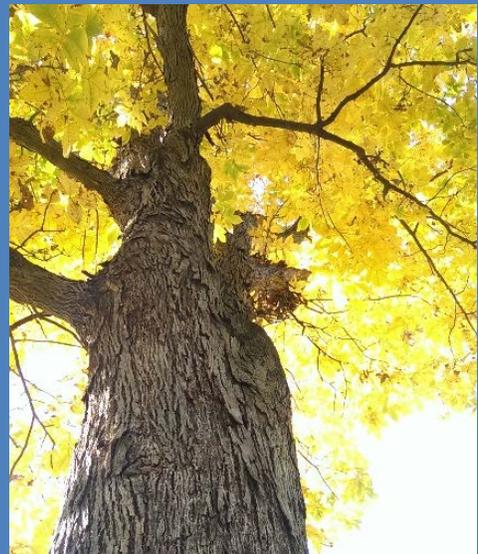
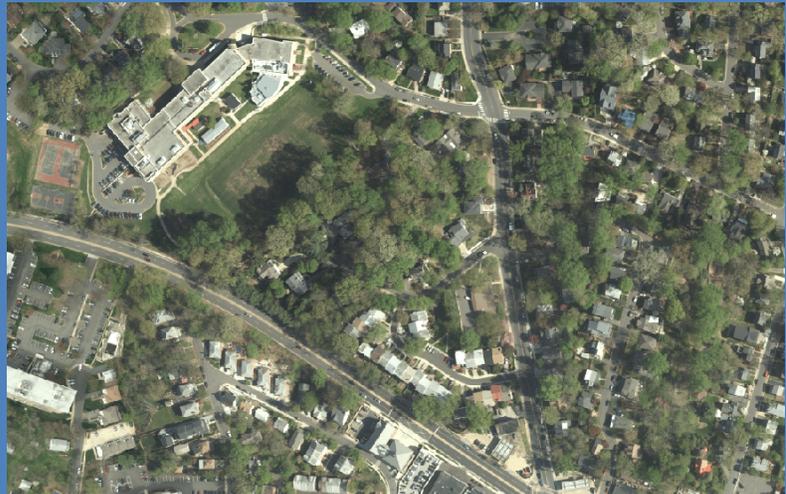


TREE CONSERVATION COOKBOOK

Essential Recipes for Tree Canopy Preservation and Enhancement in the Metropolitan Washington Region

January 2020 DRAFT



Metropolitan Washington
Council of Governments

TREE CONSERVATION COOKBOOK: ESSENTIAL RECIPES FOR TREE CANOPY PRESERVATION AND ENHANCEMENT IN THE METROPOLITAN WASHINGTON REGION

Prepared by the Regional Tree Canopy Subcommittee on behalf of the Climate, Energy, and Environment Policy Committee

DRAFT: December 2020

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EXECUTIVE SUMMARY

The urban forests of the metropolitan Washington region represent a diverse mixture of native and imported tree species of differing age, size, condition, and distribution within our landscapes. In addition, a tree may be part of a native forest or woodland community or may have been planted in a landscaped setting. This diversity, coupled with differing social, economic, and political environments, requires COG jurisdictions to craft local tree conservation ordinances, regulations and policies so they address the specific set of conditions found in their communities.

The *Tree Conservation Cookbook* was prepared in response to a COG Climate, Energy, and Environment Policy Committee (CEEPC) request to help jurisdictions better manage, protect, and preserve their urban forests. This document specifically supports Recommendation 2.2 of the *Regional Tree Canopy Management Report*, which is to “*Examine local tree-related policies and ordinances for opportunities to enhance and strengthen tree preservation and maintenance policies.*” The information contained here represents examples of regulatory concepts and technical language that the Regional Tree Canopy Subcommittee associates with effective tree conservation programs. The examples provided are offered as a resource for local jurisdictions to consider when strengthening their existing regulations, policies, and programs, or while creating new ones.

This document mimics the structure of a cookbook. The contents are separated into two categories: *Essential Recipes*, which represent the “must have” features; and, *Side Dishes*, which represent a variety of features that localities may find useful in addressing specific conditions or concerns. A description of how the recipe or dish is applied is provided to help place the examples provided in context. In addition, each example provided is classified as originating from a *Central, Inner, or Outer* jurisdiction based on their proximity relative to the core jurisdiction of Washington D.C. Finally, each example is associated with a *State, County, City or Town*. These designations may help readers target example language that originates from communities similar to their own in terms of population density, land use, demographics, and tree canopy composition.

Tree conservation language is often found scattered throughout local ordinances, regulations, policies and the technical language of jurisdictions. This document uses the following symbols to identify the category each example provided is derived from:

1. ordinance language is designated using the  symbol;
2. regulation language is designated using the  symbol;
3. policy language is designated using the  symbol; and,
4. technical language is designated using the  symbol

The authority to enact the concepts identified in the examples provided may be restricted in certain localities due to different levels of local autonomy granted by state or federal authority. Consequently, local governments may need to obtain state enabling legislation as a prerequisite to enacting local regulations.

NOTE: The example language, tables, and technical illustrations provided in this document are subject to change, therefore readers are encouraged to verify the current accuracy of examples before quoting this publication or using the examples as references.

PREFACE

Urban forests provide many benefits to our communities. As trees grow, they improve air quality, reduce runoff through infiltration and interception, remove and store carbon, improve soils, save energy by reducing ambient air temperatures and shading structures, and provide habitat for animals. Interacting with trees has been shown to improve mental, physical, and social health. A well-maintained urban forest can reduce crime, improve commerce, and raise property values. Taken together, the research on urban forest benefits points to happier and healthier citizens, a better environment, climate change mitigation, lower costs for storm water management and crime prevention, and greater business and property tax revenues – all elements of good government. But to obtain these benefits, a community must formalize the desire for a good urban forest in policies and ordinances.

Overall, most COG jurisdictions have already engaged in some form of tree conservation via regulations, ordinances, policies, or programs. When comparing local tree conservation regulatory language four distinct gradients of engagement emerge that range from passive to active management as follows:

- 1) The jurisdiction has set policies on the management and conservation of trees on public lands such as parks, government buildings, and rights of ways. Such policies govern the actions of the government but not public.
- 2) The jurisdiction has set policies and ordinances that address the management and conservation of trees during land development and/or soil disturbance on private and public property.
- 3) The jurisdiction has set restrictions on the management of trees on common land and open space, or as required by development conditions and proffers.
- 4) The jurisdiction has set restrictions on the maintenance and removal of trees located on private property.

Local regulations and policies that support the planting and preservation of trees (i.e., tree conservation) are an important step in managing our urban forests. This Cookbook provides recipes that can help guide communities during their first and successive steps in cooking up a sustainable urban forest and maximizing its benefits for its residents and others in the entire metropolitan Washington region. However, programs aimed at preserving trees or adding new trees to our landscapes will not be effective unless they are accompanied with a holistic approach to setting aside spaces for trees alongside the myriad of infrastructure and amenities that compete for those spaces. Such an approach is likely to require more difficult steps such as the regulation of open space, adjusting minimum building setbacks, and/or granting tax incentives that make tree conservation more desirable. However, that is advanced cookery; for now, we are pleased to present some tried and true recipes that may be used to express a community's desire for more and better trees. -- *The Regional Tree Canopy Management Subcommittee*

Essential Recipe 1

Ordinance applicability, findings, and purpose

Application: This Recipe is used to clearly state the applicability, findings, and purpose of regulations and provides a legal framework to justify code violations or other legal actions. This background information can help the reader appreciate how tree conservation benefits the community, and why the locality deems compliance necessary. The legal underpinning of local regulations can be strengthened when background statements link tree conservation to state and federal regulations, local environmental policies, land development criteria, comprehensive plans, and urban forest management plans.

Essential Recipe Example 1.A 🌳

Central Jurisdiction (City)
District of Columbia
District of Columbia Municipal Regulations
Title 11 Zoning Regulations of 2016
11-C General Rules
11-C400 Tree Protection

400 Introduction

400.1 Tree protection regulations of this title shall apply only in designated zones and are intended to:

- (a) Preserve mature trees in the District to the maximum extent possible;*
- (b) Prevent adverse impacts on open space, parkland, stream beds, or other environmentally sensitive natural areas that can result from loss of tree cover; and*
- (c) Encourage improved air quality and stormwater control that result from mature tree cover.*

400.2 Tree protection regulations of this chapter are not to be construed to relieve a property owner of their obligation to comply with the provisions of the Urban Forest Preservation Act of 2002, as administered by the Urban Forestry Administration within the District Department of Transportation, and the regulations promulgated under its authority, currently codified in Chapter 37 of the Public Space and Safety Regulations, Title 24 DCMR. 400.3 The tree protection regulations of this chapter are only applicable when required by a specific zone as indicated in this title.

Essential Recipe Example 1.B

Inner Jurisdiction (County)

Montgomery County, Maryland

Montgomery County Code

Chapter 55. Montgomery County Tree Canopy Law

Sec. 55-2. Findings and purpose.

Findings. The County Council finds that it is in the public interest to offset the environmental impacts of development and address the loss of environmental resources, including trees and potential growing space for shade trees, and conserve tree canopy throughout the County. Trees and tree canopy constitute important environmental resources. Trees cleanse the air, offset the heat island effects of urban development, reduce energy needs, and provide oxygen. They improve the quality of life in communities by providing for a greater sense of well-being and increasing esthetic appeal and compatibility between different land uses. Trees filter groundwater, reduce surface runoff and soil erosion, help alleviate flooding, and supply necessary habitat for a diversity of wildlife. The Council finds that the damage to or loss of environmental resources as a result of development and other land disturbing activities is a serious problem in the County, and that establishing shade trees and tree canopy helps mitigate these losses and increase the diversity of species and age classes of trees. The Council finds that, given the expected survival rate of newly planted shade trees, at least 3 new shade trees should be planted to produce the canopy coverage of one mature shade tree.

(b) *Purpose. The purposes of this Chapter are to:*

- (1) *save, maintain, and establish tree canopy for the benefit of County residents and future generations; and*
- (2) *provide for mitigation when environmental resources, including trees and potential growing space for shade trees, are lost or disturbed as a result of development, by establishing:*
 - (A) *shade tree planting requirements and standards; and*
 - (B) *a program to plant shade trees, including planting individual trees or groups of trees, on private and public property.*

Essential Recipe Example 1.C

Inner Jurisdiction (Town)

Town of Herndon, Virginia

Code of Ordinances

Chapter 26 – Environment

Article II – Tree Protection and Preservation

The town has found that the preservation of existing trees and the encouragement of the planting of new trees are in the public interest, in that trees provide shade, reduce ambient heat, conserve energy, reduce stormwater runoff, produce oxygen, consume carbon dioxide, reduce the force of wind, provide buffering and screening among community uses, increase property values, provide habitat for desirable birds, and improve the appearance of both public and private properties.

Further the town has found that trees require a modicum of care and maintenance in order to protect the community's health, safety and welfare and to prevent the spread of harmful insects and diseases among existing trees. The intent of this article is to provide for the care, protection and planting of trees within the town.

(Code 1992, § 24.5-1)

Essential Recipe Example 1.D

Outer Jurisdiction (County)

Loudoun County, Virginia

Revised 1993 Zoning Ordinance

Section 5-1401 Purpose (Buffering and Screening)

Purpose. The purpose and intent of this Section is to facilitate the creation of a convenient, attractive and harmonious county; to conserve natural resources including adequate air and water; to preserve the character of an area by preventing or mitigating the harmful effects of one use on another use; and to preserve and promote the health, safety and general welfare to the public. More specifically, this Section is intended to mitigate the effects of uses on adjacent uses by requiring a screen and/or buffer between the uses in order to minimize the harmful impacts of noise, dust and other debris, motor vehicle headlight glare or other artificial light intrusion, and other objectionable activities or impacts conducted on or created by an adjoining or nearby use. Also, this Section is intended to require the landscaping of parking lots in order to reduce the harmful effects of heat and noise and the glare of motor vehicle lights; to preserve underground water reservoirs and to permit the return of precipitation to the ground water strata; to enhance the natural drainage system and ameliorate storm water drainage problems; to reduce the level of carbon dioxide and return pure oxygen to the atmosphere; to prevent soil erosion; and to provide shade

Essential Recipe 2

Expected outcomes

Application: Like Essential Recipe 1, this Recipe is used to communicate a legal framework and background during the enforcement of regulations. This is accomplished by describing the end state(s) that are associated with full compliance. Describing expectations for tree preservation, tree removal and reforestation efforts are especially important. Where applicable, regulations should identify specific timeframes for the completion of outcomes.

Essential Recipe Example 2.A

Central Jurisdiction (City)

District of Columbia

District of Columbia Code

Title 2, Chapter 12

Anacostia Waterfront Development Zone Environmental Standard

§ 2-1226.38. Site planning and preservation standards

(8) Projects shall ensure sufficient tree planting to provide canopy coverage within 20 years of project occupancy of 30% of non-roof impervious surfaces and 40% of overall-non-roof surfaces within the project area.

Essential Recipe Example 2.B

Inner Jurisdiction (County)

Fairfax County Virginia

Fairfax County Public Facilities Manual,

Chapter 12: Tree Conservation

12-0203.5 Post-Development Tree Condition Standards. Trees designated to be preserved should survive construction in a manner that substantially retains their pre-development level of biological function, health and structural condition.

A. Any tree that the Director determines is unlikely to survive construction due to direct physical damage to root systems and above ground portions of trees; soil compaction; the addition or removal of soil within critical root zones; changes to soil hydrology, changes to drainage patterns, increased solar exposure, increased exposure to wind, changes to ambient air temperatures; and any other environmental factor that the Director determines could result in or predispose trees to structural failure and health problems will not be allowed to be retained or afforded canopy credits for purposes of meeting 10-year Tree Canopy requirements. Individual trees that will have 40 percent or more of the critical root zone disturbed by construction are not generally recommended for preservation.

B. Trees, or portions thereof, determined by the Director to be dead, declining, hazardous or a maintenance nuisance due to impacts from construction or environmental changes that resulted from construction; or, trees or portions thereof that are hazardous to either life or property

because of conditions not related to construction will be subject to removal or other corrective action as further stated in §12-0504.14 and §12-0506.3A.

Essential Recipe Example 2.C 

Inner Jurisdiction (County)

Fairfax County, Virginia

Code of Fairfax County Virginia, Chapter 122, Tree Conservation

ARTICLE 2. - Tree Conservation During Land Development

Section 122-2-1. - Ten-year Tree Canopy Requirements.

(a) All land development requiring the submission of a site plan, preliminary subdivision plat, subdivision construction plan, conservation plan, grading plan, or a rough grading plan shall provide for the conservation of trees on the site such that, after ten (10) years, minimum tree canopy is projected to be as follows:

Table 1 10-Year Tree Canopy Requirements

Use or Zoning District	Percentage of site to be covered by tree canopy in 10 years
Dedicated school, athletic field, non-wooded active recreation area	Ten percent (10%)
Commercial Revitalization District	See Note Below
Commercial; Industrial; PDC; R-20; R-30; PDH-20; PDH-30; PDH-40; PRM; R-MHP; medium and high-density areas of a PRC District	Ten percent (10%)
R-12; R-16; PDH-12; PDH-16	Fifteen percent (15%)
R-5; R-8; PDH-5; PDH-8	Twenty percent (20%)
R-3; R-4; PDH-3; PDH-4	Twenty-five percent (25%)
R-A; R-P; R-C; R-E; R-1; R-2; PDH-1; PDH-2; and low-density areas of a PRC District	Thirty percent (30%)

Essential Recipe 3

Roles and requirements of government agencies, applicants, and submitting professionals

Application: This Recipe is essential to help readers understand the relative roles and responsibilities of agencies, review staff, applicants, and submitting professionals such as civil engineers, architects, arborists and landscape architects that prepare site plans and tree preservation and planting plans. Having a clear understanding of these roles can help reduce confusion and reduced the time associated with review processes. This Recipe can also be used to ensure tree conservation proposals are prepared and reviewed by qualified tree care professionals.

Essential Recipe Example 3.A

Central Jurisdiction (County)

Arlington County, Virginia

Code of Arlington County

CHAPTER 67. Trees and Shrubs.

ARTICLE 3. Regulation of Heritage Trees, Memorial Trees, Specimen Trees, and Street Trees on Public or Private Property

67-3-1. Designation.

- (a) *A County Urban Forester or an arborist designated by the County Manager may, in accordance with the provisions of this Article, recommend to the County Board that certain trees located within the County on public property or private property, excluding parcels used for a single-family dwelling unless the owner of such property consents to the designation of such tree, be designated by ordinance as Heritage, Memorial, Specimen, or Street Trees. The County Board shall hold a public hearing prior to so designating any Heritage, Memorial, Specimen, or Street Tree. Trees may be recommended to the Urban Forester or designated arborist by any person in the instance of a tree on public property and on private property, excluding parcels used for a single-family dwelling, and by the private property owner in the instance of a tree on parcels used for a single-family dwelling, by submitting a complete report to the Urban Forester, designated arborist or County Manager describing the tree in question and its significance in needing protection.*
- (b) *In the case of a tree on private property the County Manager shall notify the owner of the property on which the tree is located by certified mail (i) as soon as practicable once the recommendation is received by the Urban Forester; and (ii) again at least 30 days prior to the hearing on the adoption by ordinance of the designation of such tree. The owner may request an extension of the hearing date for up to six months.*
- (c) *A property owner shall not destroy a tree proposed for designation pursuant to this Section pending final County Board decision or a decision by the Urban Forester or designated arborist not to recommend designation.*

Essential Recipe Example 3.B

Inner Jurisdiction (City)

Falls Church City Code

Chapter 44 – VEGETATION

Sec. 44-23. - Activities of public utilities.

