



# Protecting and Retaining Trees

## A GUIDE FOR MUNICIPALITIES AND COUNTIES IN NORTH CAROLINA

*Learn how communities across North Carolina can protect and retain trees. This guide is based on a statewide review of municipal and county land use and tree protection regulations.*

Communities across North Carolina address tree protection and retention in various ways. Some lack any regulations, even unified development ordinances (UDOs) or zoning ordinances, that could be used to protect trees before land is cleared or property use changes. Others have regulations that range from nonbinding recommendations that trees “should be preserved to the greatest extent

possible” during development to prohibitions on cutting any trees without permission. Many local governments have also incorporated provisions that require replacing trees removed in violation of ordinances and protecting trees during construction. Others allow credit towards landscaping requirements for the preservation of existing trees and exempt specific land uses, such as single-family residential development or forestry and farming, from tree protection and planting requirements.

Although examples of local ordinances are included, this guide does not advocate any specific regulation or ordinance. It describes various provisions that local governments have promulgated to regulate trees on private property and how local governments can address tree retention *before* land is developed or land uses change. Common issues facing local governments, such as clearcutting and grading, are also addressed.

### Protection and Retention

Tree protection and preservation ordinances are strategies that communities use to retain existing trees. Goals for protecting individual trees and stands of trees should be part of a community’s forest management plan. Trees are dynamic living organisms that require more than protection to keep them in the community. Without planting and maintenance, tree populations will decrease in number and quality as they are cleared from the landscape, age out, or die from damage, disease, or lack of care. Tree ordinances can ensure the

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survival of a community's beneficial trees through protection, preservation, planting, and maintenance, as this statement from one municipality's tree ordinance illustrates:

The regulations of this Ordinance are intended to reduce tree canopy loss and implement urban forest management improvements through requirements for tree protection, tree preservation, the planting and replanting of trees and the maintenance of existing trees within the Town of Jamestown. Additionally, this ordinance will establish minimum standards for the design of landscapes so as to improve the community aesthetically, economically and environmentally.

## How to Begin

To retain trees, a community must first address what is causing any loss of trees. Tree loss can be attributed to *natural causes*, such as storms, drought, disease, and insects, and *human causes*, such as conflicts between tree needs and human activity, including development and land clearing for farming and forestry. Local governments must address both natural and human causes to retain trees in their communities. They can begin by doing the following:

- ♦ **Assess and Inventory Trees.** Determine how and when trees in your community are being lost. Look at all activities and factors, including land disturbances (such as development), forestry, farming, fire, disease, age, lack of stand or buffer management, lack of maintenance and replacement, and competition with invasive, non-native species. Incentives to landowners to manage and maintain forested stands years before land is developed may provide quality trees and landscape buffers around future developments. Other factors can affect the quantity, quality, and types of trees in your community. All need to be assessed prior to developing plans and ordinances to retain trees. Conduct a community-wide inventory of trees and their characteristics before developing a management plan and, if resources are available, prior to ordinance development or amendment. This provides baseline documentation on trees in your community for later reference to see if plan and ordinance objectives are being achieved.
- ♦ **Identify Who Cares about Trees.** Examine the needs and wants of all stakeholders in a community who are concerned about retaining trees and regulating activities that may affect tree retention, such as forestry or development. Stakeholders include private citizens and business interests, including realtors, developers, forest landowners, and farmers. Stakeholder input will be used to develop vision statements for what the community will look like in the future and the plans to achieve those visions.
- ♦ **Plan for Trees.** Work with community stakeholders to develop tree retention objectives. These should be included in a community-wide forest management plan, which outlines the types of trees a community wants, where the trees will be, and how the community will care for and protect these trees on both public and private property. Other objectives may include percentages of tree canopy, retention of specific species of trees or trees with significant characteristics, and retention of trees along roadways or waterways to address aesthetic and environmental concerns. The community's vision of how it wants to look needs to be part of this plan.



*Trees are dynamic living organisms that require more than protection to keep them in the community.*

- ♦ **Develop Tools to Retain Trees.** Ordinance provisions and guidelines must be in effect to support the objectives of a community's forest management plan. What types of trees on public or private property will be regulated to meet the plan's objectives? New ordinances may need to be passed or current ones amended. How will ordinances and guidelines be written, referenced, and enforced? How these questions are answered will affect the success of a community's forest management plan. Local governments will need to look at what authorities exist to implement tree retention policies and regulations. Educational programs and materials are also very important to tree retention. Developers, forest landowners, and private citizens may not comply properly with ordinances that they know nothing or little about or if they do not know whom to call when they have questions.

## Ordinance Provisions

### Purposes and Standards

The purpose section of an ordinance should reflect what the community wants to accomplish with its landscaping and tree retention ordinances. It is usually placed at the beginning of an ordinance, and it should reference the community's forest management plan. Each community's tree retention objectives will be different. Some examples of statements listed under the purpose sections of selected local ordinances include the following:

- ♦ Protect stands of trees or heritage trees.
- ♦ Reduce invasive and exotic species in a community.
- ♦ Encourage the protection and maintenance of trees, shrubs, and soils on all public and some private lands as described in the ordinance.
- ♦ Assure the integrity of the urban forest is preserved and maintained during and after development.
- ♦ Promote the preservation of open space, existing tree canopy and vegetation, and natural diversity and wildlife habitat, using supplemental plantings when necessary.
- ♦ Safeguard and enhance property values and protect public and private investments.

