in Land Use Ordinance.**

Article	Section	Section Title	Summary	Related Regulation	Purpose
II	15-15(145)	Definition of "Wooded Area"	Contiguous wooded areas with at least one six-inch or greater caliper tree per 325 square feet of land and where branches and leaves form a contiguous canopy.	Open Space	Tree Protection
IV	15-67	Maintenance of Common Areas, Improvements, and Facilities	Land use permit recipients (and successors) are responsible for ongoing maintenance of required areas, etc. Trees used for screening, landscaping, or shading must be replaced if they die or are destroyed.	Shading, Screening, Tree Protection	Requirements are ongoing (run with the land).
XI	15-175.6	Temporary Structures and Parking Facilities	No clearing of any trees in excess of two inches in diameter shall be allowed in order to construct temporary parking facilities.	Table of Permissible Uses	Tree Protection
XII	15-184	Building Setback Requirements	Election and political campaign signs are not subject to setbacks, but may not be located in the right-of-way, and may not be attached to trees, utility poles, etc.	Exempt signs	Tree Protection
XVII	15-273(a)(5)	Exempt Signs	Size, locational limitations for signs erected in connection with elections or political campaigns. Signs may not be attached to trees.	Setback Requirements	Tree Protection
XIX	15-304 to 15-311.1	Screening	Board findings regarding the need for screening. General screening standards. Describes screens and specifies screening requirements and administrative procedures. Requires a landscaping plan for certain development in non-residential districts. Authorized Appearance Commission review prior to the issuance of a building permit.	Permit requirements, Appendix E, Flag lots in historic districts	Visual screening
XIX	15-315	Required Trees Along Dedicated Streets	Trees must be planted or retained within 50 feet of the centerline of the street so that along every 30 feet of new street frontage there is an average of at least one deciduous tree (12-inch diameter at maturity).	Public Street requirements, Appendix E	Shading, visual screening
XIX	15-316	Retention and Protection of Large Trees	Rare trees and trees over 18 inches in diameter (a.k.a. significant trees) must be retained unless the retention would unreasonably burden the development. Criteria for choosing trees to retain if development is burdened are specified. Excavation and other subsurface disturbance and impervious surfaces (permanent or temporary) are prohibited in the tree protection perimeter of significant trees. Allows parking requirement to be reduced by	Parking requirements	Tree Protection

Article	Section	Section Title	Summary	Related Regulation	Purpose
			up to 15 percent in order to protect significant trees.		
XIX	15-317	Shade Trees in Parking Areas	Twenty percent of certain paved parking areas must be shaded by retained or planted trees (of at least 12 inches in diameter at maturity). Each 12-inch tree is considered to shade an area with radius of 15 feet. No paving within tree protection perimeter of significant trees and 15 feet of any other tree. 200 square feet of unpaved area shall surround newly planted trees. Vehicles shall not strike trees. Open air markets (10.100) are exempt from shading requirements.	Paving requirements, Appendix E, Table of permissible uses	Shading, Tree protection
XIX	15-318	Protection of Trees During Construction	Protects existing trees that are shown on approved plans as being retained to comply with this article from removal, destruction, or injury. Tree Protection Plan required. Land Use Administrator to certify that tree protection plan has been complied with prior to the commencement of any land alteration. Requires replacement of any trees shown as being retained that die during the four years following issuance of a certificate of occupancy.	Large and rare trees Appendix A, Penalties for land use permit violations.	Tree Protection
XXI	15-333	Commission Rules, Procedures and Guidelines	Specifies Rules of Procedure for Neighborhood Preservation District Commission and the guidelines for reviewing permit applications. Notes that guidelines may address thirteen topic areas, including the effect of the proposed change on trees and other elements.	Neighborhood Preservation Districts	Tree Protection, Visual screening
XXI	15-339	Certificates of Appropriateness	Certificates required before initiating any changes that will affect the character of any trees located within an historic district.	Historic Districts	Tree Protection, Visual screening
App. E	E-1	Guide for Protecting Existing Trees	To ensure the survival of existing rare and significant trees, the following are specified; protecting trees with fencing during development, avoiding excavation, materials or equipment storage beneath the crown, and soil compaction. Fires are to be kept away from trees. Damaged roots and branches are to be repaired immediately.	Protection of Significant Trees	Tree protection

### **Overview of Tree Protection Policy**

As evidenced by the policies and regulations incorporated into the Town's Land Use Ordinance, the protection of trees and the visual separation of dissimilar uses are a matter of some importance in Carrboro. The Board's findings and declaration of policy in the Land Use Ordinance states that tree protection and replanting are "not only desirable but essential to the health, safety, and welfare of all persons living or working in the planning jurisdiction, present and future..." In addition, Carrboro has been a recipient of the "Tree City, U.S.A." award every year since 1984. This award recognizes excellence in several areas, including protection of existing trees, maintenance of trees in public areas, and replanting programs.