- (a) *The authority of the arborist shall extend to the control of the activities of utility companies in the matter of treating, trimming, planting or removing trees or shrubs on the public grounds and streets of the city.*
- (b) *It shall be unlawful for any such company to in any manner treat, trim, plant or remove trees or shrubs on any property, grounds or streets of the city without the written permission of the arborist, who is hereby expressly given the right to withdraw any permission where inspection by the arborist indicates that the work has not been or is not being done in compliance with good horticultural standards.*

Sec. 44-24. - Plantings along streets and public use easements.

- (a) *The planting, pruning or other treatment of trees upon the streets and public use easements shall be under the direction of the arborist. No tree upon any street or public use easement in the city shall be destroyed, cut down or otherwise removed without the consent of the arborist. No trees or plants of any kind shall be planted upon any street, public use easement or public property except with the consent of the arborist.*

Sec. 44-58. - Appeals.

An appeal to the city manager may be taken by any person aggrieved by any decision of the city arborist relative to the administration of this article. An appeal shall be taken within ten working days from the date of the issuance of the arborist's written order, by filing with the city arborist and the city manager a notice of appeal specifying the grounds. The city arborist shall then transmit to the city manager the record upon which the appeal is based. All decisions by the city manager can be appealed to a court of record. The city manager shall solicit the opinion of the urban forestry commission, hear the appeal, and render a decision within 15 working days of receipt of the notice of appeal. An appeal stays all compliance with the action being appealed, unless the city arborist certifies to the city manager that by reason of stated facts a stay would, in such arborist's opinion, cause imminent endangerment to life or property. In such cases, compliance shall not be stayed other than by a restraining order which may be granted by the city manager, or by a court of record, on application and on notice to the city arborist and on due cause shown.

Essential Recipe Example 3.C

Outer Jurisdiction (County)

Loudoun County, Virginia

Facilities Standards Manual, Chapter 7, Environmental Design Standards

Section 7.304 (Forest Management Plan)

Prior to timber harvesting or silvicultural activities, a Forest Management Plan (FMP), when required by the Zoning Ordinance for the Floodplain Overlay District, Mountainside Development Overlay District, Limestone Overlay District, and Steep Slope Standards, shall be required and submitted to the Director or Director's designee for approval. The approved FMP is required to be on file with the

Director or Director's designee and a copy kept on site throughout the duration of the timber harvest or silvicultural activity, including site stabilization, where applicable.

- A. A meeting with the Director or Director's designee is recommended to discuss the scope of the proposed timber harvest or silvicultural activities prior to the preparation and submission of the FMP.*
- B. The purpose of the FMP is to establish the tract location and to describe the Best Management Practices (BMP's) required for structural stabilization and re-vegetation of all exposed mineral soil sites. The FMP shall be prepared by the Virginia Department of Forestry, or a professional forester with, at a minimum, a Bachelor of Science degree from and accredited School of Forestry, and shall contain the following information:*

DRAFT

Essential Recipe 4

Submission requirements for permit/plan review

Application: This Recipe is used to inform readers about the minimum requirements the jurisdiction requires to determine compliance of proposed tree conservation plans. The level of detail and placement of this Recipe will vary depending on local policies guiding code and technical language content and style. Local governments should consider including a “but not limited to” proviso in regulations to help address unforeseen circumstances and/or atypical development scenarios. Exemptions and deviations may be needed to provide relief for small-scale land disturbance and minor construction activities.

Essential Recipe Example 4.A ❖

Inner Jurisdiction (County)

Fairfax County, Virginia

Fairfax County Public Facilities Manual

Chapter 12: Tree Conservation

12-0304 Site Engineering and Layout Information

12-0304.1 Site engineering and layout information required for the review of tree conservation and landscaping requirements of this Chapter must include, but is not limited to, proposed site layout and building footprints; proposed and existing property lines, lots and parcels; minimum yard setbacks and building envelopes; location of proposed and existing conservation and utility easements; the location of RPA and floodplain boundaries; the locations of existing and proposed streets, access roads, driveways, pipestem drives, paths, and sidewalks; the location of existing and proposed underground and overhead utilities; streetlight locations; the location of proposed stormwater management and best management practices facilities, including outfalls; proposed changes to topography; the location and type of erosion and sediment controls; and the location of retaining walls.

- A. The existing tree line must be accurately and clearly shown and labeled so that it is understood where the existing trees are located. This delineation must include groups of trees and individual trees standing apart from any forested areas.*
- B. The limits of clearing must be shown for all items listed in the definition of “limits of clearing” (see § 1-1000.4) for both on-site and off-site construction. The limits must encompass only the proposed area of construction associated with the plan, must be clearly labeled, and may not include any unnecessary clearing.*
- C. Other information must be furnished as deemed necessary by the Director to conduct a thorough review of the tree conservation requirements of this chapter.*

Essential Recipe Example 4.B ❖

Outer Jurisdiction (County)

Loudoun County, Virginia

Facilities Standards Manual, Chapter 7, Environmental Design Standards

Section 7.300.B (Tree Conservation)

B. Conservation of Existing Trees and Vegetation to Meet Canopy and Buffer Requirements:

1. Existing tree canopy and vegetation, including those areas of tree canopy and vegetation that an applicant has agreed to preserve or conserve as part of a proffer or condition of approval, may be used to meet canopy and/or buffering and screening requirements of the Zoning Ordinance, if the following requirements are met:

A. The following shall not be used to meet canopy or buffering and screening requirements:

i. Concentrated stands of Virginia Pine.

ii. Existing tree canopy and vegetation located within the PRZ, as defined in Section 7.303.

iii. Existing tree canopy and vegetation, located on residential lots of twenty thousand (20,000) square feet or less.

B. Existing tree canopy shall meet the standards of desirability and life-year expectancy established by the Zoning Administrator. Existing vegetation shall be suitable to provide buffering and screening in accordance with the requirements of the Zoning Ordinance. To demonstrate that these requirements are met, a field inspection of the existing tree canopy and vegetation proposed to be used to meet the canopy and/or buffering and screening requirements of the Zoning Ordinance shall be conducted, and a narrative prepared, by a Certified Arborist, Urban Forester, or Landscape Architect. The date of the inspection and the name of the individual who conducted the inspection shall be identified in the narrative.

The narrative may be accompanied by photographs. The narrative shall describe the overall size, species and general conditions of the area where such existing trees and vegetation are located. General conditions include factors such as dominant species, growth rate, stocking/basal area, structure, form and quality characteristics, regeneration, age range, soils, aspect, stand history, invasive species, and hazard trees. The narrative shall also inventory by field location, common name, scientific name and International Society of Arboriculture (ISA) condition rating of all trees within the area of trees and vegetation to be preserved or conserved located within fifty (50) feet of the limits of clearing and grading that have a diameter breast height (dbh) of thirty (30) inches or more.

Essential Recipe Example 4.C

Central Jurisdiction (County)

Arlington County, Virginia

Code of Arlington County Virginia.

Chapter 61 CHESAPEAKE BAY PRESERVATION ORDINANCE

§ 61-12. Water Quality Impact Assessment

C. 3. A landscape conservation element that:

- a. Identifies and delineates the location of all woody plant material on site, including shrubs having a canopy greater than twenty-four (24) inches in diameter and all trees on site three (3) inches or greater in diameter at breast height or, where there are groups of trees, said stands may be outlined.
- b. Describes the impacts the development or use will have on the existing vegetation. Information shall include:
 - (1) General limits of land disturbance, based on all anticipated improvements, including buildings, drives, and utilities;
 - (2) Clear delineation of all trees and other woody vegetation that will be removed.
- c. Describes the proposed measures for mitigation, including a proposed design plan and planting schedule for trees and other woody vegetation removed for construction, including a list of proposed plants and trees to be used. Possible mitigation measures include:
 - (1) The re-vegetation plan shall supplement the existing RPA buffer vegetation in a manner that provides for pollutant removal, erosion and runoff control;
 - (2) The design of the plan shall preserve to the greatest extent possible any significant trees and vegetation on the site and will provide maximum erosion control and overland flow benefits from such vegetation;
 - (3) Indigenous plants shall be used unless otherwise approved by the Director.

D. Water quality impact assessment submission and review requirements

1. Copies of all site drawings and other applicable information as required by subsections B and C above shall be submitted to the Director for review.
2. A major or minor water quality impact assessment shall be prepared, as applicable, and submitted to and reviewed by the Director in conjunction with § 61-13 (plan of development) of this chapter.
3. All information required in this section shall be certified as complete and accurate by a professional engineer or certified land surveyor, except that the landscape conservation element of the assessment shall be certified as complete and accurate by a licensed arborist or landscape architect.

Essential Recipe 5

Basis for permit/plan approval

Application: This Recipe communicates the legal basis the reviewing authority must use to approve or disapprove proposed tree conservation activities and in some cases parameters that can be used to justify modifications, waivers, deviations and conditional approvals.

Essential Recipe Example 5.A 🌳

Central Jurisdiction (City)

District of Columbia

District of Columbia Municipal Regulations

Title 11 Zoning Regulations of 2016

11-C General Rules

11-C401 Tree Protection Regulations

401.1 The tree protection standards required by specific zones shall apply when:(a) Constructing a building, accessory building, horizontal building addition, or other structure; or (b)Causing any other land disturbing activity to the lot that could result in the disturbance of the existing tree canopy.

401.2 Tree protection standards are based on trunk circumference. Trunk circumference shall be measured at a height of four feet-six inches (4 ft.6in.) above the ground.

401.3 Construction of a building, accessory building, or an addition to a building, creating any impervious surface area, subdividing any unimproved lot, or subdividing any improved lot so as to increase the number of principal structures thereupon, shall only be permitted as a matter of right subject to the following tree removal limitations:

- (a) The restrictions of this section against removing, cutting down, or fatally damaging trees apply only to trees having a circumference of twelve inches (12 in.) or greater at a height of four feet-six inches (4 ft. 6 in.) above ground;*
- (b) The prohibitions of this section do not apply to the removal or cutting down of any dead or unhealthy tree or a tree that creates an unsafe condition. The need for removal of any tree shall be certified by a tree care professional certified by the International Society of Arboriculture;*
- (c) No tree that has a circumference of seventy-five inches (75 in.) or more at a height of four feet-six inches (4 ft. 6 in.) above ground may be removed, cut down, or fatally damaged;*
- (d) No more than three (3) trees that have a circumference of more than thirty-eight inches (38 in.) at a height of four feet-six inches (4 ft. 6 in.) above ground may be removed, cut down, or fatally damaged and none of these may be located within twenty-five feet (25 ft.) of any building restriction line or lot line abutting a public street; and*
- (e) The total circumference inches of all trees removed or cut down on a lot may not exceed twenty-five percent (25%) of the total circumference inches of all trees on the lot having a circumference greater than twelve inches (12 in.); provided, that this section does not abrogate the right to remove or cut down up to three (3) trees as provided in paragraph (d) of this*

subsection; or any tree having a circumference of twelve inches (12 in.) or less at a height of four feet-six inches (4 ft. 6 in.) above ground.

401.4 Where removal or cutting of trees has occurred that would have been prohibited by this section if an application for a building permit had been contemporaneously filed, no building permit shall be issued for a period of five (5) years from such removal or cutting unless the Board of Zoning Adjustment grants a special exception pursuant to Subtitle X, Chapter 9 and Subtitle D § 5202.

Essential Recipe Example 5.B

Inner Jurisdiction (County)

Montgomery County Maryland

Montgomery County Code

CHAPTER 49, STREETS and ROADS REGULATIONS

ARTICLE 3. ROAD DESIGN AND CONSTRUCTION CODE

49.36A.01 Roadside Trees Protection – Right of Way Permits

E. The Department will approve a tree protection plan if the proposed tree work is necessary to:

1. Protect the health of the tree;
2. Eliminate or reduce a hazard to property, public safety, or health;
3. Improve or prevent deteriorated tree conditions;
4. Improve the overall appearance of the right of way; or,
5. Carry out a development which has received all other applicable development approvals.

F. Some activities relating to public utilities are exempt from tree protection requirements pursuant to Section 49-36A(b)(2) of the County Code.

G. The applicant must also apply for a Roadside Tree Care Permit from the Maryland Department of Natural Resources.

H. The right of way permit will not be issued until the Roadside Tree Care Permit is issued if one is required by the Maryland Department of Natural Resources.

I. All requirements of the Roadside Tree Care Permit become conditions of the Right of Way Permit.

J. A licensed tree expert must oversee the conditions of the permit relating to tree protection, maintenance, or removal using ANSI Standard A300.

K. During construction there must be no additional land disturbance outside of the area designated by the permit without the approval of the Department. This includes the location of storage and staging areas as well as access drives for vehicles and temporary parking.

Essential Recipe Example 5.C

Inner Jurisdiction (City)

Takoma Park, Maryland

Takoma Park Municipal Code

Chapter 12.12. URBAN FOREST

2.12.120 Criteria for tree permit decisions

A. *The City Manager or, upon appeal, the Tree Commission shall issue a tree permit pursuant to Section 12.12.080(A) if so indicated by the factors set forth in subsection (B) of this section. Upon appeal, the Tree Commission shall, considering the factors set forth in subsection (B) of this section, approve the permit, disapprove the permit, or approve the permit with modifications and/or conditions.*

B. *The following factors are into account:*

1. *The extent to which tree clearing is necessary to achieve proposed development or land use, and, when appropriate, the potential ameliorating effects of any tree protection plan that has been submitted or approved.*
2. *The number and type of replacement trees and, if appropriate, any reforestation plan proposed as mitigation for the tree or trees to be removed.*
3. *Any hardship which the applicant will suffer from a modification or rejection of the permit application.*
4. *The desirability of preserving any tree by reason of its age, size, or outstanding quality.*
5. *The extent to which the area would be subject to environmental degradation due to removal of the tree or trees.*
6. *The impact of the reduction in tree cover on adjacent properties, the surrounding neighborhood and the property on which the tree or trees are located.*
7. *The general health and condition of the tree or trees.*
8. *The desirability of the tree species as a permanent part of the City's urban forest.*
9. *The placement of the tree or trees in relation to utilities, structures and the use of the property. (Ord. 2003-40 (part), 2004)*

Essential Recipe 6

Requirements to protect existing tree canopy

Application: This Recipe is used to conserve existing trees and forests. Although tree replacement can be an essential component of tree conservation, research conducted by the U.S. Forest Service indicates that mature trees typically provide 60 times the level of environmental services provided by newly planted trees. These services may include air and water quality improvements, stabilization of soil, energy conservation, carbon storage, etc. Subsequently, tree preservation is preferable over tree planting if preservation opportunities are present and are determined to be realistic given the level of disturbance and environmental change that is likely to occur. Regulations should emphasize that tree preservation must be considered early in the land development planning process and must result in healthy and structurally sound trees that will be assets to the new development and surrounding community.

Essential Recipe Example 6.A

Central Jurisdiction (City)

Code of the District of Columbia

Chapter 6B. Urban Forest Preservation.

Sec. 8-651.04. Preservation of Special Trees; permits; penalties

8-651.04. Preservation of Special Trees; permits; penalties.

(a) It shall be unlawful for any person or nongovernmental entity, without a Special Tree removal permit issued by the Mayor, to top, cut down, remove, girdle, break, or destroy any Special Tree.

(b) The Mayor shall issue a Special Tree removal permit under this section where the applicant has:

(1) Shown that the Special Tree in question is a Hazardous Tree;

(2) Shown that the Special Tree in question is of a species that has been identified, by regulation, as appropriate for removal; or

(3) Paid into the Tree Fund an amount not less than \$55 for each inch of the circumference of the Special Tree in question.

(4) Repealed.

(c) Repealed.

(d) A violation of subsection (a) of this section, or a failure to comply with the conditions contained in a Special Tree removal permit, shall constitute a violation subject to a fine of not less than \$300 per each inch of the circumference of the Special Tree in question.

(e) The Mayor may increase the fee described in subsection (b)(3) of this section or the fine described in subsection (d) of this section by regulation.

Essential Recipe Example 6.B

Central Jurisdiction (City)
Code of the District of Columbia
Chapter 6B. Urban Forest Preservation.
Sec. 8-651.04a. Protection of Heritage Trees.

(a) *It shall be unlawful for any person or nongovernmental entity, without a Heritage Tree removal permit issued by the Mayor, to top, cut down, remove, girdle, break, or destroy any Heritage Tree.*

(b)(1) *The Mayor shall issue a Heritage Tree removal permit under this section where the applicant has:*

(A) *Shown that the Heritage Tree in question is a Hazardous Tree; or*

(B) *Shown that the Heritage Tree in question is of a species that has been identified, by regulation, as appropriate for removal.*

(2) *The Mayor may issue a Heritage Tree removal permit under this section where the applicant has averred in the Heritage Tree removal permit application that the applicant will relocate and replant, in compliance with any applicable regulations, the Heritage Tree to an identified new location within the District, without significant harm to the tree; provided, that it shall be a violation of subsection (a) of this section if a Heritage Tree that is relocated and replanted pursuant to this paragraph dies within 3 years of replanting.*

(c) *A violation of subsection (a) of this section, or a failure to comply with the conditions contained in a Heritage Tree removal permit, shall constitute a violation subject to a fine of not less than \$300 per each inch of the circumference of the Heritage Tree in question.*

(d) *The Mayor may increase the fine described in subsection (c) of this section by regulation."*

Essential Recipe Example 6.C

Inner Jurisdiction (County)
Fairfax County Virginia,
Public Facilities Manual, Chapter 12: Tree Conservation
12-0200 STANDARDS FOR PRESERVING TREES AND FORESTED AREAS

12-0201 Purpose. The purpose of this section is to provide standards that will optimize the preservation of structurally sound, healthy and functional trees and forested areas; minimize the retention of high-risk tree conditions that have potential to cause personal injury or property damage; minimize harmful practices and conditions that can degrade the long-term health, structure, functionality and regenerative capacity of forested areas; and to provide guidance concerning which trees can and cannot be used to meet 10-year Tree Canopy requirements.