*Standards* are those measures that *support* the purposes of an ordinance. Some standards may be outlined

directly in an ordinance, whereas others should be referenced separately if they are often subject to revision or if they are technical standards developed and accepted by professional organizations, such as the American National Standards Institute (ANSI) *A300 Standards for Tree Care Operations; Tree Shrubs, and Other Woody Plant Maintenance – Standard Practices*. Local governments typically apply their standards based on the type of land disturbance or clearing being proposed, what types of site characteristics (including tree cover) currently exist on a site, and how a site should appear once it is cleared or developed. Standards related to tree protection and retention often focus on these site goals:

- ♦ Obtaining or retaining some percentage of tree canopy.
- ♦ Requiring some number of trees of a certain diameter at breast height (DBH – diameter of a tree measured at a height of 4.5 feet above ground-line) and of a certain species.
- ♦ Requiring some amount of tree basal area. Basal area is measured in square feet per acre and is calculated using the DBH of trees on a site.

Methods used to meet tree protection and retention standards vary. They often include tree preservation and replanting to replace cleared trees or planting to add trees to sparsely vegetated areas. Standards, and the means to meet them, are important to achieving the purposes of an ordinance. To be effective, standards must be laid out clearly for those who must enforce and comply with them.

### Authority

Most communities in North Carolina that have some form of tree protection incorporate the regulations into the landscaping or buffering and screening sections of their zoning or unified development ordinances. Rarely do they have stand-alone tree protection ordinances. Their regulations typically apply to public property, and to private property that is being developed. Communities may obtain their authority to protect trees from the existing planning and zoning authority afforded to them under state law or from a local bill giving them special authority to protect trees. Local governments should use their authority consistently in promulgating regulations and be careful to observe instances where one authority, such as a local bill, contains restrictions on creating or enforcing regulations or conflicts with their broader planning and



zoning authority. Regulations should be pursuant to one source of authority or the other to avoid conflicts. Where appropriate, the authority used should be cited within the ordinance. For more information on local authority and tree protection regulations, refer to Woodland Owner's Note 41, *Practicing Forestry under Local Regulations*: [www.ces.ncsu.edu/forestry/pdf/WON/won41.pdf](http://www.ces.ncsu.edu/forestry/pdf/WON/won41.pdf).

## Tree Removal, Protection, Maintenance, and Replacement Standards

### Tree Removal

Most ordinances do not include regulations that prohibit tree removal prior to development or other land clearing or disturbance activities. Instead they may rely upon tree replacement *after* trees are cleared or other screening mechanisms (such as berms, walls, or fences) to screen and separate land uses as required by landscaping ordinances. Ordinance provisions for communities that regulate tree removal prohibit the following:

- ♦ Removal of any trees without permission.
- ♦ Removal of trees that are 12 inches or greater DBH for surveying or speculative grading.
- ♦ Removal of trees on acreage over a stated size.
- ♦ Removal of trees larger than a stated DBH depending on their location, such as within some footage of a highway thoroughfare or vacant property.



*Approval of site plans, tree preservation plans, and landscaping plans is often required before any trees can be removed.*

- ♦ Removal of any regulated tree – DBH of a stated number of inches or greater – regardless of species type. For example, no tree larger than 12 inches DBH may be removed from a property subject to landscaping requirements.
- ♦ Removal of trees larger than a certain DBH or caliper (diameter) 6 to 12 inches above the ground line based on tree type, such as hardwood or softwood, or a stated species. For example, the ordinance may prohibit the removal of an oak that is 12 inches or more in DBH or a dogwood of 6 inches or more in caliper 6 inches above the ground line. Such an ordinance recognizes that dogwoods do not typically reach a caliper of 12 inches but are deemed to be worth preserving when they reach a caliper of 6 inches or greater.
- ♦ Removal of champion, heritage, or specimen trees, or trees of some historical or other significance.
- ♦ Removal of trees providing habitat for endangered wildlife.

### Tree Preservation Plans

Approval of site plans, tree preservation plans, and landscaping plans, which may be combined, is often required before any trees can be removed. For example the Town of St. James has incorporated this language into its ordinance requiring tree protection plans:

#### 12.9 Tree Protection Plan – Documents Required

Before the commencement of any alteration, defoliation or land disturbing activity which requires site plan approval or preliminary plat approval, a Tree Protection Plan is required.

The Tree Protection Plan shall be a detailed plan designed to protect and preserve trees before, during, and for a period of 2 years after construction. Required specifications for a Tree Protection Plan include, but are not limited to, the following:

1. The identity of the tract of land upon which tree(s) sought to be removed are located.
2. The name, address and phone number of the owner of the land and the name, address and phone number of any tenant of the property.
3. The type, location and size as measured at the diameter breast height of the tree(s) constituting those to be protected.

Tree protection plans should delineate where immediate and future buildings will be constructed, where existing trees will be preserved, and where replanting will occur. The plans also should denote the boundaries of tree save areas, describe tree stands and individual trees to be protected, and diagram critical root zones of protected trees within tree save areas. Terms that are of specific importance, such as “critical root zone” should be defined.

Ordinances may require that trees to be preserved are healthy and not on a list of unacceptable species, and that all other characteristics (such as age and site location) support their viability for some time after a development’s completion. For example, the Town of Indian Trail also requires within the tree plan an explanation of why stands of trees or individual trees will not to be saved if they fall below the tree save requirements:

7. If the applicant is removing existing *stands* of trees and such removal means the project falls below the tree save requirement of Section 110.040B, then the applicant must indicate within the tree preservation plan an explanation why it is impractical to save the existing trees.
8. If the applicant is removing an existing *heritage tree(s)* and such removal means the project falls below the tree save requirement of Section 110.040B, then the applicant must provide within the tree preservation plan an explanation why it is impractical to save the existing *heritage trees*. See Section 110.040C for a description of the limited conditions in which *heritage trees* may be removed.