In 1989, the scope of the ordinance's tree protection measures was expanded. A mechanism for the replacement of any trees that died within four years of a project's completion was established. This mechanism included a provision that allowed the posting of performance surety in the event that the Land Use Administrator was concerned about the survivability of a significant tree that was to be retained.

In early 1993, the Board reviewed a staff report detailing educational efforts that had been investigated and initiated, per an inquiry from the Board earlier that year. The staff investigation had identified on-site preconstruction meetings to be the most effective way of informing developers of tree protection requirements.

Three years later, the Board of Aldermen requested a staff report on the protection measures of the ordinance that affected significant trees. In January 1997, a report was prepared and submitted to the Board. Entitled "Effectiveness of Carrboro's Tree Protection Regulations," this document describes how tree protection measures are evaluated during the development review process. A summary of the report follows.

#### Tree Protection Regulation Effectiveness Report – January 1997

Staff of the Zoning Division administer the Town's tree protection and planting measures. These staff members ensure compliance with the Town's regulations at three distinct points in the development process, during the review of permit plans, during the review of construction plans, and during the review of building permits. The Zoning Division also evaluates the adequacy or appropriateness of tree protection measures on an as-needed or ongoing basis for new or active permits. Applicants for development approval are notified of the existence of tree protection regulations during the initial inquiry on the review process. Tree protection fencing is inspected prior to any clearing activities occurring at a site. Subsequent meetings in the zoning office and field provide opportunities to discuss appropriate pruning techniques, acceptable activities, if any, that may occur in the dripline of significant trees, and other issues.

The Zoning Division's report included three recommendations for the Board's consideration, as follows:

1. Requiring developers and builders to watch tree protection videos and sign an acknowledgment;
2. Authorizing the Zoning Administrator to prepare a letter, to be distributed under the Mayor's signature, to the utility companies expressing the town's concerns about tree protection;
3. Including an additional Zoning staff member in 1997-1998.

#### Board of Aldermen Action and Staff Activities in Follow-up to Effectiveness Report



Following their discussion of this item in the spring of 1997, the Board voted in support of the first two recommendations. During budget deliberations later in the spring, a third Zoning staff member was approved. By February 1998, the Zoning staff included the Zoning Administrator and three Planner/Zoning Development Specialists.

Three Tree Protection Workshops, developed and presented by staff of the Planning and Public Works Departments, were held in August 1997. The workshop format included presentations by staff on tree protection regulations and appropriate tree care practices. Participants viewed several videos on strategies to improve the survival of trees affected by development activities. Eleven members of the building/development community attended the workshops.

Due to ongoing concerns about the preservation of trees in Carrboro's jurisdiction, the Board of Aldermen included on their Action Agenda for 1998, a review of existing ordinance provisions and consideration of replanting strategies.

### **Preliminary Staff Analysis of Tree Protection**

Carrboro's Land Use Ordinance provisions emphasize the protection of trees, the visual separation of dissimilar land uses, and the shading of paved parking areas. The Town's existing requirement that street trees be planted along new streets is one example of a tree policy that can be characterized as achieving all of those objectives. In so doing, this requirement addresses major environmental and aesthetic concerns of residents of any community, particularly one that is experiencing change, as Carrboro is. The Land Use Ordinance further contains lists of recommended plants and shrubs that may be used to satisfy applicable requirements, and landscaping guides to assist with the selection, maintenance and planting of trees. Proposed ordinance amendments include a list of plants, which, due to their "invasive" characteristics, will be prohibited from use in meeting ordinance requirements.

A review of landscaping and tree protection literature, as well as the experience of Town staff, indicates that the existing regulations are both broad and particular. The principal concern is that tree professionals working in this community are not completely aware of these requirements and, in some cases, of the practices that are appropriate for caring for trees in this area.