12-0202 Preservation Design Standards. Development sites must be designed and constructed in a manner that: limits the extent of land disturbance to the minimum area needed to construct the proposed use; minimizes the negative impacts of permissible construction activities and practices on trees and forested areas; and, places staging and temporary storage areas, buildings, utility connections, roads, parking areas, recreational amenities, stormwater management facilities and all other land development in a manner that minimizes direct physiological damage to root systems and above ground portions of on-site and off-site trees and forested areas and minimizes changes to environmental conditions that trees and forested areas are dependent on to survive.

Essential Recipe Example 6.D

Inner Jurisdiction (County)

Prince George's County, Maryland

The County Code – Prince George's County, Maryland

Subtitle 25. – Trees and Vegetation

Sec. 25-107. - Protection of trees during construction.

In the erection, altering, or repairing of any building or structure, the owner, or contractor shall place such guards around all nearby trees in streets as will effectively prevent injury to such trees.

Sec. 25-108. - Protection of trees during excavations; roots.

- (a) No person shall do any excavating within two (2) feet of any tree or shrub on any street without the written permission of the Department of Public Works, and a permit from the State Department of Forests and Parks.*
- (b) Where in an authorized excavation it becomes necessary to expose or cut roots more than one (1) inch in diameter of a tree on any street, it shall be the duty of the contractor to protect such roots, under advice from the Department of Public Works. The contractor shall obtain a permit from the Department of Public Works and obtain a permit from the State Department of Forests and Parks.*

Essential Recipe Example 6.E

Outer Jurisdiction (County)

Loudoun County, Virginia

Facilities Standards Manual, Chapter 7, Environmental Design Standards

Section 7.303 (Tree Protection)

7.303 TREE PROTECTION

Tree protection measures during land disturbing activities shall be in accordance with the Virginia Erosion and Sediment Control Handbook. Additionally, the following shall apply:

- A. Areas of existing tree canopy and vegetation that an applicant has agreed to conserve or preserve as part of a proffer or condition of approval or to meet canopy and/or buffering and screening requirements shall be protected during construction.*

B. Critical Root Zone/Protected Root Zone

When areas of existing tree canopy and vegetation that an Applicant has agreed to preserve or conserve as part of a proffer or condition of approval or to meet canopy and landscape buffer requirements are identified on a site plan or construction plans and profiles, the corresponding critical root zone (CRZ) or protected root zone (PRZ), as applicable, shall be delineated on the site plan and construction plans and profiles, as well as any grading plan prepared in association with and/or any grading permit application accompanying said site plan or construction plans and profiles.

1. For individual trees, the CRZ shall be represented by a concentric circle centered on the tree trunk with a radius equal in feet to one (1) times the number of inches of the trunk diameter (i.e., The CRZ for a twenty (20) inch diameter tree is twenty (20) feet), as shown in Figure 1.
2. For groups of trees, the PRZ shall be represented by a line drawn within the area of tree canopy and vegetation to be preserved or conserved that is parallel to and 15 feet from the limits of clearing and grading, as shown in Figure 1.

C. General Requirements

1. Prior to any land disturbance, protective barriers, such as Super Silt Fence as shown in Figure 3, or welded wire fence as shown in Figure 6, shall be erected along the CRZ of any tree, or along the limits of clearing and grading of any group of trees, as applicable, to be preserved. Protective barriers shall remain so erected throughout all phases of construction. No grade changes or storage of equipment, materials, debris, or fill shall be allowed within the area protected by the barrier. No construction traffic, parking of vehicles, or disposal of liquids is permitted within the CRZ and PRZ. All protective barriers are recommended to display tree protection signage, as shown in Figure 2, installed at a minimum of one sign every fifty (50) feet.
2. Tree roots which must be severed shall be cut by a trencher or similar equipment aligned radially to the tree. This method reduces the lateral movement of the roots during excavation, which if done by other methods could damage the intertwined roots of adjacent trees. This effort shall take place and be complete prior to any land disturbance activities.
3. Within four hours of any severance of roots, all tree roots that have been exposed and/or damaged shall be trimmed cleanly and covered temporarily with moist peat moss, moist burlap, or other moist biodegradable material to keep them from drying out until permanent cover can be installed.
4. Prior to completion of Phase 1 erosion and sediment control construction activity, hazard trees shall be identified by an Urban Forester, Certified Arborist, or Landscape Architect, marked with paint, saw cut, and removed. Trees that become hazard trees following Phase 1 erosion and sediment control construction activity shall also be marked with paint, saw cut, and removed prior to bond release. Tree stumps located within areas of existing canopy and vegetation to be preserved or conserved on open space parcels shall be left intact.

5. Slopes abutting a CRZ or PRZ shall not have a grade greater steeper than 2:1 for a distance of five (5) feet outside the CRZ or PRZ, or a retaining wall shall be required. Any wall constructed within five (5) feet of the CRZ or PRZ shall be reviewed and approved by the County Urban Forester or Director's designee. Grade changes and excavations shall not encroach within the CRZ or PRZ, unless approved by the County Urban Forester or Director's designee.
6. No toxic materials, including petroleum products, shall be stored within 100 feet of the CRZ or PRZ.
7. Sediment, retention, and detention basins shall not be located within the CRZ or PRZ. Such basins shall not discharge directly into the CRZ or PRZ unless the discharge is transitioned back to sheet flow prior to entering the CRZ or PRZ or is discharged into an adequate natural channel, in accordance with Chapter 5 of this manual.

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Essential Recipe 7

Requirements to mitigate impacts to offsite trees

Application: Tree conservation regulations typically focus on protecting trees and forested areas located on the property that is proposed for developed; however, the development of properties that border older established neighborhoods (a.k.a. “infill” development) can incrementally decrease tree canopy levels in jurisdictions, especially those located near core urban areas of our region, or have, or will soon, reach a state of “build-out.”

Damage to trees that are adjacent to, or straddle property lines shared with development sites occurs frequently because tree roots develop without regard to property lines or ownership. The removal or repair of damaged and dead trees can place a significant financial burden on adjacent property owners who may not be aware that trees on their property have been impacted by soil disturbance on adjacent property for several years after the fact. The loss and disfigurement of mature tree canopy can change the aesthetical nature of older neighborhoods, lower resale values, increase level of stormwater runoff, increase heating and cooling costs, and introduce objectional views. When thoughtfully crafted, this type of provision can be used to mitigate the impacts of infill development on surrounding tree canopy and neighbors while still honoring property development rights.

Essential Recipe Example 7.A

Inner Jurisdiction (City)

Fairfax, Virginia City Code

Chapter 110. Zoning Ordinance

Article 4. Site Development Standards

§4.5 Landscaping

§4.5.9. Landscape material and design

D. Existing trees and vegetation

3. Tree removal

(a) *Diseased trees or trees weakened by age, storm, fire or other injury may be removed in accordance with this §4.5.9.D.3. Trees that are damaging or can be reasonably expected to damage buildings, streets, sidewalks or other infrastructure may be removed, subject to verification of site conditions by the zoning administrator. All other tree removal should be based on a consideration of the following:*

- (1) *The effect of the proposed tree removal upon the stabilization of soil, lakes, ponds, streams and rivers;*
- (2) *The intended use of the property and feasible alternatives which would preserve existing trees;*
- (3) *The existing topography, proposed changes in the topography and proposed landscaping;*
- (4) *The hardship imposed or the reasonable use denied to the applicant as a result of permit denial;*
- (5) *Historical value of the trees;*
- (6) *Good horticultural and forestry practices;*
- (7) *The effect of the proposed tree removal on the deadening and absorption of sound;*
- (8) *The likelihood that the proposed action will adversely affect the control of flooding or soil erosion;*
- (9) *The impact of such action on surrounding property or persons; and*

(10) *The consistency of the proposed action with the purpose of §4.5.1.*

(b) *Trees that are approved by the zoning administrator for removal shall be replaced with new trees or large shrubs on the same property and in the same general location.*

Essential Recipe Example 7.B ❖

Inner Jurisdiction (County)

Fairfax County, Virginia

Fairfax County Public Facilities Manual

Chapter 12: Tree Conservation

12-0307.2.C.

Off-site Trees. A tree inventory and poor condition analysis is required for trees located on off-site properties that are 12 inches and greater in diameter located within 25 feet of the proposed limits of clearing. The location, diameter and condition rating of off-site trees may be estimated if the adjacent property owner(s) has not granted permission to access their property. In these cases, the location and diameter measurements must be noted as “location and diameter estimated;” and, if a tree is suspected to be in poor condition from a remote visual assessment, then this must be noted as “suspected as in poor condition” on the plan. Reasonable efforts must be made to lessen the impact of on-site construction activities on off-site trees (see Plates 1A-12 and 1B-12).

Essential Recipe Example 7.C ❖

Outer Jurisdiction (County)

Loudoun County, Virginia

Facilities Standards Manual, Chapter 7, Environmental Design Standards

Section 7.303 (Tree Protection)

C. General Requirements

1. Prior to any land disturbance, protective barriers, such as Super Silt Fence as shown in Figure 3, or welded wire fence as shown in Figure 6, shall be erected along the CRZ of any tree, or along the limits of clearing and grading of any group of trees, as applicable, to be preserved. Protective barriers shall remain so erected throughout all phases of construction. No grade changes or storage of equipment, materials, debris, or fill shall be allowed within the area protected by the barrier. No construction traffic, parking of vehicles, or disposal of liquids is permitted within the CRZ and PRZ. All protective barriers are recommended to display tree protection signage, as shown in Figure 2, installed at a minimum of one sign every fifty (50) feet.

Essential Recipe 8

Requirements to manage hazardous tree conditions

Application: This Recipe can be used to empower local governments to manage the removal or repair of trees, or portions of trees that represent a hazardous condition (i.e., high-risk, unsafe). This type of regulation may be embedded in code language governing land development processes, public health and safety, highway and road safety, and maintenance of private property. Several COG jurisdictions require builders and developers to protect or remove and replace publicly owned trees that have been, or will be, damaged by construction. This recipe has also been used to authorize local government staff to investigate tree-related complaints, and if necessary, to take steps to require tree owners to remove or repair trees which may threaten the community at large; and/or adjacent properties.

Essential Recipe Example 8.A

Inner Jurisdiction (City)

Falls Church, Virginia

Falls Church City Code

Chapter 44 - VEGETATION

Sec. 44-22. - Removal or treatment of trees or shrubbery on private grounds.

- (a) *The arborist, except in the event of an emergency, shall, in carrying out the duties of the arborist outlined in subsections (b), (c) and (d) of this section, contact the property owner by writing the last known address of such owner, describing the conditions and stating the control necessary for correction and establishing a reasonable time within which the required steps shall be taken on a voluntary basis.*
- (b) *The arborist, under the grant of power to municipalities in the state code, may cause or order to be removed any tree or part thereof on private ground which is in unsafe condition, or which by reason of its nature is injurious to sewer or other public improvements, or is affected with any injurious fungus, insect or other pest.*
- (c) *The arborist shall also have power to:*
 - (1) *Enter upon any private grounds in the city and to spray or otherwise treat or cause or order to be sprayed or otherwise treated any tree or shrub infected or infested by any parasite, insect or pest, when it shall be necessary in the opinion of the arborist to do so;*
 - (2) *To prevent the breeding or scattering of any parasite; and*
 - (3) *To prevent danger to person or property or to trees and shrubs planted in the public streets or other public places.*
- (d) *Whenever in the opinion of the arborist, trimming, pruning, removal or treatment of any such tree or shrub located on private grounds shall be deemed prudent and necessary and consistent with the standards of the International Society of Arboriculture as outlined in the American National Standards Institute A3000 and Z133.1 Standards, the arborist shall have the power to trim, treat or remove any such tree or shrub, or cause or order the same to be done.*
- (e) *If the required steps are not taken within the specified time, the arborist shall cause or order the same to be done and shall assess the cost to the owner of the property.*

Essential Recipe Example 8.B

Inner Jurisdiction (County)

Montgomery County, Maryland

Code of Montgomery County Maryland, Regulations

Chapter 49, Streets and Roads Regulations

Sec. 49-36A. Roadside tree work.

- (a) Right-of-way permit required;
- (3) (A) (b) Applicability; exceptions.; and
- (c) Basis for Permit
 - (a) *Right-of-way permit required. The Department must not issue a building or related permit to an applicant for any demolition, clearing, pre-construction activity, construction, or development that is likely to result in the trimming, pruning, root-pruning, cutting, or removal of, or injury to, a roadside tree unless the applicant obtains a right-of-way permit from the Department under Section 49-35.*
 - (3).(A). *A licensed tree expert need not obtain a right-of-way permit for tree work performed on:*
 - (i) *a tree that is uprooted or severely damaged because of a storm or vehicular collision;*
 - (ii) *a tree branch that is broken and contacts a telephone, cable television, electric power, or other wire carrying electric current; or*
 - (iii) *a tree or tree branch that a licensed tree expert finds immediately endangers a person or property.*
 - (c) *Basis of permit. The Department may issue a right-of-way permit if the applicant shows that the proposed tree work is necessary to:*
 - (1) *protect the health of the tree;*
 - (2) *eliminate or reduce a hazard to property, public safety, or health;*
 - (3) *improve or prevent a deteriorated tree condition;*
 - (4) *improve the overall appearance of the right-of-way; or*
 - (5) *carry out a development which has received all other applicable development approvals.*

Essential Recipe Example 8.C

Inner Jurisdiction (County)

Fairfax County, Virginia

Code of Fairfax County Virginia

CHAPTER 46. - Health or Safety Menaces.

ARTICLE 1. - In General.

Section 46-1-1. - Definitions

Section 46-1-2. - Inspection for health or safety menaces

Section 46-1-3. - Abatement of health or safety menaces.

46-1-1. Definitions

(6) Hazards such as open excavations, open wells, pits, trees or parts thereof in danger of falling, or habitation for bats, wasps or other venomous pests;

Section 46-1-2. - Inspection for health or safety menaces.

The Director is authorized to inspect occupied or vacant land or premises to ascertain the existence of health or safety menaces on such land or premises. The Director shall inspect the land or premises at reasonable daylight times in a reasonable manner. If the owner or occupant of the land or premises denies the Director free access for such purposes, the Director may inspect after obtaining a search warrant. (6-14-61, § 8; 1961 Code, § 15B-3; 36-74-15B; 4-78-46; 39-88-46; 41-14-46.)

Section 46-1-3. - Abatement of health or safety menaces.

(a) When any condition that constitutes a public health or safety menace is found on occupied or vacant land or premises, the Director shall notify in writing the owner or occupant of the land or premises on which the condition exists and/or any other person who he believes is responsible for the health or safety menace. Such notice shall contain a description of the health or safety menace and the time within which the menace shall be abated, corrected or eliminated.

Essential Recipe Example 8.D

Outer Jurisdiction (County)

Loudoun County, Virginia

Facilities Standards Manual, Chapter 7, Environmental Design Standards

Section 7.303 (Tree Protection)

C. General Requirements

4. Prior to completion of Phase 1 erosion and sediment control construction activity, hazard trees shall be identified by an Urban Forester, Certified Arborist, or Landscape Architect, marked with paint, saw cut, and removed. Trees that become hazard trees following Phase 1 erosion and sediment control construction activity shall also be marked with paint, saw cut, and removed prior to bond release. Tree stumps located within areas of existing canopy and vegetation to be preserved or conserved on open space parcels shall be left intact.

Essential Recipe 9

Provisions to offset canopy loss from land development, natural mortality rates, and other sources

Application: This Recipe is focused on the tree planting aspect of tree conservation. It can be used to ensure replenishment of tree canopy where existing trees cannot be preserved; must be removed because they have been severely impacted by construction activities; or must be removed because of poor health and condition. This recipe should always be supported by standards for tree selection and specifications for tree planting such as the examples provides in Essential Recipe 10 and 11.

Essential Recipe Example 9.A

Inner Jurisdiction (County)

Montgomery County, Maryland

Montgomery County Code

Chapter 55. Montgomery County Tree Canopy Law

ARTICLE 2. MITIGATION REQUIREMENTS AND REVIEW.

55-6. Shade Tree Planting.

(a) *Alternatives. An applicant for a sediment control permit must plant shade trees on the affected property or, if the applicant opts not to plant the required number of trees, pay a fee under subsection (d).*

(b) *Quantity. The number of shade trees required to be planted under this Section must be based on the square footage of the area in the limits of disturbance.*

(1) *Unless modified or superseded by applicable regulations adopted under Method 1, the number of shade trees planted must comply with the following schedule:*

Area (sq. ft.) of the Limits of Disturbance		Number of Shade Trees Required
From	To	
1	6,000	3
6,001	8,000	6
8,001	12,000	9
12,001	14,000	12
14,001	40,000	15

(2) *If the area in the limits of disturbance exceeds 40,000 square feet, the minimum number of shade trees required must be prorated using the ratio of 15 trees per 40,000 square feet.*

(c) *Planting. Each planting of shade trees under this Section must conform to the following requirements:*

(1) *Each shade tree must be allowed at least 400 square feet, unless applicable regulations adopted under Method 1 specify a smaller amount, of open surface area free of any impervious surface, utility, stormwater management system, or other impediment to root growth and development.*

(2) *Shade trees may be planted anywhere on the subject property, including outside the limits of disturbance if sufficient open surface area is available entirely within the property*

boundaries. Open surface area on an adjacent County right-of-way may be included if no utility, public utility easement, or impervious surface is in that part of the right-of-way and the tree is located on the affected property so that its stem will not grow into the right-of-way.