## Permits and Compliance

Approval and issuance of building permits, grading permits, and tree removal permits often depend on properly submitted and approved plans. Permits may also be withheld until tree protection measures are installed and inspected. How jurisdictions handle tree removal, tree disturbance, or zoning compliance permits varies. Except for exempt properties and activities, permits are often required in the following situations:

- ♦ Clearing of any regulated trees on a site.

- ♦ Clearing that is not part of an approved development plan.
- ♦ Trees removed as part of a forestry activity.

A tree removal or tree disturbance permit may be required in addition to other permits, such as grading permit or zoning compliance permits, prior to grading. The permits may be issued simultaneously or each permit may be issued separately. In some instances, a grading permit may not be required if the land area is less than a certain acreage or other conditions are met. Expiration of a tree removal permit is not often addressed in local ordinances. This should be considered, given that individual trees and stands of trees are dynamic and health and site conditions will change.

Once a development is completed, many local governments require that all landscaping requirements be met and that all protected trees be intact and healthy before a certificate of occupancy can be issued. Where trees have been damaged or destroyed, replacement may be required before a certificate of occupancy for the developed use is issued. When replanting is not feasible due to seasonal, weather, or other considerations, such as availability of plants, a jurisdiction may issue a conditional or temporary certificate of occupancy for a limited time until the requirements can be met. In addition to or in place of this conditional certificate, a local government may also require a letter of credit, bond, or some other form of financial guaranty that trees will be replaced and all landscaping requirements will be met. This tie to the certificate of occupancy is very notable in one ordinance, which states that violation of an ordinance provision “constitutes an illegal occupancy of the principal use.”

## Tree Protection

Local governments often require descriptions of measures that will be taken to protect trees before, during, and after development as part of tree protection and landscaping plans. Ordinances may also require that a pre-construction meeting be convened before any land disturbance. One jurisdiction also states that no trees can be removed for surveying without permission if the trees are in protected areas. Periodic inspections of fencing, signs, flags, and other tree protection measures before and during development ensure that tree protection plans are implemented and measures remain in place during development. The Town of Chapel Hill actually requires on-site supervision in its ordinance:

(e) *On-site supervision.*

For all development other than that related to single-family and two-family dwellings on individual zoning lots, the following on-site supervision is required:

- (1) The applicant shall designate as landscape protection supervisors one or more persons who have completed instruction and examination in landscape protection procedures with the town and have received a landscape protection certificate.
- (2) It shall be the duty of the landscape protection supervisor to ensure the protection of new or existing landscape elements to be preserved, as defined in the landscape protection plan. At least one (1) identified landscape protection supervisor shall be present on the development site at all times when activity is taking place that could damage or disturb such landscape elements. Such activities include:
  - A. Clearing and grubbing;
  - B. Any excavation, grading, trenching or moving of soil;
  - C. Removal, installation or maintenance of all landscape elements and landscape protection devices; or
  - D. The delivery, transporting and placement of construction materials and equipment.
- (3) The approved landscape protection supervisor(s) shall supervise all site work to assure that development activity conforms to provisions of the approved landscape protection plan.



*Periodic inspections of fences, signs, flags, and other tree protection measures before and during development are important.*

Additional information on protecting trees during construction is available through another Extension publication: *Construction and Tree Protection* (AG-685) (<http://www.ces.ncsu.edu/forestry/pdf/ag/ag685.pdf>). To protect trees prior to and during development, a tree protection plan should be approved and permits issued **before** trees are cleared. Meeting with developers before tree clearing, grading, and construction is also important as it provides the opportunity to explain ordinance requirements and penalties before vegetation and land are disturbed.

### **Tree Maintenance**

Local governments concerned about tree health after development is completed have implemented different types of requirements. One is that trees to be preserved live for a minimum period after the certificate of occupancy is issued. The amount of time varies but may range from one year after construction is completed to no time limit. If there is no set time limit, periodic inspections can be conducted and a notice of violation can be issued whenever landscaping or trees required for development approval need maintenance or replacement. Some ordinances also state a time frame for replacing trees, such as 30 days after they die. Property owners who do not replace damaged trees within that time may be subject to fines per damaged tree or per inch of DBH.

Ordinances often exempt the need for permission for tree removal or maintenance under emergency conditions, such as after a hurricane or ice storm. If permission is required to thin within buffers; remove dead, dying, or damaged trees; or perform other tree maintenance, it should be specified within the ordinance. (See “Applicability and Exemptions” later in this guide.)

Pruning and maintenance procedures and standards for trees are often outlined within an ordinance. Some ordinances cite external standards, such as the ANSI A300 standards, to be used for compliance. Referencing external standards created and accepted by professional organizations minimizes the need to amend or update an ordinance as professional standards change.

Baseline documentation for a site, including information from site and tree preservation plans, tree and environmental surveys, and photographs, is useful for inspections. Ordinances should state the responsible parties for future maintenance, usually the property owners, who are responsible for the continued maintenance of landscaping materials, compliance with landscaping regulations, and any other requirements provided for in a development’s approved site plan and development agreement.