The emphasis on rare and significant trees was shown, in the case of the Autumn Woods Apartments, to present some serious drawbacks to a more comprehensive desire to retain forest cover. The provisions that establish hardwood areas as primary conservation areas in the draft NSA Ordinance may address the issue of forest retention in the case of residential development, but a similar procedure has not yet been developed for non-residential development. Consequently, this review further suggests that an ordinance change to establish either forest cover retention standards or a landscaping ordinance for non-residential development may be in order. The comments in the following table incorporate observations of staff and the Appearance Commission regarding measures for the Board's consideration.

### **Additions/Changes to the Town's Tree-related Regulations and Policies**

<b>Issue</b>	<b>Possible Action</b>
1. Mixed-age/species standards, protection for groups of trees	Inventory of existing forest cover to determine appropriate "group" size and to identify minimum sizes and locations of significant or desirable mixed-age/specie areas.
2. Long-term protection of street trees that are	Requirement that street tree easements be established and included on recorded plats to notify property owners of designated "street trees" located outside the

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	required by ordinance to meet the street tree requirements, but are located on private lots.	right-of-way. The easements would note that the trees are to be retained and/or replaced should they need to be removed due to damage, age, or other circumstances. It is envisioned that homeowners' associations would hold these easements.
3.	Planting and maintenance procedures	Development of a tree protection and planting manual that would be incorporated as an appendix to the Land Use Ordinance, similar to the drainage manual. Preparation of a brochure summarizing tree protection and planting requirements.
4.	Shading Requirements to include Coniferous Trees	Trees and shrubs planted to meet the Town's shading requirements provide cooling benefits and maintain the visual scale of sometimes-large paved areas. Requiring a mix of deciduous and coniferous trees will ensure that the visual scale of larger developments and parking areas is maintained throughout the year.
5.	Forest cover retention	Require retention of forest cover on lots developed for non-residential purposes, based on a priority listing that is prepared from the results of a forest resources inventory.
6.	Tree cover/replanting requirements	The desire to maintain a certain level of tree cover may also be addressed through specific landscaping provisions in the text or in an appendix. These provisions could be based on mandatory tree cover ratios for lots developed for various purposes or site-specific ratios that would need to be maintained or restored.
7.	Certification of tree professionals	Require permit recipients for projects that involve greater than five units to identify a tree protection manager. This designated individual must have successfully completed a certification course offered by the Town.
8.	Ongoing inspection of tree protection fencing	Building inspectors may be trained to inspect tree protection fencing, approved by the Zoning Division during building permit approval, throughout the home inspection process. Building inspectors visit new home sites, on average, 30 times during the course of construction.
9.	Education/Enforcement	Education is possibly the first, best enforcement strategy. On-site inspections and meetings ensure that staff and developers share the same information about site conditions. Regular tree protection workshops and Appearance Commission-sponsored "Yard Doctor" visits open to all citizens and other approaches should be strongly considered.

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## ARTICLE XIX

### SCREENING AND TREES

#### PART II. SHADING AND TREE PROTECTION

##### Section 15-314 Board Findings and Declaration of Policy on Shade Trees.

- (a) The Board finds that:
- (1) Trees, shrubs, and other plants are proven producers of oxygen, a necessary element for human survival;
  - (2) Trees, shrubs, and other plants appreciably reduce the ever-increasing environmentally dangerous carbon dioxide content of the air and play a vital role in purifying the air we breathe;
  - (3) Trees, shrubs, and other plants precipitate dust and other particulate air-borne pollutants from the air and create temporary conditions of narcosis allowing air-borne pollutants to settle to the ground;
  - (4) Trees, shrubs, and other plants transpire considerable amounts of water each day and thereby purify the air much like the air-washer devices used on commercial air conditioning systems;
  - (5) Trees, shrubs, and other plants have an important role in neutralizing waste water passing through the ground from the surface to ground water tables and lower aquifers;
  - (6) Trees, shrubs, and other plants through their root systems stabilize the ground water tables and play an important and effective part in soil conservation, erosion control, and flood control;
  - (7) Trees, especially large, old trees, provide invaluable beneficial physical, aesthetic, historic, and psychological counterpoint to the urban setting, making urban life more comfortable by providing shade and cooling the air and land, reducing noise levels and glare and breaking the monotony of human developments on the land, particularly parking areas; and
  - (8) For the reasons indicated in subdivision (7), trees, shrubs, and other plants have an important impact on the desirability of land and, consequently, on property values.

**(AMENDED 03/21/89)**

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(b) Based upon the findings set forth in subsection (a), the Board declares that it is not only desirable but essential to the health, safety, and welfare of all persons living or working within the town's planning jurisdiction, present and future, to protect certain existing trees and, under the circumstances set forth in this article, to require the planting of new trees in certain types of developments.