- (d) Fees. If the applicant concludes that any required shade tree cannot be planted on the affected property because sufficient open surface area is not available or for any other reason, the applicant must pay into the Tree Canopy Conservation Account a fee for each required shade tree that is not planted on the affected property. The fee must be equal to the applicable rate the Department sets for bonding trees in the right-of-way.

Essential Recipe Example 9.B

Inner Jurisdiction (County)

Fairfax County, Virginia

Code of Fairfax County Virginia, Chapter 122, Tree Conservation

Section 122-2-2. - Standards for 10-year Tree Canopy Requirements; and,

Section 122-2-4. - Tree Planting Requirements

- (a) The 10-year tree canopy requirement may be met through the preservation or planting of trees. However, when existing trees meet standards of health, condition, and suitability, and when it is feasible to preserve those trees within the framework of permissible uses, densities, design standards, and construction practices, all efforts shall first be made to meet the tree canopy requirement through the preservation of trees before tree planting is allowed to meet any portion of the tree canopy requirement.
- (b) Tree canopy credit shall be given to existing areas of trees and forested areas designated to be preserved on plans and comprised of self-supporting and woody plant material exceeding five feet in height at time of plan submission provided that the trees and forested areas meet standards for health, condition, and suitability.
- (c) Any portion of the tree canopy requirement that cannot first be met through the preservation of trees as provided for in § 122-2-3 shall be provided through tree planting.
- (d) Tree canopy credits for trees and plant material used to satisfy 10-year tree canopy requirements shall be determined in accordance with the provisions of the Public Facilities Manual (PFM). (64-08-122.)

Section 122-2-4. - Tree Planting Requirements.

- (a) Tree canopy credit shall be given to areas of planted tree canopy based on the projected 10-year tree canopy calculation as set forth in the PFM, provided that the proposed tree species meets standards established to manage proper levels of biodiversity and the spread of invasive plants, pests, and diseases.
- (b) Tree canopy credits shall be given to tree seedlings, shrubs and woody seed mix planted in large open spaces, low-density residential settings, or in low-impact development projects.

- (c) *Additional tree canopy credits shall be granted for the planting of trees that will provide air quality, energy conservation, water quality, wildlife conservation benefits.*
- (d) *Additional tree canopy credits shall be granted for the use of native tree species, and the use of cultivars or varieties that develop desirable growth and structural patterns, resist decay organisms and the development of cavities, show high levels of resistance to disease or insect infestations, and, exhibit high survival rates in harsh urban environments.*
- (e) *In order to provide higher levels of biodiversity and to minimize the spread of pests and diseases, or to limit the use of species that cause negative impacts to native plant communities, cause damage to nearby structures, or possess inherent physiological traits that prone trees to structural failure, the PFM designates trees that cannot be planted to meet tree canopy requirements or that shall only receive partial tree canopy credits.*
- (f) *All plant materials used to satisfy 10-year tree canopy requirements shall be selected, located, handled and installed in accordance with the PFM. (64-08-122.)*

Essential Recipe Example 9.C 🌳

Inner Jurisdiction (County)

Montgomery County, Maryland

Code of Montgomery County Maryland, Regulations

Chapter 49, Streets and Roads Regulations

Sec. 49-36A. Roadside tree work.

(e) Tree replacement.

(1) *Each permittee who removes a roadside tree in a County right-of-way must:*

- (A) *plant a tree from the recommended County tree list in a County right-of-way, at or near the location of the original tree, which is suitable to that location, unless the Director waives this requirement because:

 - (i) *compliance at the specific site would not be feasible; or*
 - (ii) *the removed tree was already dead or posed a danger to persons or property; and**
- (B) *pay an amount into a Street Tree Planting Fund maintained by the Department of Transportation, unless the Director waives this requirement because the removed tree was already dead or posed a danger to persons or property, at a rate set by regulation that will allow the Department of Transportation to plant 2 more suitable replacement trees, or 3 more replacement trees if the Director has waived the on-site planting requirement because compliance at the particular site would not be feasible, at suitable locations in the right-of-way of a public road in the County.*

Essential Recipe 10

Standards for planting spaces, planting techniques, and survivability

Application: This Recipe is focused on the technical aspects of tree planting. Its inclusion in tree planting regulation is necessary to ensure that planting efforts are executed in a manner that is based on the latest scientific research and arboricultural industry best management practices. It is also used to ensure the quality, health, structure and survivability of plant materials required by regulation. The application of these standards is especially critical where trees will be planted in harsh urban environments such as those found along urban streets and in parking lots.

When applicable, these standards should be linked to relevant sections of ANSI A300 Standards for Tree Care, and ANSI Z60.1 American Association of Nurserymen's American Standard for Nursery Stock, In addition these standards are often accompanied by technical drawings such as Essential Recipe Example 10.B which is a tree planting detail.

Essential Recipe Example 10.A ❖

Inner Jurisdiction (County)

Fairfax County, Virginia

Fairfax County Public Facilities Manual

12-0315 Landscape Plans

E. Standards for Tree Location

1. *Tree canopy credit will be given to trees that are preserved or planted on privately owned lots and parcels, common open space, dedicated open space and on public property, if the tree canopy meets specifications and standards of § 12-0200.*
 - a. *Tree planting spaces proposed in the streetscape and other areas restricted by barriers to root growth should provide a planter open surface area at least 6 x 6 feet. Where minimum planting areas cannot be met and planting spaces at least 8 feet wide cannot be provided, rooting zone width a minimum of 8 feet should be provided beneath paved surfaces that provide uncompacted soil within the planting space, with planting sites meeting the following specifications: a. A minimum of 6 feet open surface width and 36 square feet open surface area.*
 - b. *Rooting area beneath paved surfaces a minimum of 8 feet wide, taking into consideration sloped sides as may be needed to support adjacent compacted soils for roadways and pedestrian walkways. Planting space depth should be 4 feet within four feet of the tree on all sides. Soil depth in areas beyond four feet may be shallower or narrower if specified minimum soil volumes are met. Paved surfaces over the specified rooting area should not be dependent upon compacted soil for structural support.*
 - c. *Soil volume for Category III or IV trees (as indicated in Table 12.17) should be a minimum of 700 cubic feet per tree for single trees. For two trees planted in a contiguous planting area, a total soil volume of at least 1200 cubic feet should be provided. For three trees or more planted in a contiguous area, the soil volume should equal at least 500 cubic feet per tree. A contiguous area is defined as any area with a soil depth of 3-4 feet, within which lateral root growth is unrestricted.*

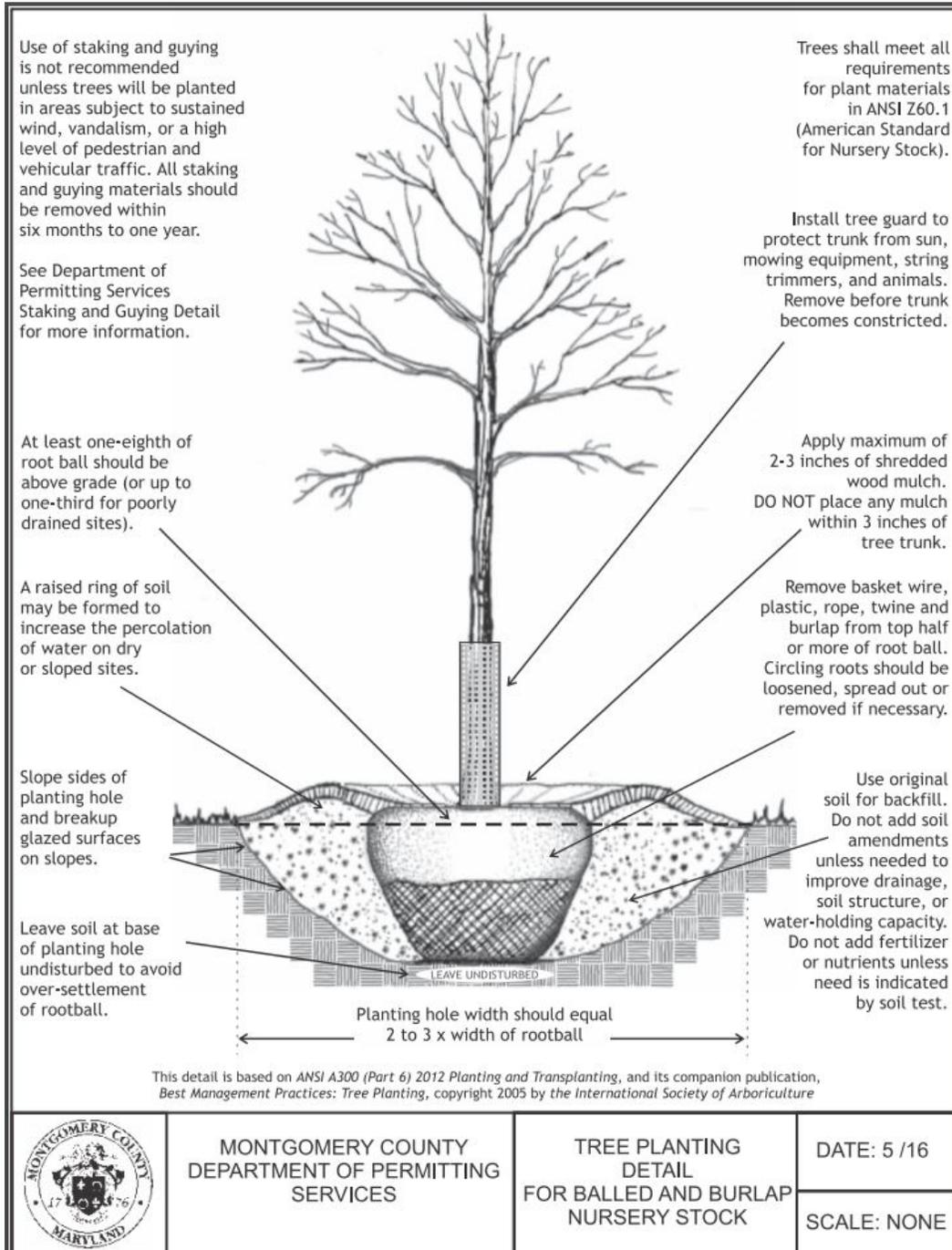
12-0315.5 Planted Trees and Easements

- A. The landscape plan must show all existing and proposed easements that may conflict with the tree planting requirements of Article 13 of the Zoning Ordinance and this Chapter.*
- B. Trees may not be planted within any existing or proposed public utility easement that is required to be delineated on the plan, or within 5 feet of storm drainage easements that contain pipes. In addition, trees may not be planted in an area which will interfere with existing or proposed utilities or obstruct or interfere with access of maintenance personnel or equipment, as determined by the Director, except as may be allowed in accordance with § 12-0315.5C below.*
- C. If trees are shown to be planted within an existing or proposed public utility easement, the plan must contain a letter of permission from the owner of the easement.*

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Essential Recipe Example 10.B ❖

Inner Jurisdiction (County)
 Montgomery County, Maryland
 Montgomery County
 Roadside Tree Protection Law
 Design Guidelines & Specifications
 Tree Planting Detail



Essential Recipe Example 10.C ❖

Outer Jurisdiction (County)

Loudoun County, Virginia

Facilities Standards Manual, Chapter 7, Environmental Design Standards

Section 7.305 (Reforestation Standards)

7.305 REFORESTATION STANDARDS

Any required reforestation used to satisfy the Zoning Ordinance, a proffer, or a condition of approval of a special exception or variance shall comply with the following standards. These standards may serve as guidance for other voluntary planting efforts.

A planting plan prepared by an Urban Forester, Certified Arborist, or Landscape Architect shall be required and shall be reviewed and approved by the County Urban Forester or Director's Designee. The planting plan shall specifically address plant materials, plant density/stocking requirements, site preparation, site stabilization, release/maintenance, livestock exclusion, wildlife damage, maintenance, and restocking requirements (post-establishment). Any proposed streambank stabilization and control of invasive plant species also should be addressed by the planting plan.

A. Plant Materials

A general description of the existing trees and vegetation on the site shall be provided. Table 3 identifies certain trees and shrubs that are native and have multiple use benefits that improve or enhance wildlife, recreation, and overall aesthetic values, that shall be used for reforestation. To achieve diversity, canopy tree plantings shall consist of a mixture of five (5) or more species from Table 3 and understory tree plantings shall consist of a mixture of three (3) or more species from Table 3. The County Urban Forester or Director's Designee may approve the use of additional tree species where appropriate.

- 1. Plantings shall be installed as soon as possible after delivery from the nursery. If plantings cannot be installed within 48 hours of delivery from the nursery, such plantings shall be kept cool and moist or heeled-in. Plantings shall be high quality stock with good root systems. Quality hardwood seedlings should have a minimum of four to five large lateral roots.*
- 2. Plantings should be installed in early Spring (March–April). A tree planting machine, auger, planting bar, or shovel can be used to plant seedlings. Root collars of seedlings shall be slightly below the soil surface. Planting holes shall be closed, plant material shall not be J-rooted, and the soil around the root or cutting shall be firm.*

B. Planting Density/Stocking Requirements

- 1. Plantings shall be installed with a staggered and uniform spacing. Understory trees shall be interplanted among canopy trees. A canopy tree shall be defined as any tree thirty (30) feet tall or greater at maturity, while an understory tree shall be defined as any tree less than thirty (30) feet tall at maturity.*

2. Plantings shall be installed in accordance with the plant densities and shall include all plant size categories listed in Table 2.

<i>Table 2 - Required Plant Densities for Reforestation Plant Size Categories</i>	<i>Plants per Acre</i>	<i>Staggered Plant Spacing (ft)</i>
Seedlings/Tublings (Canopy Species)	200	14' x 14'
Seedling/Tublings (Shrubs)	165	16' x 16'
3-gallon Understory Trees	120	12' x 12'
3-gallon Canopy Trees	180	

Essential Recipe 11

Standards for life expectancy, species diversity, pest and disease resistance, environmental suitability, and other characteristics

Application: This Recipe relates to another critical aspect of tree planting: taking steps to ensure that planted trees possess characteristics that: are conducive to long life spans; do not disrupt native tree populations; are more resistant to the effects of pests and diseases; can thrive in the environments they are planted in; require less maintenance; and possess other desirable characteristics that are considered assets by the communities. These standards help to sustain the health, safety and value of urban forests over time. Essential Recipe Examples 11.A and B can be used to prevent tree species and species of the same genus (family) from being overused. These provisions reflect a widely used strategy that is used to ensure that planted tree canopy remains biologically diverse and resilient to threats from diseases, pests, climate change and other pressures.

Essential Recipe Example 11. A ❖

Outer Jurisdiction (County)

Loudoun County, Virginia

Facilities Standards Manual, Chapter 7, Environmental Design Standards
Section 7.302 (Tree Conservation and Landscape Plans)

B. or new plantings used to meet canopy, landscaping and/or buffering and screening requirements, a Landscape Table shall be provided as follows below. For tree plantings, canopy coverage provided shall be in accordance with Table 3, or as established by the Director or Director's designee for additional species. To achieve diversity:

- 1. If 30 or more trees of a planting category are required to be planted, then no more than one-third of any category of trees (canopy, understory, and evergreen) shall be composed of one species; and*
- 2. Evergreen tree species used to meet evergreen tree planting requirements shall not be used to meet understory tree planting requirements.*

Essential Recipe Example 11. B ❖

Inner Jurisdiction (County)

Fairfax County, Virginia

Fairfax County Public Facilities Manual
12-0315 Landscape Plans

L. Plant Diversity. If 30 or more trees are required to be planted on a site, then no more than 10 percent of the total number of trees should be composed of one species and no more than 33 percent of the total number of trees should be composed of one genus. This requirement should not apply to the composition of transitional screening yards required by the provisions of Article 13 of the Zoning Ordinance. Sites requiring less than 30 trees and/or portions of sites dedicated as a transitional screening yard should not be comprised of more than 33 percent of one plant species or 66 percent of one genus.

Essential Recipe Example 11.C ❖

Inner Jurisdiction (County)

Fairfax County, Virginia

Fairfax County Public Facilities Manual

12-0400 Tree Selection and Cover Guide

12-0400 TREE SELECTION AND CANOPY COVER GUIDE

12-0401 Explanation of Tree Selection and Canopy Cover Guide

12-0401.1 Purpose. The Tree Selection and Canopy Cover Guide (Table 12.17) contains information which is helpful when selecting trees to be planted on sites after construction has been completed. For the purposes of defining tree canopy credit, the table contains categories of trees based on their ultimate height and spread. This information is not all inclusive but does include many species which have performed well in this region and are generally available in local nurseries. The highlighted tree species and their cultivars, many of which are native species, have proven to perform well in the landscape under the conditions typical for the listed tree uses. Sections § 12-0401.1A through § 12-0401.1F provides an explanation of Table 12.17 entitled Tree Selection and Canopy Cover Guide, columns and codes. The Director may approve trees other than those listed in Table 12.17 for various uses and canopy credit, upon request, with adequate documentation regarding the characteristics of the tree(s) in question.