Table 1: Requirements for Protecting Existing Tree Canopy and Creating New Tree Canopy

Land Use Classification	Standard for Saving Existing Tree Canopy	Standard for Sites Lacking Existing Tree Canopy
Low to Medium Density Districts: R20, RA20, R40, RA40, RC80	Where the <i>existing tree canopy</i> is at least 20% of the property area, a <i>tree save area</i> equal to at least 20% of the property must be protected.	Where the <i>existing tree canopy</i> is less than 20% of the property area, a <i>tree save area</i> equal to 20% of the property must be achieved by saving all <i>existing tree canopy</i> and planting new trees consistent with Section 120.010.
Medium to High Intensity Residential: R6, R8	Where the <i>existing tree canopy</i> is at least 15% of the property area, a <i>tree save area</i> equal to at least 15% of the property must be protected.	Where the <i>existing tree canopy</i> is less than 15% of the property area, a <i>tree save area</i> equal to 15% of the property must be achieved by saving all <i>existing tree canopy</i> and planting new trees consistent with Section 120.010.
All Non-Residential or Mixed Use Districts	Where the <i>existing tree canopy</i> is at least 10% of the property area, a <i>tree save area</i> equal to at least 10% of the property must be protected.	Where the <i>existing tree canopy</i> is less than 10% of the property area, a <i>tree save area</i> equal to 10% of the property must be achieved by saving all <i>existing tree canopy</i> and planting new trees consistent with Section 120.010.

Figure 1. Example of a local government's tree canopy standards

## Tree Replacement

Tree replacement is often guided by standards that the local government establishes based on what is on the site before and after development (Figure 1). For example, if a standard requires that 10 percent of the canopy be maintained and 5 percent is cleared for development, then a local government could require planting of trees to reestablish the lost 5 percent. Where heritage trees are lost, local governments often require that some number of trees, often of much smaller diameter, be replanted in the area based on the diameter of the trees removed. This approach presents problems if the area being replanted does not have enough resources and space to support the growth of multiple trees over a long period. A more reasonable approach would be to specify the number of trees to be replanted based on the sizes of the trees removed, the area disturbed, and the replanting stock. If planting is required to mitigate the loss of heritage trees, then the standard should be flexible in allowing for planting of additional trees at other locations. Another alternative would be to stipulate payment into a fund that supports a community tree program. In replanting trees, local

governments should provide guidance on acceptable tree species that may be planted, how they should be planted, and where. Guidelines and standards for replanting, maintaining, and protecting trees can be referenced within landscaping and tree retention regulations but provided elsewhere in other local government regulations or guidelines.

## Applicability and Exemptions

The applicability section of landscaping or tree protection ordinances denotes the activities or uses to be regulated. Ordinances typically specify that tree retention regulations and landscaping and replanting requirements will apply only to (1) new development, (2) expansion of an existing development, (3) conversion of one type of land use or development to another, or (4) any use no longer exempt from regulation. Some ordinances state the regulations will apply to *all* land uses. Anything not subject to the regulations must then fall within the exemptions sections of an ordinance. Most ordinances do not state that landscaping and tree retention provisions

will apply to municipal and county projects, and that local departments and agencies must observe these regulations. For consistency, local governments should consider incorporating in their ordinances that tree regulations do apply to public projects and agencies as well.

Common exemptions from landscaping or tree protection provisions specify types of land uses or circumstances whereby tree removal is allowed. A common statement within local ordinances is that requirements are not intended to prevent development or unreasonably restrict the use of property. Many local governments provide the following exemptions from these regulations:

- ♦ Existing or proposed single-family detached dwellings or two-family dwellings on individually owned lots.
- ♦ Lots smaller than a stated acreage.
- ♦ Removal of trees that are dead, dying, diseased, or damaged from storms or other causes.
- ♦ Removal of trees that pose a risk to public health, safety, and welfare or to property.
- ♦ Tree removal to protect utilities or maintain utility right-of-ways.
- ♦ Trees located within a project's future right-of-way, outline of a building envelope, or project parking area.
- ♦ Blockage of stormwater control mechanisms.
- ♦ Forestry activity on forestland taxed on the basis of its present-use value as forestland under Article 12, Chapter 105, of the N.C. General Statutes.
- ♦ Activity conducted in accordance with a forest management plan prepared or approved by a forester registered as prescribed in Chapter 89B of the N.C. General Statutes.

Even when tree removal is allowed, some ordinances require that new trees be planted to achieve a minimum canopy or other standard. New trees may be planted in areas that do not interfere with development or utilities, and they often are based on plant lists provided by local governments that exclude undesirable invasive and exotic tree species.

Communities exempt different activities and land uses for different reasons. Exemptions should be decided upon by community stakeholders and considered within the context of a community's forest management plan. Flexibility within the ordinance can support

its purpose. In certain circumstances, exemptions can support the community's goals. For example, forestry activities are exempt under state law from regulation if certain conditions are met, such as those specified in the N.C. Sedimentation Pollution Control Act of 1973. Some local governments note these exemptions in their ordinances along with the applicable conditions (following the Forest Practices Guidelines Related to Water Quality).