**Section 15-315 Required Trees Along Dedicated Streets.**

Along both sides of all newly created streets with respect to which an offer of dedication is required to be made by this chapter, the developer shall either plant or retain sufficient trees so that, between the paved portion of the street and a line running parallel to and fifty feet from the center line of the street, there is for every thirty feet of street frontage at least an average of one deciduous tree that has or will have when fully mature a trunk at least twelve inches in diameter. Trees planted to satisfy this section shall not be placed uniformly but in an irregular pattern with a minimum of one twelve inch (12") diameter tree (when fully mature) every one hundred feet (100'). When trees are planted by the developer pursuant to this section, the developer shall choose trees that meet the standards set forth in Appendix E. (AMENDED 11/19/96)

**Section 15-316 Retention and Protection of Large Trees.**

(a) Every development shall retain all existing trees eighteen inches in diameter or more, and all very rare trees of any tree diameter, unless the retention of such trees would unreasonably burden the development. For the purposes of this section, very rare trees include the American Elm, Bald Cypress, Incense Cedar, Ohio Buckeye, Osage Orange, Swamp Chestnut Oak, and Southern Shagbark Hickory, which are either not native to the region, or are native, but occur only in very small numbers in the region, as well as all tree species listed in the North Carolina Natural Heritage Program as being significantly rare, of special concern, threatened, or endangered. When a site would be so unreasonably burdened by the retention of all such trees that a choice must be made as to which trees will be retained, the following criteria shall be used by the applicant, in consultation with the land use administrator and landscape or forestry profession also to evaluate the trees for the purpose of deciding which to retain:

- (1) The rareness of the tree species, both relative to the species representation on the site and relative to the species representation within the region and the state. This shall be the most important criterion in the evaluation;
- (2) The tree's relative size and age, large old trees being considered more valuable than smaller, younger trees of the same species;
- (3) The trees' relative expected longevities, including such factors as the trees' relative health at the time of the evaluation;
- (4) The relative hardiness of the trees in question, including wind firmness, climatic requirements, susceptibility to insects and diseases;

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- (5) The trees' relative aesthetic values, including flowers, fruit, form characteristics, potential for autumn coloration;
- (6) The trees' relative sizes at maturity;
- (7) The trees' relative contribution to summertime comfort through their potential to provide shading.

**(AMENDED 03/21/89)**

(b) No excavation or other subsurface disturbance may be undertaken within the Tree Protection Perimeter around any tree to be retained in accordance with (a) above. For purposes of this Article, the Tree Protection Perimeter is defined as that area within a circle drawn with the tree's trunk as the center and a radius defined by the tree's dripline (which is the perimeter formed by the points farthest away from the trunk of a tree where precipitation falling from the branches of that tree lands on the ground). In addition, no impervious surface (including but not limited to equipment, paving, and structures) may be located within the Tree Protection Perimeter, either during construction or after completion of the development. **(AMENDED 03/21/89)**

(c) There shall be no clearcutting in any development within the Transition Area portion of the Carrboro Joint Development Area as identified in the Joint Planning Agreement. The term "clearcutting" shall refer to the large-scale, indiscriminate removal of trees, shrubs, and undergrowth with the intention of preparing real property for nonagricultural purposes. **(AMENDED 05/25/99)**

(d) If space that would otherwise be devoted to parking cannot be so used because of the requirements of subsections (a) or (b), and, as a result, the parking requirements set forth in Article XVIII cannot be satisfied, the number of required spaces may be reduced by the number of spaces "lost" because of the provisions of subsections (a) and (b), up to a maximum of fifteen percent of the required spaces.

**Section 15-317 Shade Trees In Parking Areas.**

(a) Vehicle accommodation areas that are required to be paved by Section 15-296 must be shaded by deciduous trees (either retained or planted by developer) that have or will have when fully mature a trunk at least twelve inches in diameter. When trees are planted by the developer to satisfy the requirements of this subsection, the developer shall choose trees that meet the standards set forth in Appendix E. **(AMENDED 11/10/81)**

(b) Each tree of the type described in subsection (a) shall be presumed to shade a circular area having a radius of fifteen feet with the trunk of the tree as the center, and there must be sufficient trees so that, using this standard, twenty percent of the vehicle accommodation area will be shaded.