- A. Botanical/Common Name. This column lists trees alphabetically and categorizes them based on their ultimate size and tree canopy area. Botanical names are given first, including genus, species, and, in some cases, cultivar name. Common names used in the Mid-Atlantic region are given second. Deciduous trees are separated from evergreens in all categories. Evergreens include both coniferous and broadleaf species.*
- B. Minimum Planting Area. This column shows the soil surface area in square feet that must be provided when planting a given species. This information should be used to determine the minimum planting space for all planted trees. When minimum planting areas cannot be provided due to existing conditions, alternative designs that provide the maximum possible planting areas may be allowed as approved by the Director. A detail showing the alternative design must be provided on the landscape plan.*
- C. Projected 10-year Tree Canopy Area. These columns give the projected 10-year Tree Canopy area in square feet for trees of different sizes at time of planting. Deciduous trees are listed by commonly available caliper sizes and evergreen trees are listed by commonly available heights. The 10-year Tree Canopy cover will be used to determine tree canopy credit for planted trees and will be used for drawing trees to scale on the landscape plan and to determine minimum spacing requirements. When drawn to scale, tree canopies should not significantly overlap (see § 12-0315.1D). Trees proposed to be planted in sizes larger than those listed in Table 12.17 (larger than a 3-inch caliper for deciduous trees and taller than 10 feet in height for evergreens) may receive additional 10-year Tree Canopy credit using Table 12.17 as a guide as approved by the Director.*
- D. Tree Uses and Screening Yard Use. Tree selection should be based upon post-development site conditions (see Table 12.15).*

<i>Table 12.15 Tree Uses and Screening Yard Use Codes</i>	
<i>Tree Uses</i>	<i>Code</i>
General	G
Native	N
Parking Lot Planting Areas	PL
Planting in Restricted Areas	RA
Energy Conservation Credit	EC
Wildlife Value	WL
<i>Screening Yard Use</i>	<i>Code</i>
Categorized by Transitional Screening Requirements:	
Large Evergreen Tree	LE
Medium Evergreen Tree	ME
Large Deciduous Tree	LD

1. General (G). These trees are suitable for a variety of uses.
2. Native (N). A native tree is defined as a tree species that the Director determines to be indigenous to any of the forest or woodland communities that were likely present in Fairfax County immediately before European settlement of Virginia. These trees may be used for additional canopy credits as provided in § 12-0310.4B.
3. Parking Lot Planting Areas (PL). These tree species have been selected for use in parking areas based on their favorable branching habits and tolerance of poor soils, drought, radiant heat and restrictive root space. Trees most appropriate for planting on parking decks will have the following environmental tolerances: restricted root zone (RZ), poor soils (SC), air pollution (AP) and drought tolerance (D). Tree planters on decks should provide the minimum planting areas as stated in Table 12.17 and include a suitable, lightweight soil mix, and means of irrigation and drainage (see Plate 5-12).
4. Plantings in Restricted Areas (RA). These species should be considered where the ultimate size and form of a tree, along with its root structure, must be given consideration in order to avoid potential maintenance, safety, and access problems.
5. Screening Trees (LE, ME, LD). Trees identified by these notations are effective in meeting the transitional screening requirements of Article 13 of the Zoning Ordinance, by providing eye-level visual screening. Both deciduous and evergreen species are listed but only evergreens provide year-round screening.

E. Environmental Tolerances. This column is used to select species that are tolerant of specific environmental factors, both natural and constructed, that occur frequently in the urban setting. Refer to Table 12.16 for the tolerance code list.

<i>Table 12.16 Environmental Tolerance Codes</i>	
<i>Environmental Tolerances</i>	<i>Code</i>
Restricted Root Zone	RZ
Poor Soil Conditions	SC
Partial Shade	PS
Full Shade	SH
Air Pollution	AP
De-icing Salts	IS
Wet Soil Conditions	W
Drought Conditions	D

1. *Restricted Root Zone (RZ). These species will tolerate limited planting areas better than other species. Roots of these trees will usually not disrupt surrounding hardscapes. It is noted that trees that are planted in areas that meet only the minimum requirements for planting area, generally will not be healthy, long-lived trees. A larger planting space will result in more healthy, vigorous specimen trees due to increased nutrient availability and improved soil conditions.*
2. *Poor Soil Conditions (SC). These species are noted for their tolerance to a range of soil conditions found in the urban environment. It should be noted that most trees do not tolerate poor soils. Tolerant trees that may grow in poor soil will generally not thrive.*
 - a. *A poor soil is a soil used as a growing medium that has marginal properties for support of plant life. Poor soil conditions may include one or more of the following characteristics: low nutrient content (essential nutrients have been leached or the soil lacks nutrient holding capacity), improper pH (a soil that is either too acidic or too alkaline) and poor structure (highly compacted with little pore space and a low water infiltration and percolation rate).*
 - b. *Subsoils used to provide a stable base for sidewalks, parking lots, buildings, etc., and general grading purposes are often inadequate for plant growth. Amending these soils with composted organic matter and agricultural lime may improve soil pH, structure and nutrient availability. Testing soil for pH and nutrient content is advisable before amending soil. Soil amending in individual planting holes is not recommended. If soil amendments are needed, they should be applied using broadcast methods and tilled in over a large planting area.*
3. *Partial Shade (PS). These species tolerate or prefer areas receiving partial amounts of direct sunlight such as on the Eastern or Northern sides of structures or forested areas.*
4. *Full Shade (SH). These species tolerate or prefer a shaded environment. However, the deeper the shade, the more difficult it is for any tree to thrive.*
5. *Air Pollution (AP). This group of species will tolerate areas subjected to exhaust gas emissions found along roadways and within parking lots. These trees are*

typically deciduous and shed their leaves before particulate matter can damage plant tissue. Evergreens retain leaves or needles longer, allowing particulate matter to be absorbed and destroy plant tissue, and as such are more susceptible to pollution injury.

6. *De-icing Salts (IS). These species are tolerant of root and leaf exposure to de-icing salts such as sodium chloride and calcium chloride. These trees should be planted along roadways and in the vicinity of parking lots, sidewalks and asphalt paths subject to snow and ice removal operations.*
7. *Wet Soil Conditions (W). These species will tolerate moderate to excessive soil moisture. These trees should be planted adjacent to waterways, ponds, lakes, stormwater retention and detention facilities.*
8. *Drought Conditions (D). These species will tolerate hot, dry conditions. They require less available soil moisture than most trees and should be considered for planting areas subjected to heat, drying winds, and intense solar radiation without the benefit of supplemental moisture. These conditions are often found along roadways, parking lots, parking decks, and around buildings that absorb heat and reflect sunlight.*

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12-0400 TREE SELECTION AND CANOPY COVER GUIDE (partial example)

Essential Recipe Example 11.D ❖

Inner Jurisdiction (County)

Fairfax County, Virginia

Fairfax County Public Facilities Manual

12-0400 Tree Selection and Cover Guide

12-0000 TREE CONSERVATION

Table 12.17 Tree Selection and Canopy Cover Guide

Botanical/ Common Name	Min. Planting Area in ft ²	Projected 10-yr. Tree Canopy Area in ft ² and caliper in inches at planting			Tree Uses	Screening Yard Use	Environmental Tolerances	Conditional Use or reduced credit	Air Quality 12-0310.4B(1)	Energy Conservation 12-0310.4B(2)	Water Quality 12-0310.4B(3)	Wildlife 12-0310.4B(4)	Native 12-0310.4B(5)	Improved Cult./Var. 12-0310.4B(6)
		1.0	2.0	3.0										
CATEGORY I DECIDUOUS TREES		Trees 50 feet or less in height at maturity with a spread less than one-half of their height												
<i>Acer rubrum</i> 'Columnare'/ columnar red maple	50	40	50	75	RA		RZ							
<i>Carpinus betulus</i> 'Fastigiata'/ fastigate European hornbeam	50	40	50	75	RA		PS							
<i>Fagus sylvatica</i> 'fastigiata'/ fastigate European beech	50	40	50	75	RA		PS							
<i>Ginkgo biloba</i> 'Sentry'/ sentry ginkgo	50	40	50	75	RA		AP, D, RZ, SC	Yes						
<i>Quercus robur</i> 'Fastigiata'/ fastigate English oak	50	40	50	75	RA		SC							
CATEGORY II DECIDUOUS TREES		Trees that can be maintained at a height of 20 feet or less and have a spread approximately equal to their height												
<i>Acer campestre</i> / hedge maple	50	75	100	125	G		AP, D							
<i>Acer ginnala</i> / amur maple	50	75	100	125	G, RA		D, PS, RZ							
<i>Acer palmatum</i> / Japanese maple	50	75	100	125	G		RZ, SH							
<i>Amelanchier arborea</i> / downey serviceberry	50	75	100	125	G, RA		PS, RZ, W			1.25	1.5	1.5		
<i>Amelanchier laevis</i> / Allegheny serviceberry	50	75	100	125	G, RA		PS, RZ, W			1.25	1.5	1.5		
<i>Asimina triloba</i> / Paw paw	50	75	100	125			SH, W			1.25	1.5	1.5		
<i>Carpinus caroliniana</i> / American hornbeam	50	75	100	125	G, RA		SH, W			1.25		1.5		
<i>Castanea pumila</i> / Allegheny chinkapin	50	75	100	125							1.5	1.5		

Essential Recipe 12

Provisions to ensure tree conservation practices are planned and implemented by qualified tree care professionals

Application: This Recipe is used to ensure that certain aspects of tree care are planned or carried out by technically proficient tree care professionals such as individual that have been designated by the International Society of Arboriculture as a *Certified Arborist*, or by the State of Maryland as a *Licensed Tree Expert*.

Essential Recipe Example 12.A

Inner Jurisdiction (County)

Montgomery County, Maryland

Code of Montgomery County Maryland, Regulations

Chapter 49, Streets and Roads Regulations

49.36A.01.05. D. Right of Way Permit Applications, and

49.36A.01.06. A. Tree Protection Plan

49.36A.01.05. D. Right of Way Permit Applications

D. *The applicant must apply for a right of way permit or amend an existing application for a right of way permit to include the tree disturbance or removal. The application for a right of way permit must include a tree protection plan including the designation of a licensed tree expert to perform the tree care or removal for the Department's review and approval. The Department will approve all measures necessary to protect roadside trees except when the right of way permit designates removal of those trees.*

49.36A.01.06. A. Tree Protection Plan

A. *The applicant must submit a site-specific tree protection plan except when the area of construction is included in a forest conservation plan approved by the Maryland National Capital Park and Planning Commission. The plan must designate a licensed tree expert who will be responsible for tree protection during construction and must incorporate all necessary measures to protect or minimize damage to any affected roadside tree. It must include the limits of disturbance, critical root zone of any roadside tree, access and storage areas.*

Essential Recipe Example 12.B 
Non-COG Member Jurisdiction (CITY)
Fredericksburg City Code
Chapter 72. Unified Development Ordinance
SECTION 72-55. Landscaping
Sec. 72-55.1. General requirements.

A. Landscape plan

(1) To ensure compliance with the standards of this section, a professionally prepared landscape plan, approved by an International Society of Arboriculture (ISA), certified arborist, demonstrating compliance with the requirements shall be included as a part of any application for approval of a site plan, subdivision, planned development, cluster development, certificate of appropriateness, special use permit, or zoning permit, as appropriate.

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Essential Recipe 13

Flexible exceptions, deviations, waivers, and appeal procedures

Application: This Recipe can be used to provide administrative flexibility when localities determine that strict application is likely to cause unavoidable conflicts with other codes or legal requirements or law; prohibit the development of uses and densities allowed by local development and zoning regulations; or, would conflict with adopted land use planning or socio-economic goals. In these cases, localities may find it useful to define a set of alternative outcomes that it expects in lieu of full compliance.

Tree regulations should also provide an appeal process that defines the basis for appeals, associated deadlines, and identifies title of local official(s) designated to examine the merits of appeals and to make final determination.

Effective dates and “grandfathering” provisions and effective dates may be needed to define the exact date and time the regulation becomes effective, and to exempt the applicability of the regulations to proposed land development permits and plans which have already entered into the local land development review pipeline.

Essential Recipe Example 13.A ❖

Inner Jurisdiction (County)

Fairfax County, Virginia

Public Facilities Manual, Chapter 12: Tree Conservation

12-0308 Tree Preservation Target

12-0308.3 Allowable Deviations to Tree Preservation Target

A. Deviations in whole or part from the site’s Tree Preservation Target may be requested under the following conditions:

- 1. Meeting the Tree Preservation Target would preclude the development of uses or densities otherwise allowed by the Zoning Ordinance;*
- 2. Meeting the Tree Preservation Target would require the preservation of trees that do not meet standards for health and structural condition and other vegetation and risk management requirements of § 12-0200 et seq.*
- 3. Construction activities could be reasonably expected to impact existing trees or forested areas used to meet the Tree Preservation Target to the extent these would not likely survive in a healthy and structurally sound manner for a minimum of 10-years in accordance with the post-development standards for trees and forested areas provided in §§ 12-0203 and 12-0204.*

Essential Recipe Example 13.B

Inner Jurisdiction (City)

Falls Church, Virginia

Falls Church City Code

Chapter 44 - VEGETATION

ARTICLE II. - TREES AND SHRUBS

Sec. 44-58. - Appeals.

An appeal to the city manager may be taken by any person aggrieved by any decision of the city arborist relative to the administration of this article. An appeal shall be taken within ten working days from the date of the issuance of the arborist's written order, by filing with the city arborist and the city manager a notice of appeal specifying the grounds. The city arborist shall then transmit to the city manager the record upon which the appeal is based. All decisions by the city manager can be appealed to a court of record. The city manager shall solicit the opinion of the urban forestry commission, hear the appeal, and render a decision within 15 working days of receipt of the notice of appeal. An appeal stays all compliance with the action being appealed, unless the city arborist certifies to the city manager that by reason of stated facts a stay would, in such arborist's opinion, cause imminent endangerment to life or property. In such cases, compliance shall not be stayed other than by a restraining order which may be granted by the city manager, or by a court of record, on application and on notice to the city arborist and on due cause shown.

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Essential Recipe 14

Standards and definitions to administer, review and enforce the regulations

Application: This Recipe is used to strengthen laws, regulations and standards by defining terms referenced within these documents. Without these definitions, regulatory framework administration and enforcement will be compromised, creating confusion among those tasked to administer them as well as those seeking to comply.

Essential Recipe Example 14.A

Inner Jurisdiction (City)
Takoma Park, Maryland
Takoma Park Municipal Code
Title 12 TREES AND VEGETATION
Chapter 12.04 GENERAL PROVISIONS

12.04.010 Definitions.

As used in this chapter:

Basal area means the area of a tree trunk's cross section, measured outside the bark.

Caliper means the diameter measurement of the trunk of nursery stock trees, taken at caliper height.

Caliper height means 6" above the ground in the case of trees less than 4" in diameter at 6" above the ground and 12" above the ground in the case of all other trees.

Canopy means the combined crowns of all trees on a tract of land.

City Manager means the City Manager of the City of Takoma Park or his or her designee.

City Property means City rights-of-way, City parks, median strips, and other City-owned or controlled property.

Critical root zone means the protection zone for an individual tree or an area defined by a circle with a diameter 36 times the DBH of the tree (or 1.5' of radius for each inch of DBH) or such smaller area as determined by the City Manager in a tree impact assessment.

Crown means the volume defined by the spread of the branches and foliage of a tree.

Department means the Department of Public Works of the City of Takoma Park.

Diameter at breast height or "DBH" of a tree means the measurement of the average diameter of the tree taken at 4 1/2' above the ground.

Essential Recipe Example 14.B

Inner Jurisdiction (CITY)

Falls Church, Virginia

Falls Church City Code

Chapter 44 - VEGETATION

Sec. 44-21. - Definitions

Arborist or urban forester means a person trained in arboriculture, forestry, horticulture, landscape architecture and/or related fields, and experienced in the conservation and preservation of native and ornamental trees in the employ of or under contract to the city, duly appointed by the city manager and primarily charged with the responsibility of enforcing the provisions of this article.

Buffer area means an area of natural or established vegetation managed to protect other components of a resource protection area and state waters from significant degradation due to land disturbances.

Critical root zone or CRZ means the area beneath a tree that may extend well beyond the spread of its branches. The size of the critical root zone is a function of tree type, size, health and its response to construction stresses. The size of the critical root zone should be adjusted according to the specific factors listed in this definition and site conditions, but generally can be calculated as one foot per inch of diameter at breast height (DBH) of the tree to be preserved. For example, a ten-inch diameter at breast height tree would have a critical root zone of ten feet from the tree trunk in all directions.

Denuded refers to a term applied to land that has been physically disturbed and no longer supports vegetative cover.

Development means land disturbance and the resulting landform associated with the construction of residential, commercial, industrial, institutional, recreation, transportation, or utility facilities or structures, or the clearing of land for non-agricultural or non-silvicultural purposes.

Diameter at breast height or DBH means the diameter of the tree measured outside the bark at a point four feet above the ground.

Director means the director of public works or his designee and is the representative of the city who has been appointed to serve as the agent of the city in administering this article.

Disturbed acreage means that portion of the project that will be disturbed, denuded, graded, cut, or filled.

Dripline means a vertical projection to the ground surface from the furthest lateral extent of a tree or shrub's canopy.

Destroy means to cut down a tree or to perpetrate any intentional or negligent act which will cause a tree to decline or die within a period of two years. The term "destroy" shall include, but is not limited to:

- (1) Damage inflicted upon the root system of a tree by:

- a. The application of toxic substances;
 - b. The operation of equipment and vehicles; or
 - c. The change of natural grade by unapproved excavation or filling within the covered area of a tree.
- (2) Damage caused by the unapproved alteration of natural physical conditions.

Development means any alteration of the natural environment of improved and unimproved real estate which requires the application and approval of a site plan, subdivision plat or development plan related to regulated land disturbance activities and/or requiring permits, including, but not limited to, demolition, grading, filling, excavation and building.

Historic tree means a tree which has been determined by the city council to be of notable historic interest because of its age, size or historic association and has been so designated in the official records of the city.

Land disturbing activity means a manmade change to the land surface that potentially changes its runoff characteristics including any clearing, grading, or excavation except that the term shall not include those exemptions specified in section 35-4.

Layout means a conceptual drawing sufficient to provide for the specified stormwater management facilities required at the time of approval.