## Enforcement and Guidance

Ordinances need to state clearly which local government officials or representatives will be responsible for enforcement. The ordinances should specify who will conduct pre-construction meetings, inspect tree protection measures, monitor tree protection and maintenance measures during harvesting or development, and give final approvals when all the requirements of landscaping or tree regulations are met. Those often responsible for approval of plans and permits include planning directors and planning staff, zoning enforcement officers, and building inspectors who issue the certificate of occupancy. In addition, enforcement of ordinances is often carried out by parks and recreation staff, public works staff, city arborists, and city foresters. Municipalities without the resources to hire an urban forester or arborist to enforce tree regulations could consider the following options:

- ♦ Share enforcement responsibilities among town staff, which will already be the case if multiple agencies are responsible for overseeing different steps of the development process from start to finish. Coordination between agencies is critical to successful enforcement.
- ♦ Use the resources of planning and building inspections staff from a neighboring town, the county, or a council of government. Agreements are necessary, and costs will be incurred. But such agreements may require fewer resources than creating a position or assigning these responsibilities to existing staff.
- ♦ Contract with a consulting forester or arborist to administer the tree protection regulations through the local planning or zoning office. Possible conflicts of interest must be addressed before making such an arrangement. Many consulting foresters and arborists have worked with or could be working for the property owners and developers subject to enforcement. If no conflicts of interest exist, this



arrangement makes forestry expertise available to a local government that does not have an urban forestry position.

Any individual or outside agency responsible for enforcing tree protection regulations should have training and knowledge regarding tree health and maintenance to ensure that tree protection and maintenance provisions are implemented and accomplishing ordinance objectives. There is no simple solution to lack of enforcement resources for local governments with limited finances and staff. Tree protection regulations must be written carefully so that the actions they require can be enforced effectively and consistently across the entire planning jurisdiction. This will ensure fairness and avoid issues with equal protection. If enforcement capabilities are limited, and the options mentioned above are not available, regulations can still be established. They need to reflect, however, the realistic availability of enforcement resources.

A tree board, or a similar parks, greenway, or tree committee, should be established to assist with implementing landscaping and tree retention regulations. Where no or limited regulations exist, a community might consider establishing an advisory board to help develop or amend tree regulations. The board could also provide guidance on alternative ways to comply with regulations and establish community outreach and public education programs on regulations and the importance of community trees. This advisory board should be made up of citizens and stakeholders who are concerned about tree protection and regulation.

## Incentives and Alternatives

Incentives for tree protection are not common in local ordinances. There are few incentives offered to landowners or developers by local governments in North Carolina to encourage preservation of specific trees or stands of trees. We could find no ordinances that offer direct monetary compensation for tree preservation to landowners. Examples of incentives offered include the following:

- ♦ Provide credit for preserving individual trees (such as heritage trees) or stands of trees to meet landscaping requirements. Some local governments offer bonus percentages for preserving existing vegetation. The bonus applies to the total percentage of landscaping required on a site after disturbance. For example, if trees of special significance, often referred to as *heri-*

*tage* or *specimen* trees, are preserved, then 110 percent of that existing canopy will be counted towards the total canopy percentage specified for a site. Local ordinances may specify that credit for existing trees will not be given unless a tree preservation plan is submitted prior to the clearing or grading of a site. Also, credit may not be allowed for dead, damaged, or diseased trees or any trees that will be subjected to grade alterations.

- ♦ Reduce the required setback area in exchange for the preservation of existing vegetation or an increase in the tree save area that goes beyond a required standard.
- ♦ Reduce the amount of required parking in exchange for the preservation of existing vegetation or an increase in the tree save area that goes beyond a required standard.

The Town of Boone provides credit based on the DBH of trees that are preserved (Figure 2). Alternative methods of compliance in landscaping ordinances provide flexibility in dealing with site-specific situations that make compliance difficult, such as rock formations, front-lot configuration, utility easements, or other circumstances. Local governments often require that alternatives, such as shifting the location of a planting area or modifying the width, be contained within approved plans *prior to* clearing and development and that these modified requirements be met.

Payment in lieu of compliance with the tree ordinance is another alternative. Local governments can allow the option of payment into a fund designated

### [b] Credits and other incentives to preserve vegetation.

#### [1] Preserved trees may be credited at the rate of:

- 2" – 6" caliper tree = 1 tree
- 7" – 12" caliper tree = 2 trees
- 13" – 18" caliper tree = 3 trees
- 19" – 24" caliper tree = 4 trees
- 25" + caliper tree = 5 trees

Note: All replacement trees are required to be a minimum 2 1/2 inch caliper with a height of 12 - 14 feet.

- #### [2]
- In order to receive credit, preserved vegetation must be certified in good health and condition by a Certified Horticulturist, Arborist or Forester, Landscape Architect, North Carolina Landscape Contractor, or N. C. Certified Plant Professional. Trees designated to be preserved must be indicated on the Landscape and Grading Plans. Protective barriers must be shown on the Landscape and Grading Plans in accordance with the requirements of Section 370 [c]. If a preserved tree dies after completion of the project, it must be replaced with the total number of trees which were credited to the existing tree.

Figure 2. Example of ordinance language providing credit for preserved vegetation

only for tree protection and preservation when all other methods of compliance with the ordinance have been considered. For example the City of Raleigh regulations include this wording:

After consideration of other alternate methods of compliance, §10-2082.4(a), the landowners *may* satisfy the requirements of section 10-2082.14 with the payment of money to the City of Raleigh. Payments *shall* be equal to the tax value of lands, not structures, relieved from the compliance, as determined as a ratio from the overall per square foot tax value of the entire land area of the property similarly zoned.

All collected monies, including any income derived from such monies, shall be spent either for acquisition of lands where trees will be preserved or for tree planting. The City Council shall set forth specific eligible activities for tree preservation and tree plantings. All collected monies must be spent within the same open space fee zone of City Code Part 10 chapter 8 as from which the payment were collected.