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(c) No paving may be placed within 15 feet (measured from the trunk) of any tree retained to comply with subsection (a), unless such tree is eighteen inches or greater in diameter or a very rare species as described in Section 15-316, in which case no paving may be placed within the Tree Protection Perimeter for such trees as described in 15-316(b). New trees planted to comply with subsection (a) shall be located so that they are surrounded by at least 200 square feet of unpaved area. (AMENDED 5/10/83, 03/21/89)

(d) Vehicle accommodation areas shall be laid out and detailed to prevent vehicles from striking trees. Vehicles will be presumed to have a body overhang of three feet six inches.

(e) The foregoing requirements shall not apply to 19.100 classification uses where such uses do not involve the construction of a permanent structure and are conducted not more than two days per week on the site of a vehicle accommodation area that is used primarily in connection with another use. Furthermore, when a 19.100 classification use meeting the foregoing requirements is installed on a lot that is nonconforming with respect to the shading requirements of this section, the lot shall not be required to comply with these shading requirements solely because of installation of such use, even though a new permit applicable to the entire lot may be required. (AMENDED 9/2/86)

**Section 15-318 Protection of Trees During Construction.**

(a) The permit recipient shall be responsible for ensuring that all existing trees specifically shown on approved plans as being retained to comply with this article are protected, during the construction process, from removal, destruction, or injury. As described in Appendix A, a tree protection plan detailing the methods for such protection shall be submitted as part of the land use permit application and construction plan package. (AMENDED 3/12/85; 2/24/87; 03/21/89)

- (1) The permit recipient shall ensure that, before any excavation takes place on the site, a barrier is erected around the Tree Protection Perimeter of all trees to be retained on the site that are within the area to be disturbed by construction activities, and other provisions made such as are necessary and sufficient to put on notice all construction personnel that the area within the Tree Protection Perimeter of all such large and rare trees are to be retained is not to be disturbed. During the construction process, the permit recipient shall ensure that all activities are kept outside the Tree Protection Perimeter of all such trees. The barrier required by this subsection shall be installed before the issuance of any grading or construction permits for such site.
- (2) The permit recipient shall ensure that all large and rare species trees to be retained on the site that are within the area to be disturbed by construction activities, or near roads within the development, shall be further protected from accidental equipment damage by wrapping their trunks with sections

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of snow fence or boards wired together from the ground to a height six (6) feet above the ground.

- (3) The permit recipient shall ensure that land disturbing activity shall not occur, and that building materials, construction trailers, vehicles, equipment or machinery, dirt, fill, and/or other debris shall not be stored within the Tree Protection Perimeter of such trees as are to be retained.
- (4) The permit recipient shall ensure that all such trees as are to be preserved shall not be used as supports for roping, cable, signs, or fencing, and that nails shall not be driven into the trunks of trees.
- (5) The permit recipient shall ensure that any damage done during construction to the limbs or trunks of such large or very rare trees as are to be retained shall be properly treated so as to assure the continued health of the trees. The land use administrator shall be consulted, and may suggest that the applicant seek advice from landscape or forestry professionals as to the appropriate method for such treatment.
- (6) Prior to the commencement of any land alteration on a site for which a Tree Protection Plan has been approved, including all clearing or grading activities, the land use administrator shall certify in writing based on an inspection of the site that all tree protection measures required by the approved Tree Protection Plan have been put in place properly and accurately. The land use administrator shall provide this certification in a timely fashion on being notified by the permit recipient that the site is ready for such inspection and certification. **(AMENDED 03/21/89)**

(b) If a violation of subsection (a) occurs, and as a result a tree or trees greater than eighteen inches in diameter specifically shown on approved plans as being retained die or otherwise must be removed within four years after a certificate of occupancy is granted for that portion of a development on which the trees are or were located, then the permit recipient shall be required to replace such trees with trees of the same species. Each replacement tree shall be at least of tree diameter equivalent in size to one (1) inch per every four (4) inches of tree diameter of the tree it replaces, up to a maximum replacement tree diameter of five inches. In cases where the tree to be replaced had a diameter greater than twenty inches, it shall be replaced by more than one tree, such that the ratio of one inch of replacement tree diameter to four inches of original tree diameter is satisfied, and at least one of the replacement trees is of the maximum replacement tree diameter of five inches. In addition, no replacement tree may be smaller than one inch in diameter. For example, a twenty-eight inch diameter tree would be replaced by one five inch diameter tree and one two-inch diameter tree of the same species. Tree replacement shall be performed by either a landscape contractor or forester licensed to practice in the State of North Carolina, or by an arborist certified by the International Society of Arboriculture or National Arborists Association. Such replacement must take place within one year after the death or removal of the trees occur, and this obligation shall be a continuing condition of the