Permittee means the person to whom the stormwater management permit is issued, including any owner or operator whose construction site is covered under a state construction general permit.

Person means any individual, corporation, partnership, association, state, municipality, commission, or political subdivision of a state, governmental body, including a federal, state or local entity as applicable, any interstate body or any other legal entity.

Pre-development conditions refers to conditions at the time an applicant becomes subject to the provisions of this article. Where phased development or plan approval occurs (preliminary grading, roads and utilities, etc.), the existing conditions at the time the applicant first becomes subject to the provisions of this article shall establish pre-development conditions.

Redevelopment means the process of developing land that is developed or has been previously developed.

Resource protection area or RPA means that component of the Chesapeake Bay Preservation Area as defined in subsection 35-10(b). Resource protection areas consist of sensitive lands that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may result in significant degradation to the quality of state waters.

Riparian Buffers Modification and Mitigation Guidance Manual means the Riparian Buffers Modification and Mitigation Guidance Manual, published in September 2003, written and published by the Chesapeake Bay Local Assistance Department, now the Virginia Department of Environmental Quality. The intent of the manual is to provide guidance and clarification for tidewater local governments, at their request, regarding the section of the Chesapeake Bay Preservation Act describing buffer exemptions and modifications.

Shrub means any self-supporting woody plant which usually has multiple trunks. For preservation and canopy coverage calculation purposes, a shrub shall measure no less than five feet in height above ground level.

Specimen tree means a tree which has been determined by the city council to be notable by virtue of its outstanding size and quality for its particular species and of high value because of its type, size, age or other professional criteria and has been so designated in the official records of the city.

Street tree means any tree which has been individually designated by the city council and which grows in the street right-of-way or on private property as authorized by the owner and placed or planted there by the city. [I don't know where this definition comes from –designating individual street trees by law is weird]

Tree means any self-supporting woody plant which usually provides one main trunk and produces a more or less distinct and elevated head with many branches. For preservation purposes and canopy coverage calculation purposes, a tree shall measure no less than two inches in DBH.

Tree canopy means the branches, leaves, or other foliage from any tree measuring no less than two inches in DBH and shrubs measuring no less than five feet in height.

Tree canopy coverage means the area surrounding a tree or shrub located within the dripline.

Tree replacement plan means a plan indicating the location, size, quantity, common and botanical name, and type of nursery stock (B and B, BR or container) of replacement trees.

Woody vegetation means and includes all trees and shrubs.

Essential Recipe 15

Provisions to monitor, inspect and enforce regulations

Application: This Recipe is used to authorize local government staff to monitor, inspect and enforce regulatory requirements after the review and approval process. It typically is divided into distinct sections that address the what, who and where's of monitoring and inspection processes; and legal consequences, remedies and timeframes associated with violations. In some cases, the Recipe identifies monetary mechanisms such as surety bonds or cash escrows that are used to guarantee the completion of code requirements.

Essential Recipe Example 15.A

Inner Jurisdiction (City)

Falls Church, Virginia

Falls Church City Code

Chapter 48 - ZONING

Sec. 48-1143. - Bonds.

- (b) *Bond for landscape elements. There shall be a bond to ensure the planting and maintenance of all plants and trees shown on the plan for landscaping. Prior to the issuance of building or development permits, the owner or agent shall deposit a cash bond in an interest-bearing escrow account upon which the city may draw under the conditions set out in this section in an amount equal to the total replacement cost of all newly installed plants and trees. Deposit of such funds shall be in a qualified security or insured savings account and any interest earned shall be credited to the owner or his agent.*
- (1) *Time, amount of bond fixed and standard for fixing amount. The replacement cost of the plants and trees shall be fixed as of the time the approved plan for landscaping is released by the city staff and shall be based upon the most current Guide for Establishing Values of Trees and Other Plants, prepared by the Council of Tree and Landscape Appraisers.*
- (2) *Other forms of security allowed. In the event the amount of the bond is fixed in excess of \$2,000.00, a surety bond, letter of credit, certified check or other similar form may be provided in lieu of cash bond for the amount in excess of \$2,000.00, if the particular form is approved by the city attorney.*
- (3) *Procedure for administration and term of bond. The owner or agent shall notify the city arborist three days prior to the installation of the plants and trees shown on the plan for landscape. The arborist shall inspect the plant and tree material and the method of installation. The arborist shall have the authority to require that healthystock be planted and that the installation be done in a manner permitted by the most recent edition of American Standard for Nursery Stock, published by the American Association of Nurserymen. The arborist shall certify in writing when the installation of all new plants and trees shown on the plan for landscaping has been completed in an acceptable manner, based on the standards in this section. The bond for the site may be apportioned if the property is being developed in phases or discrete parts. The term of the bond shall be one year from the date on which the arborist certified that installation was complete. The arborist shall inspect the site during the one-year period and, if the plants or trees are not in good health, the arborist may require corrective measures or replacement, if the plant or tree cannot be saved. At the end of the one-year period, the owner may apply to the arborist for a discharge of the unobligated or unexpended portion of the bond. Prior to such discharge the arborist shall make a final*

inspection and shall require the replacement of any plants or trees not in good health based upon the standards set out in the American Standard for Nursery Stock. The unobligated or unexpended portion of the bond shall be discharged upon the arborist's certification that the replacement has been made.

- (4) *Responsibilities of the owner. If the owner or his agent refuses to comply with the requirements of the arborist, the city may at its option, have the work performed by others or by its own forces. In either case all costs incurred by the city shall be reimbursed from the bond or other funds being held. In the event the owner or his agent has sold all or a portion of the real estate subject to the approved site plan, the original owner or agent shall continue to be responsible for plants and trees located in common areas and on individual fee-simple lots. If the new owner of a single-family residential property refuses to permit the original owner or the arborist to make the required inspection, repairs or replacements, the original owner shall be considered as having complied with this section.*

In addition to the requirements in this subsection (b) of this section, a tree preservation and maintenance agreement and bond shall also be required if the site plan shows any existing trees which are to be protected, in accordance with section chapter 44, article II, division 5, prior to the issuance of building or development permits.

Essential Recipe Example 15.B

Inner Jurisdiction (County)

Fairfax County, Virginia

Code of Fairfax County Virginia, Chapter 122, Tree Conservation

ARTICLE 4. - Monitoring and Inspections.

Section 122-4-1. - Monitoring and Inspections.

ARTICLE 5. - Violations and Penalties.

Section 122-5-1. - Constitution and Processing of Violations.

ARTICLE 4. - Monitoring and Inspections.

The Director shall provide for periodic inspections of tree conservation activities in accordance with Public Facilities Manual § 12-0500 Standards for Field Practices, and Chapter 104 (Erosion and Sedimentation Control Ordinance) of the Code. (64-08-122; 38-18-122.)

ARTICLE 5. - Violations and Penalties.

Section 122-5-1. - Constitution and Processing of Violations.

- (a) *Any land disturbing activity and any removal of vegetation contrary to any of the provisions of this Chapter shall constitute a violation.*
- (b) *Any person, whether owner, lessee, principal, agent, employee or otherwise, who violates any of the provisions of this Chapter, or permits any such violation, or fails to comply with any of the requirements hereof; or any professional, as defined in 18 VAC 10-20-10, or Certified Arborist or Registered Consulting Arborist, as defined in PFM Section 12-0307.2G, who directs or causes another person to violate any provision of this Chapter, shall be subject to the enforcement provisions of this Article.*

- (c) Upon becoming aware of any violation of any provision of this Chapter, the Director shall serve a notice of violation on the property owner, professional, or any other person committing or permitting the violation, either in person or by registered or certified mail. Such notice shall specify the provisions of the Chapter which have been violated, the measures needed to remedy the violation, and a reasonable time in which to remedy the violations. Failure to take steps to comply with such notice within the time provided for therein shall constitute a separate violation of this Chapter.
- (d) The Director, on behalf of the Board of Supervisors, may apply to the Fairfax County Circuit Court for injunctive relief to enjoin a violation or a threatened violation of any provision of this Chapter. (64-08-122; 20-19-122.)

Section 122-5-2 - Replacement trees and/or vegetation.

- (a) Land disturbing activities involving tree removal without an approved tree conservation plan.
1. A tree conservation plan shall be submitted for approval by the Director when a violation is issued for land disturbing activity involving tree clearing without an approved plan in accordance with the Erosion and Sedimentation Control Ordinance.
 2. Replacement trees and/or other vegetation may be required by the Director according to the guidelines set forth in Public Facilities Manual.
- (b) Land disturbing activity conducted in violation of an approved tree conservation plan.
1. A revision to the approved tree conservation plan may be required by the Director when land disturbing activities are conducted, without prior approval of the Director, in areas outside the limits of clearing and grading shown on the approved plan resulting in the removal or damage to trees or forested areas designated to be preserved on such plan.
 2. Replacement trees and/or other vegetation may be required by the Director according to the guidelines set forth in the Public Facilities Manual. (64-08-122.)

Section 122-5-3. - Criminal Violations and Penalties.

- (a) Any violation of the provisions of this Ordinance shall be deemed a misdemeanor and, upon conviction thereof, shall be punishable by a fine of not less than \$10 and not more than \$1000. Failure to remove or abate a violation within the time period established by the Court shall constitute a separate misdemeanor offense punishable by a fine of not less than \$10 nor more than \$1000, and any such failure during any succeeding ten-day period shall constitute a separate misdemeanor offense for each ten day period punishable by a fine of not less than \$100 nor more than \$1500.
- (b) The remedy provided for in this Section shall be in addition to any other remedies provided by law including but not limited to violations of Chapters 101 (Subdivision Ordinance), 104 (Erosion and Sedimentation Control Ordinance), 112 (Zoning Ordinance), and 118 (Chesapeake Bay Preservation Ordinance) of the Code, however, the designation of a particular violation of this

Ordinance for a civil penalty precludes criminal prosecution or sanction, except for any infraction that results in civil penalties that total \$5,000 or more. (64-08-122; 20-19-122.)

Section 122-5-4. - Infractions and Civil Penalties.

- (a) A violation of any provision of this Ordinance shall be deemed an infraction and shall be punishable by a civil penalty of \$200 for the first violation; and subsequent violations arising from the same set of operative facts shall be punishable by a civil penalty of \$500 for each separate offense.
- (b) Each day during which any violation is found to have existed shall constitute a separate offense. However, in no event shall any such violation arising from the same set of operative facts be charged more frequently than once in any ten-day period, nor shall a series of such violations arising from the same set of operative facts result in civil penalties which exceed a total of \$5,000.
- (c) The designation of a particular violation as an infraction pursuant to Paragraph (a) above shall be in lieu of criminal sanctions, and such designation shall preclude the prosecution of a violation as a criminal misdemeanor unless such violation results in injury to any person or persons or the civil penalties under Paragraph (a) above total \$5,000 or more for such violation. If the civil penalties for a violation under Paragraph (a) above total \$5,000 or more, the violation may be prosecuted as a criminal misdemeanor.
- (d) After a notice of violation has been served on any person who violates this Ordinance, if the violation has not ceased within the reasonable time specified in the notice, then, upon the approval of the County Attorney, the Director shall serve a summons upon such person.
- (e) Such summons shall contain the following information:
 - 1. The name and address of the person charged.
 - 2. The nature of the infraction and the Ordinance provision(s) being violated.
 - 3. The location, date and time that the infraction occurred or was observed.
 - 4. The amount of the civil penalty assessed for the infraction.
 - 5. The manner, location and time in which the civil penalty may be paid to the County.
 - 6. The right of the recipient of the summons to elect to stand trial for the infraction and the date for such trial.
- (f) The summons shall provide that any person summoned for a violation may elect to pay the civil penalty by making an appearance in person or in writing by mail to the Department of Finance at least 72 hours before the time and date fixed for trial and, by such appearance, may enter a waiver of trial, admit liability, and pay the civil penalty established for the offense charged. Such summons shall provide that a signature to an admission of liability shall have the same force and effect as a judgment of court; however, an admission shall not be deemed a criminal conviction for any purpose.

(g) If a person charged with a violation does not elect to waive trial and admit liability, the violation shall be tried in the General District Court in the same manner and with the same right of appeal as provided by law. A finding of liability shall not be deemed a criminal conviction for any purpose.

(h) The remedies provided for in this Section are cumulative and not exclusive and shall be in addition to any other remedies provided by law. (20-19-122.)

Essential Recipe Example 15.C

Inner Jurisdiction (City)

Takoma Park, Maryland

Takoma Park Municipal Code

Title 12 TREES AND VEGETATION

Chapter 12.12 URBAN FOREST

12.12.130 Violations and penalties—Enforcement.

A. Municipal Infractions.

1. Any of the following is a Class AA municipal infraction:

- a. Doing any of the acts for which a permit is required under Section 12.12.040 or 12.12.050 or performing any such act in relation to a dead or hazardous urban forest tree, without applying for a permit, after an application for a permit has been denied, or after applying for a permit but before a permit has been issued, unless a permit waiver covering the act has been issued or the act is described in Section 12.12.040(B) or 12.12.050(B).
- b. Failure to fulfill the requirements of Section 12.12.100.
- c. Any violation of a decision or order of the Tree Commission, including but not limited to the violation or nonperformance of conditions imposed in connection with the issuance of a permit.
- d. Any violation of a requirement for a tree permit or tree protection plan.
- e. Any violation of a condition imposed in connection with the issuance of a tree permit or tree protection plan permit.

B. Misdemeanors.

1. It is a Class A misdemeanor to do any of the following:

- a. To do any of the acts specified in subsection (A) of this section in relation to three or more urban forest trees, whether such urban forest trees are located on the same property, within a three-month period.

- b. To do any of the acts specified in subsection (A) of this section in relation to any urban forest tree which has been designated by the Tree Commission or the City as having special botanical, ecological or historical significance or as a landmark
 - c. To do any of the acts specified in subsection (A) of this section in relation to any tree, which is more than 33 inches in circumference at four and one-half feet above ground level.
 - d. To willfully or repeatedly violate this chapter or an order of the Tree Commission.
 - e. To violate a stop-work order issued pursuant to Section 12.04.050(C).
- C. Each urban forest tree that is damaged or destroyed as a result of act(s) taken in violation of any provision of this chapter is considered a separate violation of the appropriate section(s).
- D. In cases where a person has hired an individual or organization to perform tree work that is in violation of any provision of this chapter, both the hired and the hirer may be subject to the penalties set forth in this chapter.
- E. Any person or organization that performs tree trimming or tree removal for hire within the City of Takoma Park and who violates any provision of this chapter may be barred from contracting with or performing work for the City of Takoma Park.
- F. Fines collected for violations of this chapter are deposited by the City's tree planting fund. (Ord. 2004-6 (part), 2004/Ord. 2003-40 (part), 2004).

Essential Recipe Example 15.D 
Inner Jurisdiction (City)
 Falls Church, Virginia
 Falls Church City Code
 Chapter 44 VEGETATION
 ARTICLE II. TREES AND SHRUBS DIVISION
 1. GENERALLY
 Sec. 44-25.

Sec. 44-25. - Violations and penalties; remedies.

Any person, whether as an owner, lessee, principal, agent, employee or otherwise, who violates any of the provisions of this article or permits any such violation or fails to comply with any of the requirements, or who erects any building or who uses any building or any land in violation of any detailed statement of plan submitted by such person and approved under the provision of this article shall be subject to a civil penalty not to exceed \$2,500.00 for each violation. Each day upon which such violation continues shall constitute a separate violation. Furthermore, the arborist, through the city attorney, may apply to the circuit court of the county for injunctive relief to enjoin a violation or a threatened violation of this article, it being determined that vegetation in general and trees in particular are unique and thus a proper subject of equitable relief.

(Code 1982, § 35-10; Ord. No. 811; Ord. No. 1704, 5-14-2001)

Essential Recipe 16

Provisions to ensure the use of industry-accepted standards and best management practices

Application: This Recipe can be used to ensure that tree maintenance, preservation and planting requirements are likely to be implemented according to industry-accepted best management practices and standards such as the ANSI A300 Tree Care Standards and associated Best Management Practices.

Essential Recipe Example 16.A

Inner Jurisdiction (County)

Montgomery County, Maryland

Code of Montgomery County Maryland, Regulations

Chapter 49, Streets and Roads Regulations

49.36A.01.04 Documents Incorporated by Reference

The following documents are incorporated by reference as if fully set forth. Whenever the provisions of this regulation and those of the following documents are in conflict, the provisions of this regulation will govern and be enforced in the County:

- A. *American National Standards for Tree Care Operations, ANSI A300, American Standards Institute, hereinafter referred to as ANSI A300, in effect as of December 1, 2013.*
- B. *American Standard for Nursery Stock, ANSI Z60.1, American Nursery & Landscape Association, hereinafter referred to as ANSI Z60.1, in effect as of December 1, 2013.*

Essential Recipe Example 16.B

Outer Jurisdiction (County)

Loudoun County, Virginia

Revised 1993 Zoning Ordinance

Section 5-1300 Tree Planting and Replacement

5-1302 General Standards.

- A. *All trees to be planted shall meet the specifications of the American Association of Nurserymen.*
- B. *The planting of trees shall be done in accordance with either the standardized landscape specifications jointly adopted by the Virginia Nurserymen's Association, the Virginia Society of Landscape Designers and the Virginia Chapter of the American Society of Landscape Architects, or the road and bridge specifications of the Virginia Department of Transportation. The County shall maintain current copies of these specifications available to the public.*
- C. *The minimum caliper of all deciduous trees planted shall be one (1) inch, and the minimum height of all evergreen trees shall be six (6) feet.*

Essential Recipe 17

Provisions to establish a tree board

Application: This Recipe is used to establish an independent advisory board or commission appointed by the governing body of the jurisdiction to periodically review and propose revisions to the tree ordinance, provide community education related to tree conservation, plan Arbor Day activities, and provide public forums for citizens concerned about community trees. In some jurisdictions such boards are charged with providing advising the governing board about the effectiveness of regulations and tree programs, generating and advocating for urban forest master plans, and providing public outreach to the public (see Recipe 16.A). In other jurisdictions the board is involved with regulatory decisions such as appeals (see Recipe 16.B). Irrespective of the specific responsibilities assigned to the board, these organizations are critical to the long-term effectiveness of tree conservation programs because they establish a formal communication link between the governing body, the governmental tree program, and the community they serve.