Local governments should address certain concerns before allowing this option. Other methods of alternative compliance, such as additional on-site plantings at other locations, should be provided to ensure that all possible alternatives to collecting money have been considered first. This will avoid undermining the ordinance purpose. Also make sure that there is a strong nexus between the fees paid for noncompliance with the tree protection ordinance and purposes (such as replanting and protection of trees elsewhere within the jurisdiction). Any fees collected must be used for the purposes specified in the ordinance. A local government may specify that payment of fees is not an option if it compromises a purpose of the ordinance. For example, if a developer removes a tree of significance from a tree save area and the tree does not interfere with a building, road, or utility footprint nor meet other criteria for removal, (such as disease or safety hazards), fee payment would not be a suitable option. Replacement of the tree canopy with particular kinds of trees would be purposeful alternatives in this situation.

## Penalties and Remedies

Some landscaping or tree preservation ordinances specify *penalties* for violations of a local ordinance or *remedies* to abate continued violations. Other ordinances do not have a separate penalties or remedies section. In these instances, penalty provisions are contained within a separate section of a UDO, zoning code, or elsewhere within the local government's code of ordinances. Where penalties are tied to violations of specific requirements in a landscaping ordinance, it is common to have a section at the end of the ordinance to stipulate what penalties will be assessed for noncompliance. Penalties are typically assessed per violation, such as per tree removed or per day that a violation continues in a case where landscaping is required but not installed. If the violation involves particular trees, the amount fined may be assessed per tree or per inches of DBH of trees removed. Examples of penalties include the following:

- ♦ Replacement of trees.
- ♦ Fines for damage or disturbance to tree protection areas or critical root zones of trees within tree protection areas.
- ♦ Civil fines assessed per tree, per inches of DBH or caliper of tree removed, or an amount equal to the value of a tree removed.
- ♦ Civil fines for each day that a required permit is not obtained or a site is in violation.
- ♦ Non-monetary penalty, in the form of increased or additional planting requirements.
- ♦ Withholding a certificate of compliance or occupancy.
- ♦ Withholding plan approvals or permits for a designated period.

Remedies listed within ordinances include these:

- ♦ Stop work orders.
- ♦ Revocation of permits and certificates
- ♦ Injunctions and orders of abatement.

Appeals processes to challenge permit and plan disapprovals or penalties and remedies are often listed at the end of landscaping ordinances. If they are contained elsewhere, they are referenced and cited. Variances and appeals may be filed with planning departments and then heard by boards of adjustment or the governing body of the local government.

## Common Issues Communities Face

### Clearcutting and Grading

Under state law created by Session Law 2005-447, N.C.G.S. § 153A-451 for counties and N.C.G.S. 160A-458.5 for municipalities, a local government can deny approval of site plans, plans, or building permits for up to three years if trees are removed that would have otherwise been protected by municipal or county regulations – and up to five years if such removal proves to be willful. This authority is not referenced directly in most municipal and county ordinances, though it would be useful to do so. Those who would be affected should know that delays may occur in approvals if required buffers and protected trees are cleared at any point prior to development, whether willfully done or not. Also, local governments need to consider what is required for adequate enforcement of ordinance provisions under this authority:

- ♦ Timing of ordinances – What ordinances were in effect and enforceable at the time the regulated and protected trees or required buffers were cleared?
- ♦ Baseline documentation – What regulated and protected trees were present at the time of clearing? These would include any trees regulated under the enforceable ordinances in place when they were removed.
- ♦ Willfulness – The distinction between three and five years requires that the removal of protected trees be willful, which the local government must prove.

Municipalities have incorporated this authority into ordinances in various ways. Some require a permit before any forestry activity may be conducted on property, and a fine may be levied if the permit is not obtained. The ordinance may then state how long the locality will withhold approval of plans or permits if all protected trees are removed.

One locality takes the additional step of attaching a notice or covenant to the deed indicating that if trees are removed from protected buffers, no building permit, site plan, or subdivision plan will be approved by the local governing authority for a period of five years after harvesting:

*Forestry general* is allowed in the perimeter buffers provided that the landowners *shall* first record with the local county register of deeds a covenant running with and binding the land stating: “That *forest-*

*ry general* operations were initiated within regulated perimeter buffers of the real property on \_\_\_\_\_ date and year, and that pursuant to State Law, no building permit, *site plan*, or subdivision plan will be approved by the local governing authority for a period of five years following harvesting.” A copy of this covenant recorded with the local county register of deeds *shall* be provided to the Chief Zoning Inspector and to the Planning Director.

However, if tree conservation areas are recorded with the county register of deeds before a building permit is issued and requirements for those areas are met and the areas are not disturbed, the property may then be developed within a normal time frame.

Another local government requires a five-year “waiting period” but will allow this to be waived if the governing party determines by 75 percent of those voting that a particular project is desired. Then development can proceed on property where no buffers were maintained. Large-scale clearing may be done for mass grading or to remove trees that have poor health or undesirable aesthetic characteristics. If the trees that would be preserved in buffers or tree save areas are not desirable, ordinances can provide the option of replanting. This option encourages replacement of trees that would provide few benefits over the long term – particularly if they are unhealthy.

Local governments often have concerns about numbers of trees being removed prior to grading on properties approved for development but not developed for some time. In the interim, the undeveloped site presents aesthetic concerns because of the lack of trees and landscaping. Erosion of sediment from water and wind is also an issue on unvegetated or poorly vegetated sites. Some local governments address this by not issuing any permit for grading or clearing for development until all permits and approvals for a proposed development have been obtained. Additionally, they may allow grading of only lots that are to be developed currently and require that lots approved for later development remain vegetated until building is to occur. As with any ordinance provisions, local governments should consider the impacts of this type of provision or allow for flexibility, such as grading of sites with building permits and designating areas where soil may be transferred from one area on the site to another. Limits on soil transfers on site may require a developer to bring in soil from or haul soil to another location.