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validity of the permit. Violators of the tree protection requirements described in subsection (a) shall be subject to the penalties and remedies for all land use ordinance and land use permit condition violations described in Section 15-114. (AMENDED 03/21/89)

(c) If a violation of subsection (a) occurs, and as a result a very rare species tree or trees specifically shown on approved plans as being retained die or otherwise must be removed within four years after a certificate of occupancy is granted for that portion of a development on which the trees are or were located, then the permit recipient shall be required to replace such trees with an equal number of trees of the same species, if available, or of a similar species. The choice of the replacement species, where necessary, shall be made subject to approval by the Town. Each replacement tree shall be at least of tree diameter equivalent in size to one (1) inch per every four (4) inches of tree diameter of the tree it replaces, up to maximum replacement tree diameter of five inches. In cases where the tree to be replaced had a diameter greater than twenty inches, it shall be replaced by more than one tree, such that the ratio of one inch of replacement tree diameter to four inches of original tree diameter is satisfied, and at least one of the replacement trees is of the maximum replacement tree diameter of five inches. In addition, no replacement tree may be smaller than one inch in diameter. For example, a twenty-eight inch diameter tree would be replaced by one five inch diameter tree and one two-inch diameter tree of the same species. Tree replacement shall be performed by either a landscape contractor or forester licensed to practice in the State of North Carolina, or by an arborist certified by the International Society of Arboriculture or National Arborists Association. Such replacement must take place within one year after the death or removal of the trees occur, and this obligation shall be a continuing condition of the validity of the permit. Violators of the tree protection requirements described in subsection (a) shall be subject to the penalties and remedies for all land use ordinance and land use permit condition violations described in Section 15-114. (AMENDED 03/21/89)

**Section 15-319 Performance Security May Be Required** (AMENDED 03/21/89; 10/24/06)

(a) In cases when the land use administrator has reasonable cause to believe that a Tree Protection Plan has been violated, he or she may require that the developer post a security, for the five year period (four years plus one year in which replacement may occur) described in subsections (b) and (c) of section 15-318, to cover the potential replacement of all such large and rare species trees as are called out in the Tree Protection Plan as being protected. The purpose of this security is to ensure that the financial capability will exist, during the full five year period described in subsections (b) and (c) of section 15-318, to replace any large or rare species trees as are called out on a Tree Protection Plan as being protected during construction, and which have died due to construction damage caused by a violation of the Tree Protection Plan.

(b) It is the intent of this section that the removal and replacement of such trees that die due to construction damage shall be arranged by the Town only when the developer cannot be located at the time when the removal and replacement becomes necessary.

(c) The required security shall be in the form of an interest-bearing account or certificate of deposit payable to the Town, in the amount necessary for the removal of all of the



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large and rare species trees as are called out in the Tree Protection Plan as being preserved, their replacement as described in subsections (b) and (c) of section 15-318, and the one-time violation penalty described in section 15-114 at the time the security is required. At such time as the four year period described in subsections (b) and (c) of section 15-318 is complete, and no deaths of trees called out in the Tree Protection Plan as being preserved have occurred, the security and all interest accrued on it shall revert to the developer. In the event that some but not all of the security amount is used or needed for tree removal and replacement at the end of the four year period described in subsections (b) and (c) of section 15-318, the remaining security amount and the interest it has accrued shall revert to the developer at the end of that four year period.

**Section 15-319.1 Regulation of Forestry Activities.**

(a) The terms “forestry,” “forestry activity,” “forestland,” “forest management plan” and “timber harvest” shall be defined by and used in the same manner as in G.S. 160A-458.5.

(b) Notwithstanding any other provisions of this chapter, this chapter does not regulate either:

(1) Forestry activity on forestland that is taxed on the basis of its present-use value as forestland under G.S. Chpt. 105, Art. 12; or

(2) Forestry activity that is conducted in accordance with a forest management plan that is prepared or approved by a forester registered in accordance with G.S. Chpt. 89B.

(c) Notwithstanding subsection (b) above, the Town may deny a zoning, special use, conditional use, or building permit for a tract of land for a period of up to three years after the completion of a timber harvest if the harvest results in the removal from that tract of all or substantially all of the trees protected by this chapter. If the removal of such trees was in willful violation of the requirements of this chapter, then such permits may be refused for a period of five years.