Essential Recipe Example 17.A

Inner Jurisdiction (City)

Falls Church, Virginia

Falls Church City Code

Chapter 44 - VEGETATION

Sec. 44-57. - Urban forestry commission.

- (a) *Established; composition; term.* An urban forestry commission is hereby established. The commission shall be composed of five commissioners appointed by the city council from among the eligible voters' residents in the city and such ex officio members as may be designated by the council. The commissioners shall serve for terms of three years; however, of those commissioners initially appointed, two shall serve for three years, two shall serve for two years, and one shall serve for one year. Upon the expiration of a term of office, the commissioner holding that office may continue to serve until a successor shall be qualified. Any vacancy shall be filled for the unexpired term in the manner in which commissioners are regularly chosen.
- (b) *Officers.* The chair and vice-chair of the urban forestry commission shall be elected by the commissioners from among themselves within two months following the annual installation of new full-term commissioners.
- (c) *Duties.* The urban forestry commission shall perform the following duties:
- (1) The commission shall advise the city manager regarding rules and regulations promulgated under this article and shall assist the arborist in the performance of such arborist's duties.
 - (2) The commission shall recommend to the city council any legislation, plans, policies and programs complementary to the intent and purpose of this article.
- (d) *Requirements.* The urban forestry commission shall:
- (1) Establish its own bylaws and rules of procedure consistent with the state code, city Charter, and this Code;
 - (2) Meet in regular sessions, open to the public, on dates established by the commission and in special sessions, as necessary;
 - (3) Post with the city clerk notices of all meetings and provide agendas which shall be available to the public at least three days prior to meetings, except in cases of emergency;
 - (4) Maintain and file with the city clerk approved minutes of its meetings; and
 - (5) Follow, unless otherwise provided, the general requirements for citizen boards, commissions and committees of the city, as set forth in chapter 2.

Side Dish 1

Provisions to allow for tree and forest mitigation banking

Application: This Side Dish can be used to protect trees and forest through the land development process. The examples below show how tree mitigation banks and funds can be created as an in-lieu mechanism when tree preservation cannot be met on site. There may be opportunity to use similar processes during other land development process (i.e. rezoning, revitalization districts) to allow for high density or multiple land use designations. This would allow for less tree canopy in areas converting from high canopy land uses to lower canopy land uses by mitigating the canopy off-site. Other mechanisms that could be used in conjunction with this include multiplication ratios (e.g. mitigation can be off-site if preserving twice the canopy area) or higher credit given to areas that are afforested or connecting two already existing, but disjointed, ecological corridors. Regulations should emphasize that on-site tree preservation and canopy is prioritized before off-site mitigation could be considered. Justifications for such off-site mitigation should include clear criteria and conditions to ensure appropriate use of such banking mechanisms.

Side Dish Example 1.A ❖

Inner Jurisdiction (County)

Prince George's County, Maryland

Environmental Technical Manual

7.0 Type 2 Tree Conservation Plans

- 7.3.1 *When the woodland conservation requirements for a site cannot be met on-site, due to site constraints or other considerations, an alternative is fulfilling the requirement off-site by securing woodland conservation credits from a woodland conservation bank. A woodland conservation bank is defined in the WCO as:*

“A lot or parcel, or portions of a lot or parcel, that has been intentionally preserved or afforested as perpetual woodlands and has been protected by the documents recorded in the land records for the purpose of meeting the requirements of this Division for land development activities occurring on another property in the county.”

Side Dish Example 1.B ❖

Inner Jurisdiction (County)

Fairfax County, Virginia

Fairfax County Public Facilities Manual

12-0312 Providing 10-year Tree Canopy through Tree Banking and Tree Fund

0312.1 Criteria for use. Transfer of on-site 10-year Tree Canopy requirements through off-site tree banking or through pro rata payment into the Tree Preservation and Planting Fund is allowed when the Director determines that one or more of the following criteria apply.

- A. The strict application of the tree canopy requirements would cause irresolvable conflicts with other site development requirements, design standards, or comprehensive planning goals.*
- B. Sites or portions of sites lack sufficient space for future tree growth;*
- C. Planting spaces will not provide adequate space for healthy root development;*
- D. Trees would cause unavoidable conflicts with underground or overhead utilities and;*
- E. Trees are likely to cause damage to public infrastructure.*
- F. Use of off-site tree banking or contribution to the Tree Preservation and Planting Fund is a prerequisite for modifying the 10-year Tree Canopy percentage requirement as required by the provisions of § 12-0313.4C.*

Side Dish Example 1.C 📄

Code of Maryland (State)

Forest Conservation Act model ordinance language

Section 7

Article X-2 Forest Mitigation Banks

10.1.2 Forest Mitigation Banks.

- A. A person may create a forest mitigation bank from which applicants may purchase credits to meet the afforestation and reforestation requirements of this Ordinance.*
- B. The forest mitigation bank shall:*
 - (1) Afforest or reforest an area of land in accordance with a forest mitigation bank agreement;*
 - (2) Be protected by an easement, deed restrictions, or covenants which require the land in the bank to remain forested in perpetuity and are enforceable by the Department and the Department of Natural Resources;*
 - (3) Limit the use of the land in the bank to those activities which are not inconsistent with forest conservation such as recreational activities, forest management under a forest conservation and management program under Tax-Property Article, §8-211, Annotated Code of Maryland, or activities specified in a forest management plan prepared by a licensed forester and approved by the Department;*
 - (4) Use native plant materials for afforestation or reforestation unless inappropriate; and*
 - (5) Cause trees to be planted which:*
 - (a) Establish or enhance forested buffers adjacent to intermittent and perennial streams and coastal bays to widths of at least 50 feet;*

- (b) Establish or increase existing forested corridors, which, where practical, should be a minimum of 300 feet in width to facilitate wildlife movement, to connect existing forests within or adjacent to the site;
- (c) Establish or enhance forest buffers adjacent to critical habitats where appropriate;
- (d) Establish or enhance forested areas in 100-year floodplains;
- (e) Stabilize slopes of 25 percent or greater;
- (f) Stabilize slopes of 15 percent or greater with a soil K value greater than 0.35 including the slopes of ravines or other natural depressions;
- (g) Establish buffers adjacent to areas of differing land use where appropriate, or adjacent to highways or utility rights-of-way; or
- (h) Establish forest areas adjacent to existing forests to increase the overall area of contiguous forest cover, when appropriate.

C. A person proposing to create a forest mitigation bank shall submit to the Department a:

- (1) Completed application on a form approved by the Department which has been signed by an authorized individual in conformance with COMAR 08.19.04.02I;
- (2) Forest mitigation bank plan which contains a:
 - (a) Vicinity map of the proposed mitigation bank site;
 - (b) Simplified forest stand delineation which meets the criteria in COMAR 08.19.04.02;
 - (c) Detailed afforestation or reforestation plan, which shall include a timetable and description of the site and soil preparation needed, species, size, and spacing to be utilized, prepared by a licensed Maryland forester, a licensed landscape architect, or a qualified professional who meets the requirements stated in COMAR 08.19.06.01A; and
 - (d) Proposed 2-year maintenance agreement that:
 - (i) Sets forth how the areas afforested or reforested will be maintained to ensure protection and satisfactory establishment;
 - (ii) Complies with COMAR 08.19.04.05C(4)(a); and
 - (iii) Includes watering and reinforcement planting provisions if survival falls below required standards;
- (3) Copy of the deed to the property;
- (4) Survey or other legally sufficient description of the bank site for inclusion in the deeds of easement, deed restrictions, or covenants;
- (5) Title report or other assurance that:
 - (a) The property is not encumbered by any covenants or other types of restrictions which would impair the property's use as a forest mitigation bank; and
 - (b) There is legally sufficient access to the forest mitigation bank site which can be used by the Department and its assignees to inspect the forest mitigation bank; and
- (6) Description of the system to be used by the person owning and operating the forest mitigation bank to identify and keep track of which portions of the bank have been debited to meet an applicant's offsite afforestation or reforestation requirements.

D. The owner of an approved forest mitigation bank shall enter into an agreement with the Department which contains:

- (1) The approved reforestation or afforestation plan;
- (2) The approved system for marking and tracking which portions of the bank have been debited; and;
- (3) An acknowledgment that the bank may not debit any portion of the afforested or reforested land until 2 years of successful growth has been achieved unless the banker has posted a bond or alternate form of security.

Side Dish 2

Provisions to ensure expected canopy outcomes are met.

Application: This Side Dish should be used if an expected outcome is an amount of future canopy coverage. Adopting or creating a standard for how much future canopy credit a given planted tree will receive is essential to determine if canopy coverage requirements will be met. The standard should specify how many square feet of future canopy a tree of a given species and size will get toward the canopy coverage requirement.

Side Dish Example 2.A ❖

Outer Jurisdiction (County)

Prince William County, Virginia

Prince William County Design and Construction Standards Manual

804.02 Tree Selection and Cover Guide

LANDSCAPING - PLANT SELECTION AND COVER GUIDES

I. Plant Selection and Cover Guides for Buffer Areas, Basic Landscaping, Street Planting, and Reforestation Areas:

The plant selection guides to be utilized by persons preparing landscape plans for buffer areas, basic landscaping, street planting, and reforestation areas are found in Tables I-2-T (trees), I-2-S (shrubs), I-2-P (perennials), and I-2-G (grasses). The following is an explanation of the columns and codes contained therein:

- A. Tree Categories/Tree Canopy Coverage -- Table I-2-T is divided into categories of trees (i.e., large, medium, small, and compact) for purposes of calculating tree canopy coverage. The category each tree is placed in is determined by the projected size of the tree's canopy spread.*
- B. Botanical Name, Common Name -- The first column contains the Latin name and the common name for the plant.*
- C. Projected 10-Year Tree Cover -- These three columns in Table I-2-T list the area of tree canopy coverage in square feet for each species. The canopy area is determined by the size of a tree at planting related to the projected size of the tree's canopy after 10 years of growth in an urban environment. Also note that the tree cover credit is based on the area of the projected canopy for the species. If cultivars or varieties, which vary significantly from the species, are used then applying canopy credit consistent with the characteristics of the cultivar or variety may be required. For example, if a narrow columnar cultivar of red maple is proposed, then the canopy credit for that selection would be chosen from the compact deciduous category. (part of table I-2-T follows)*

TABLE I - 2-T TREE SELECTION AND COVER GUIDE							
BOTANICAL NAME COMMON NAME	PROJECTED 10 – YR TREE COVER IN ft ² BY CALIPER OR HEIGHT AT PLANTING			USES	ENVIRONMENTAL TOLERANCES	ASSOCIATED PROBLEMS	
		1"	2"				3"
Quercus velutina Black Oak		150	200	250	N		T
Salix babylonica Weeping Willow		150	200	250	RG	WS	W, D, I
Salix matsudana 'Tortuosa' Corkscrew Willow		150	200	250		WS	W, D, I
Ulmus Americana: 'Princeton', 'Valley Forge', 'New Harmony' American Elm		150	200	250	N, LS, P	WS	D, I

DRAFT

Side Dish 3

Provisions to minimize the use of invasive and non-native tree species.

Application: This Side Dish is used to limit the use of species are invasive and have other undesirable characteristics, and non-native species that have potential to carry pest disease into our region from other parts of the world. It is important to note that example given does not prohibit the sales of invasive and non-native tree species by local nurseries and landscape companies but prohibits or limits their use during tree planting associated with land development.

Side Dish Example 3.A ❖

Inner Jurisdiction (County)

Fairfax County, Virginia

Fairfax County Public Facilities Manual

12-0310.4 Planting Trees for 10-year Tree Canopy Credit

12-0310.4. C.;

- C. *Species that Can Cause Problems after Planting. Ten-year Tree Canopy credits will either not be granted, will be reduced or will be granted conditionally for planting tree species that the Director has determined to be problematic due to overabundance in the countywide tree population; invasive behavior; a special susceptibility to pests or disease; a predisposition to health and structural problems; a predisposition to causing damages to infrastructure; or the potential to cause negative impacts to the environment. Table 12.9 identifies these problematic species, the canopy credit multiplier (if any) that may be applied, and the condition(s) that must be met for using the canopy credit multiplier.*

Side Dish Example 3.B ❖

Inner Jurisdiction (County)

Fairfax County Virginia

Fairfax County Public Facilities Manual

12-0310.4 Planting Trees for 10-year Tree Canopy Credit

Table 19-9: Species that Can Cause Problems after Planting (partial table)

<i>Species</i>	Common Name	Problem	Canopy Credit Multiplier	Conditional Credit
<i>Liquidambar styraciflua</i>	sweetgum	Invasive root system. High VOC emissions.	Conditional 0.5	None if planted near buildings or infrastructure. May receive .25X if planted immediately adjacent to an existing forest/woodland community that contains this species as a major constituent
<i>Morus alba</i>	white mulberry all cultivars	Invasive.	None	
<i>Phellodendron amurense (female only)</i>	amur corktree	Prolific, invasive seeds.	Conditional 1.0	May receive full credit if male plant is used.
<i>Pinus strobus</i>	white pine	Brittle wood. Branch and twig failure. Susceptibility to disease and environmental stress. Overuse in Fairfax County.	0.5	Not conditional, but reduced credits
<i>Populus alba</i>	white poplar	Invasive root system	None	
<i>Populus deltoides</i>	Eastern cottonwood	Brittle wood. Branch and twig failure. Invasive root system.	Conditional 1.0	None if planted near buildings or infrastructure. May receive full credits if planted immediately adjacent to existing forest/woodland communities that contain this species as a constituent
<i>Populus nigra 'Italica'</i>	Lombardy poplar	Susceptibility to disease. Short life span.	None	
<i>Pyrus calleryana</i>	all varieties and cultivars of Callery pear.	Poor branch attachment. Highly susceptible to storm damage. Invasive. Overuse in Fairfax County.	None	
<i>Quercus palustris</i>	pin oak	Invasive root system. Susceptibility to stress in urban environments with low soil pH.	Conditional 1.0	None if planted near buildings or infrastructure. May receive full credit if planted immediately adjacent to existing forest/woodland communities that contain this species as a major constituent.
<i>Salix alba</i>	white willow	Weak wood. Grows quickly. Branch and twig failure.	Conditional 1.0	None if planted near buildings or infrastructure. May receive full credit if planted immediately adjacent to existing forest/woodland communities that contain this species as a constituent.

Side Dish 4

Incentives to plant trees for specific environmental or ecological goals such as energy conservation, air and water quality improvement, wildlife value, and use of native tree species

Application: This Side Dish can be used to as an incentive to plant trees in a manner that supports a broad range of socioeconomic, environmental and ecological objectives and policies adopted by local governments by granting additional credits. The broader objectives can be realized through a wide range of tree functions and services such as air and water quality improvements; mitigation of stormwater runoff; lowered energy use in buildings; and increased wildlife habitat and food sources. In addition, these types of incentives can used to incentivize the use of native tree species, and the use of tree varieties (i.e., cultivars) that have been developed to withstand harsh environments. Technical drawings and specification may be required to support incentive-based regulatory language (see Side Dish Example 4.B)

Side Dish Example 4.A ❖

Inner Jurisdiction (County)

Fairfax County, Virginia

Fairfax County Public Facilities Manual

12-0310.4 Planting Trees for 10-year Tree Canopy Credit

B. Opportunities for Additional 10-year Tree Canopy Credits. This section identifies opportunities to receive additional tree canopy credits in exchange for the planting of trees in a manner that will provide specific environmental and ecological benefits, or for the use of species that are native to Fairfax County, or for the use of species that are resistant to diseases, pests, decay and the negative impacts imposed by harsh environmental conditions. Individual trees planted for these purposes will not receive credit under more than one category of additional canopy credits identified below. Furthermore, additional tree canopy credit may not be applied to trees proposed to satisfy interior parking lot landscaping, peripheral parking lot landscaping and/or transitional screening requirements, if the Director determines that the application of additional 10-year Tree Canopy credits is likely to compromise the ability of the proposed design to fulfill the intent and purpose of Article 13 of the Zoning Ordinance. The appropriate canopy area multiplier and discrete area of canopy associated with trees planted for these purposes must be clearly identified within the landscape plan plant schedule and 10-year Tree Canopy calculations.

1. Air Quality. A multiplier of 1.5 may be applied to the normal 10-year Tree Canopy area listed in Table 12.17 for trees that the Director determines to provide air quality benefits.