## Development or Forestry?

Just cutting trees is not forestry, though the initial result of doing so for either development or forestry is the same. Forestry is often defined in local ordinances, and is defined in both N.C.G.S. § 153A-451 and 160A-485.5 as “the professional practice embracing the science, business, and art of creating, conserving, and managing forests and forestland for sustained use and enjoyment of their resources, materials, and other forest products.” Development is defined within these same statutory sections to include any activity, including forestry, associated with converting forestland to nonforest use. Local governments have several concerns around the question of whether an activity is forestry. Even if an activity is considered forestry, governments must decide *how* to address environmental and aesthetic concerns. Land that has been surveyed for roads, houses, and utilities is probably not being used for forestry – and more than likely is not being managed under a legally prescribed forest management plan. Forestry is typically undertaken on land that is under the present-use-value tax-deferral program and has a forest management plan, although not all forestland is enrolled in the present-use-value program. Some landowners choose not to enroll in this tax-deferral program but still manage their land for forestry purposes. Areas cleared for silvicultural purposes, according to a sound forest management plan, will be reforested later; and forestry may continue for many years depending on several factors, including whether a landowner has the ability to harvest trees on their land in the future.

Local governments address aesthetic and environmental concerns about *forestry* activities through some of the following measures:

- ♦ Require a permit prior to commencement of forestry activity, which may require that a forest management plan be filed with the application. Some jurisdictions may require filing a notice of activity with the county register of deeds as well for properties subject to such activity.
- ♦ Establish buffer standards that specify some amount of vegetative buffer around an area to be harvested, particularly along streams or roadways in highway overlay districts. Local governments may also require plans indicating where required buffers or tree save areas are to be preserved – or can voluntarily be preserved – to allow property to be developed sooner if all protected trees are not cleared.

- ♦ Require that forestry activities follow forestry best management practices related to water quality when forestry is undertaken in water-supply watershed protection areas and to protect water quality.

Local governments address aesthetic and environmental concerns about *development* activities through some of the following measures:

- ♦ Require tree surveys or environmental surveys that provide general descriptions of stands or trees of special significance, such as any tree designated as a “Champion Tree” by the N.C. Division of Forest Resources. *Note that some local bills prohibit the surveying of individual trees.*
- ♦ Establish tree conservation areas to protect trees during construction and to serve as buffers around development.
- ♦ Require landscaping and tree preservation plans that denote tree conservation areas, critical root zones of trees to be protected, as well as measures that will be taken to protect trees before, during, and after development. These include measures, such as fencing and signage, to protect trees during construction.
- ♦ Sediment and erosion control regulations may also apply depending on the acreage and site conditions.

Both forestry and developmental uses, including residential and nonresidential, commercial, retail, and industrial uses, can disturb trees and other vegetation. Communities must tailor their ordinances to address the effects common to all of these land uses. They also must consider the differences in these uses, particularly in regard to the quantity, quality, and type of vegetation to be regenerated or replanted and how it will be maintained.

## Defining and Exempting Bona Fide Farm Purposes

Some land uses are uniquely regulated under the state’s planning and zoning authority. Counties in North Carolina are required to exempt bona fide farm purposes as defined in N.C.G.S. § 153A-340(b)(2), which includes timber production, from their zoning ordinances – and accordingly from any landscaping or tree retention and protection measures that are part of these ordinances. Definitions of forestry and silviculture may vary within local ordinances. But the definition of *bona fide farm purpose* for the state’s purpose of exempting such activities from zoning is very clear

and not subject to modification by counties without special authority. It is recommended that the definition of this term in county UDOs and zoning ordinances be referenced rather than copied from the state statutory section, which has changed over the years. As a result, many county ordinances do not properly define bona fide farm purposes when listing them as exempt from their zoning ordinance. Tree protection measures may be passed under a county's general ordinance-making authority, but their application to forestry activities may be limited by N.C.G.S. § 153A-451.

Some municipal governments exempt bona fide farm purposes or land classified as agricultural from either their UDOs or zoning ordinances, or from landscaping provisions. Some follow the exemption criteria listed in N.C.G.S. § 160A-458.5 and specifically exempt from their landscaping or tree preservation ordinances forestry activity on forestland taxed on the basis of its present-use value or managed in accordance with a plan prepared or approved by a registered forester. Municipalities can choose to define bona fide forestry activities differently than counties for the purposes of exempting these activities from zoning or other ordinances. Activities to be exempted or regulated within an ordinance must be defined. Many municipalities exempt bona fide farm purposes or forestry activity from their ordinances but do not define them.

## Adequate Vegetative Buffers and Screening

Buffering and screening of land uses are common requirements within zoning and subdivision ordinances. These sections do not typically require the retention of existing trees nor address the composition of buffer areas with regards to tree type and size, tree health, or activities within buffer areas. Vegetation of any type that can be used for buffering and screening is often lumped together with fences, walls, and earthen berms, which are not damaged by construction equipment, do not require protection of critical root zones, and are more easily replaced than trees. Tree retention regulations may be contained within the buffering and screening sections of an ordinance; but because the purposes and benefits of the trees can go beyond shielding dumpsters and parking lots, the regulations should contain the details needed to address all aspects of tree health. These include protecting trees from soil compaction and damage during construction and buffer maintenance to allow for removal of invasive and exotic tree species or to prevent the spread of fire.

Local governments should consider the objectives of the community forest management plan and decide if their buffer and screening requirements are specific enough to support those objectives. If a buffer and screening requirement highlights the use of a wall or a berm in place of trees or other vegetation, then that may be the resulting buffer between land uses. Buffering and screening requirements are sometimes organized separately within a UDO or zoning ordinance but still reference landscaping or tree retention requirements as well. Communities can decide when crafting ordinances what methods may be used to meet the objectives of their forest management plan and what flexibility can be offered to those who must meet landscaping or tree retention requirements.

Also, consider what is being buffered. The same amount of buffer area may not be required on property being developed adjacent to undeveloped land encumbered by a conservation easement, for example, that prohibits removal of trees in buffer areas adjacent to other properties. If adjacent land is to be developed in the future next to currently developed land, requirements may already be in place to require buffers on the undeveloped property if it is to be developed in the future. Local governments have to address which property owners will bear the burden of providing the total amount of required buffers between land uses. Factors that local governments use when determining who must provide buffer areas and in what amount include which use existed first, what impacts a use will have over another (e.g., residential versus retail), and what buffers already exist that will not be removed. Of particular concern are those buffers that consist of trees subject to removal in the future. Ordinance provisions that address new uses or the expansion of existing uses on land can help.

## Protecting Trees Into the Future

Opportunities to retain trees exist long before property is developed and land is converted from forestland or farm uses to residential and commercial uses. Undeveloped forest and farmland is often located in what is referred to as the *wildland-urban interface*. It is within a county's planning jurisdiction before it becomes part of a city's corporate boundaries or its extraterritorial jurisdiction. Forestlands and farmlands enrolled in a county present-use-value tax-deferral program are the types of land eligible for participation in voluntary agricultural district programs. Many

counties in North Carolina have established county voluntary agricultural district programs, which promote the continuation of farming and forestry on private property. Municipalities also can establish voluntary agricultural district programs under the Agricultural Development and Farmland Preservation Act.

These programs offer various benefits to forest and farmland owners in return for agreeing to forego the right to develop some amount of their land for up to 10 years. Municipal voluntary agricultural district programs, or agreements with counties to administer county-municipal programs, may be necessary where cities annex properties in a county program, which then disqualifies those properties from continued participation in a county program. Municipalities can also on their own, or in conjunction with counties, other municipalities, or land trusts, purchase working forest easements on a property. These easements limit development on a property while allowing the landowner to harvest timber or continue agricultural operations on the property. Voluntary agricultural district programs and conservation easement programs are two ways that municipalities can encourage the retention of large, contiguous tracts of forested areas. These forestlands in rural areas can be an integral part of a community's forest management plan into the future.



*Municipalities can establish voluntary agricultural district programs under the Agricultural Development and Farmland Preservation Act.*

## Resource Information

### Publications

- Abbey, B. 1998. *U.S. Landscape Ordinances: An Annotated Reference Handbook*. New York: John Wiley and Sons, Inc.
- Duerksen, C. J. and S. Richman. 1993. *Tree Conservation Ordinances: Land-Use Regulations Go Green*. Planning Advisory Service Report Number 446. Chicago, IL: American Planning Association.
- Fazio, J. R. 1995. *Writing a Municipal Tree Ordinance*. Tree City USA Bulletin Number 9. Nebraska City, NE: National Arbor Foundation.
- Fazio, J. R. 1997. *Tree Protection Ordinances*. Tree City USA Bulletin Number 31. Nebraska City, NE: National Arbor Foundation.

### Online Publications

- Swiecki, T. J. and E. A. Bernhardt. 2001. Guidelines for Developing and Evaluating Tree Ordinances. <http://www.isa-arbor.com/publications/ordinance.aspx>.
- Burgess, J. 2005. *Tree Ordinance Development Guidebook*. Macon, GA: Georgia Forestry Commission. [www.gfc.state.ga.us/CommunityForests/documents/2005TreeOrdinance-100.pdf](http://www.gfc.state.ga.us/CommunityForests/documents/2005TreeOrdinance-100.pdf)
- National Association of Home Builders. Not dated. *Tree Preservation Ordinances*. Washington, DC: NAHB. <http://www.nahb.org/generic.aspx?genericContentID=19086>
- Burgess, S. 2007, September. *Urban Tree Conservation: a White Paper on Local Ordinance Approaches*. Montgomery, AL: Montgomery Tree Committee. [www.aces.edu/ucf/documents/TreeConservationWhitePaper.pdf](http://www.aces.edu/ucf/documents/TreeConservationWhitePaper.pdf)

### Sample Ordinances

To review ordinances from communities in North Carolina, visit this N.C. Cooperative Extension Web site: *Trees and Local Regulations in North Carolina*. <http://www.ces.ncsu.edu/forestry/ordinance/>



## Technical Standards

For the latest accepted standards related to planting tree stock and tree care, obtain copies of the following:

American Nursery & Landscape Association (ANLA).  
2004. *American Standards for Nursery Stock*, American Nursery and Landscape Association. Washington, DC: ANLA. <http://www.anla.org/applications/Documents/Docs/ANLAStandard2004.pdf>

Tree Care Industry Association (TCIA). *ANSI A300 Standards for Tree Care Operations; Tree, Shrub, and Other Woody Plant Maintenance—Standard Practices*. Londonderry, NH: TCIA. [http://www.tcia.org/Public/gov\\_standards\\_a300.htm](http://www.tcia.org/Public/gov_standards_a300.htm)

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*Prepared by*  
**Brandon A. King**, *Extension Assistant*  
**Robert E. Bardon**, Ph.D., *Extension Specialist*  
Department of Forestry and Environmental Resources  
North Carolina State University

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