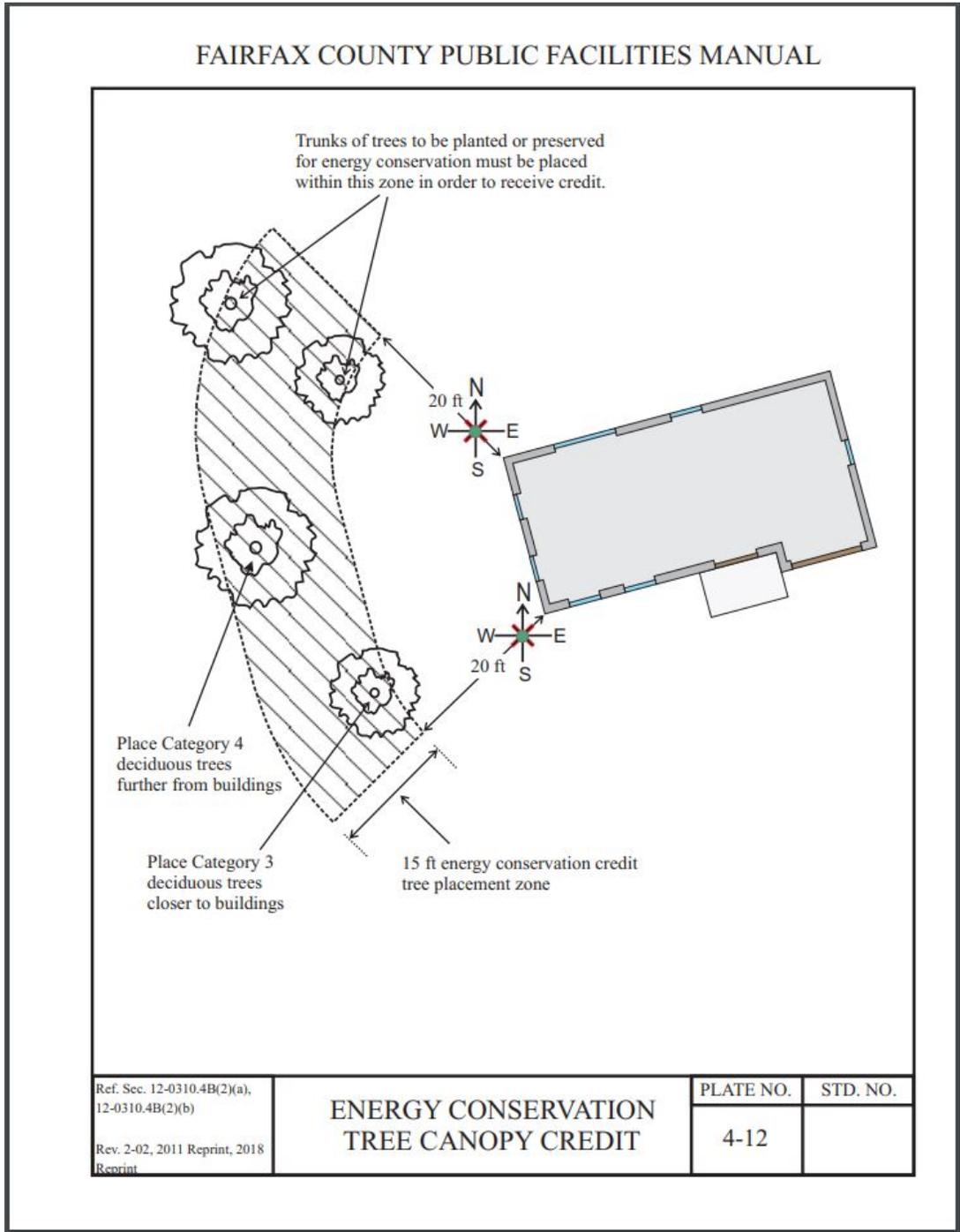
a. The species listed in the “Air Quality” column of Table 12.17 may receive the additional canopy credits identified in § 12-0310.4B(1) above when planted in the nursery stock sizes listed in Table 12.17 and located in common open space protected in perpetuity by a deed restriction, such as a conservation easement. Other species not listed in the “Air Quality” column of Table 12.17 may be approved if they are determined by the Director to emit lower levels of reactive volatile organic compounds.

b. A multiplier of 1.5 may be applied to the species listed in the “Air Quality” column of Table 12.17 if they are proposed to be planted in a manner that provides significant levels of

shade to parking lot surfaces and associated motorized vehicles, and located in planting beds

2. *Energy Conservation. A multiplier of 1.5 times the 10-year Tree Canopy credit listed in Table 12.17 may be applied to the canopy area of trees planted to achieve reductions in energy use in buildings.*
 - a. *Selecting Trees for Energy Conservation. Table 12.17 identifies species that may receive credits for energy conservation planting. These species are well suited for this purpose due to their ultimate size, form, canopy density and other criteria. When choosing a planting location for energy conservation, a tree's form and ultimate size should be considered to minimize maintenance problems and assure healthy, long-term growth and survival. Consult Table 12.17 to determine tree sizes and other species-specific constraints. For example, if the planting area is located 20 feet from a building, a Category III tree would be appropriate. If the planting distance from the building is 30 feet or greater, a Category IV tree should be considered (see Plate 4-12).*
 - b. *Locating Trees for Energy Conservation Credits. In Fairfax County, maximum reductions in utility energy usage results when deciduous trees shade the western, southwestern, and northwestern walls and windows of buildings. Trees planted for energy conservation canopy credits must be located 20 to 35 feet from the edge of a building and substantially shade its western, southwestern, or northwestern exposure from 2:30 p.m. to 7:30 p.m. from May through September (see Plate 4-12).*
 - c. *Energy Conservation Landscape Plan Submission Requirements. The landscape plan must clearly label trees which are used for the additional energy conservation canopy credits. The 10-year Tree Canopy calculations must identify the specific amount of canopy credits taken for energy conservation plantings.*

Side Dish Example 4.B ❖
 Inner Jurisdiction (County)
 Fairfax County, Virginia
 Fairfax County Public Facilities Manual
 Energy Conservation Tree Canopy Credit Plate 4-12



Side Dish 5

Provisions to protect and maintain trees after land development processes

Application: This Side Dish can be used to protect trees have been preserved or planted after land development has taken place. This type of provision may be necessary to limit the loss of tree canopy in jurisdiction that have obtained a state of build out. It may be applied to public or private property.

Side Dish Example 5.A

Inner Jurisdiction (City)

Takoma Park, Maryland

Takoma Park Municipal Code

Title 12 TREES AND VEGETATION

Chapter 12.12 URBAN FOREST

12.12.020 Urban forest trees.

An urban forest tree is a tree in the City which:

- A. Measures 24 inches or more in circumference at four and one-half feet above ground level or measures seven and five-eighths inches or more DBH; or
- B. Is required to be planted or maintained, pursuant to governmental order, agreement, stipulation, covenant, easement, or a tree protection plan, or as a condition of issuance of a tree permit; or
- C. Is planted with government funding or under a government program. (Ord. 2003-40 (part), 2004)

12.12.030 Tree impact assessment.

- A. Except as provided in subsection (B) of this section, a tree impact assessment is required prior to conducting any of the following:
 - 1. Land disturbing activities, such as raising or lowering existing grade, or excavating more than three inches in depth over an area in excess of 25 square feet within 50 feet of an urban forest tree;
 - 2. Activity within the critical root zone of an urban forest tree that may destroy a significant portion of the roots of a tree or endanger the water supply to the roots;
 - 3. Construction or placement of a structure other than a fence within 50 feet of an urban forest tree;
 - 4. Paving in excess of 25 square feet with an impervious surface within 50 feet of an urban forest tree; or
 - 5. Removing, relocating, destroying, or topping an urban forest tree or pruning more than 5% of the live canopy of an urban forest tree, or pruning live limbs with significant diameter in relation to the size of the tree, or other action which would significantly and permanently detract from an urban forest tree's health or growth.
- B. A tree impact assessment shall not be required for action required on an emergency basis (with no time to obtain an assessment) to prevent harm to life or property, for actions performed at the written request of a utility company such as PEPCO, Verizon, WSSC, or Washington Gas, or for actions performed by a utility company in accordance with a memorandum of understanding between the utility and the City.
- C. The City Arborist shall conduct a tree impact assessment at the request of any person intending to conduct an activity described in subsection (A) of this section. Following the tree impact

assessment, the City Arborist will advise the person requesting the assessment of the permits required under this chapter to proceed with the proposed activity.

- D. The fee for a tree impact assessment is \$50.00 payable to the City with the application.
- E. Failure to obtain a tree impact assessment before conducting any of the activities described in this subsection shall constitute a Class AA municipal infraction. (Ord. 2010-27 § 1 (part), 2010/Ord. 2003-40 (part), 2004)

Side Dish Example 5.B

Inner Jurisdiction (City)

Falls Church, Virginia

Falls Church City Code

Chapter 48

Sec. 48-1149. - Maintenance of landscaped areas.

The owner, tenant and their agent, if any, shall be jointly and severally responsible for the maintenance of all landscaped areas not in the public right-of-way. Such areas shall be maintained in accordance with the approved site plan and to present a healthy and orderly appearance free from refuse and debris. Changes to the approved landscape plan shall require the approval of the city arborist. All plant life shall be replaced if, in the opinion of the city arborist, it dies or is seriously damaged or is removed. If the owner, tenant and/or agent, if any, fails to maintain landscaped areas as required, the city may, after due notice, enter upon the property and perform the required maintenance, the costs of which shall be charged to the owner. Payment for such costs may be accomplished by means of a lien on the property or by utilizing bonds, notes and/or cash held by the city for such purposes, as well as by any other legal or equitable remedy; provided this section does not apply to the type of plantings in private yards maintained and utilized by single families. In residential areas, this section applies to common open space.

Side Dish Example 5.C ☞

Outer Jurisdiction (County)

Loudoun County, Virginia

Example of easement language used to protect forested areas after construction.

TREE PRESERVATION EASEMENTS

THIS DEED FURTHER WITNESSETH, that for and in consideration of the sum of One Dollar (\$1.00), cash in hand paid, the receipt and sufficiency of which are hereby acknowledged, the Owner does hereby grant and convey unto the County, its successors and assigns, and the Association, its successors and assigns, tree preservation easements in the area shown on the Plat. Within these easements, no trees, or other foliage providing canopy coverage pursuant to any duly adopted County ordinance, shall be denuded, defaced, or disturbed in any manner, with the following exceptions: removal of noxious and/or invasive alien vegetation such as poison ivy and poison oak, as well as dead, dying or hazardous trees and vegetation and the removal of trees that, in the opinion of the County Urban Forester, should be replaced due to poor quality or the potential for weather damage. The easement areas shall not be improved with any building or structure, except for the construction and maintenance of public roads, trails and/or sidewalks, water, sanitary sewer, storm drainage and other utility crossings, and stormwater management outfalls. Further, these areas shall not be subject to vehicular access, other than maintenance vehicles, without the prior written approval of the County. Both the County and the Association shall have the right to inspect and maintain any area which lies within the easements, and to remove any improvements or other items which are constructed or located within the easement areas in contravention of the terms stated herein. The Association shall be responsible for maintenance of these easements. The maintenance of these easements shall not be the responsibility of the County or the Commonwealth.

Side Dish 6

Provisions to allow dead trees to remain to create wildlife habitat

Application: This Side Dish can be used to allow dead trees to remain in place within certain environments in order to create wildlife habitat in a manner that is safe to human populations.

Side Dish Example 6.A ❖

Inner Jurisdiction (County)
Fairfax County Virginia
Fairfax County Public Facilities Manual
12-0203 Tree Condition Standards

12-0203.6

Leaving Dead Trunks for Wildlife Benefits. The main trunks of dead trees may be allowed to remain on sites where the Director determines that a “trunk snag” may provide habitat or other wildlife benefits and have little or no potential to cause personal injury or property damage, or to obstruct streams or other drainage.

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Side Dish 7

Provisions to incentivize tree planting as a component of integrated environmental requirements for landscape elements and site design – Green Area Ratio (GAR)

Application: This Side Dish is used to meet Green Area Ratio urban landscaping requirements of the District of Columbia.

Side Dish Example 7.A

Central Jurisdiction (City)

District of Columbia

District of Columbia Municipal Regulations

Title 11 Zoning Regulations of 2016

11-C General Rules

11-C600 Green Area Ratio

600.1 *Green Area Ratio (GAR) is the ratio of the weighted value of landscape elements to land area. The GAR score relates to an increase in the quantity and quality of environmental performance of the urban landscape.*

600.2 *GAR sets integrated environmental requirements for landscape elements and site design that contribute to the reduction of stormwater runoff, the improvement of air quality, and the mitigation of the urban heat island effect.*

600.3 *The purposes of the GAR regulations are to:*

- a. Implement a value-based system of requirements for environmental site design that provides flexibility in meeting environmental performance standards; and*
- b. Promote attractive and environmentally functional landscapes*

601 Calculation of Green Area Ratio

The GAR shall be calculated using the following formula:

$$\text{GAR} = \frac{(\text{area of landscape element 1} \times \text{multiplier}) + (\text{area of landscape element 2} \times \text{multiplier}) + \dots}{\text{Lot Area}}$$

For the purposes of the above formula and the remainder of this chapter:

The term “landscape element” refers to one (1) of the elements listed in the table in Subtitle C § 602.9, and will be hereafter referred to as “landscape element” or “element”;

The term “multiplier” refers the number listed Table C § 602.9 that corresponds to a “landscape element”; and

The “area of landscape element” shall be the square feet of a landscape element, unless the element is a tree or large shrub, in which case “area of landscape element” refers to the element’s equivalent square footage as indicated in Subtitle C § 602.7.

The process for calculating a property’s GAR under the formula is as follows:

The area of each landscape element is multiplied by its corresponding multiplier;

The resulting numbers for all landscape elements are added together;

The resulting point total is then divided by the total land area of the lot; and

The product of the equation equals the property’s GAR.

The total points for all permeable paving and enhanced tree growth credits may not count for more than one-third (1/3) of the GAR score for a lot.

If multiple landscape elements occupy the same area, for example groundcover under a tree or trees and shrubs on an intensive green roof, the full square footage or equivalent square footage of each element may be counted.

A landscape element must meet the eligibility conditions of Subtitle C § 603.

Equivalent square feet of tree canopy and large shrubs are identified in the table below:

TABLE C § 602.7: GAR EQUIVALENT SQUARE FEET OF TREE CANOPY AND LARGE SHRUBS

GAR LANDSCAPE ELEMENTS	EQUIVALENT SQ. FT.
<i>Plants, not including grasses, at least 2 feet tall at maturity</i>	<i>9 sq. ft. per plant</i>
<i>Tree canopy for trees 2.5 inches to 6 inches in diameter</i>	<i>50 sq. ft. per tree</i>
<i>Tree canopy for trees 6 inches to 12 inches in diameter</i>	<i>250 sq. ft. per tree</i>
<i>Tree canopy for trees 12 inches to 18 inches in diameter</i>	<i>600 sq. ft. per tree</i>
<i>Tree canopy for trees 18 inches to 24 inches in diameter</i>	<i>1,300 sq. ft. per tree</i>
<i>Tree canopy for trees larger than 24 inches in diameter</i>	<i>2,000 sq. ft. per tree</i>

Landscape elements of the GAR shall be measured in the following ways:

All trees shall be measured for diameter at a height four feet, six inches (4 ft. 6 in.) above grade when planted and the square footage equivalent based on diameter shall be as established in the table in Subtitle C § 602.7;

For vegetated walls, the area calculated is the height times the width of the area to be covered by vegetation; and

For all other elements other than trees, large shrubs, perennials, and vegetated walls, square footage is determined by the area of a horizontal plane that is over the landscape element.

Eligible landscape elements are identified in the table below:

TABLE C § 602.9: GAR LANDSCAPE ELEMENTS AND MULTIPLIERS

GAR LANDSCAPE ELEMENTS	MULTIPLIER
<i>Landscaped area (select 1 of the following for each area)</i>	
<i>Landscaped areas with a soil depth of less than 24 inches</i>	0.3
<i>Landscaped areas with a soil depth of 24 inches or more</i>	0.6
<i>Bioretention facilities</i>	0.4
<i>Plantings</i>	
<i>Ground covers, or other plants less than 2 feet tall at maturity</i>	0.2
<i>Plants, not including grasses, at least 2 feet tall at maturity</i>	0.3
<i>Tree canopy for all new trees with mature canopy spread of 40 ft. or less calculated at 50 sq. ft. per tree</i>	0.5
<i>Tree canopy for all new trees with mature canopy spread of greater than 40 ft. calculated at 250 sq. ft. per tree</i>	0.6
<i>Tree canopy for preservation of existing trees 6 inches to 24 inches in diameter</i>	0.7
<i>Tree canopy for preservation of existing trees 24 inches in diameter or larger</i>	0.8
<i>Vegetated wall, plantings on a vertical surface</i>	0.6
<i>Vegetated roofs</i>	

<i>GAR LANDSCAPE ELEMENTS</i>	<i>MULTIPLIER</i>
<i>Extensive vegetated roof over at least 2 inches but less than 8 inches of growth medium</i>	0.6
<i>Intensive vegetated roof over at least 8 inches of growth medium</i>	0.8
<i>Permeable paving</i>	
<i>Permeable paving over at least 6 inches and less than 2 feet of soil or gravel</i>	0.4
<i>Permeable paving over at least 2 feet of soil or gravel</i>	0.5
<i>Other</i>	
<i>Enhanced tree growth systems</i>	0.4
<i>Renewable energy generation (area of)</i>	0.5
<i>Water features (using at least 50% recycled water)</i>	0.2
<i>Bonuses</i>	
<i>Native plant species listed in Subtitle C § 603.9</i>	0.1
<i>Landscaping in food cultivation</i>	0.1
<i>Harvested stormwater irrigation</i>	0.1

Landscape Element Conditions for Green Area Ratio

No landscape element may be counted towards a property's GAR unless it meets the applicable conditions stated in this section.

Plantings over the specified soil depths shall meet the required conditions listed in Table C § 602.9: GAR Landscape Elements and Multipliers.

Trees shall meet the following conditions:

All trees shall be at least two and one-half inches (2.5 in.) in diameter measured at a height four feet, six inches (4 ft. 6 in.) above grade when planted and shall be replaced if damaged or killed by any cause; and

All trees shall meet the American Standard for Nursery stock, as set forth by the American Nursery and Landscape Association

Other Resources

Making Your Community Forest-Friendly: A Worksheet for Review of Municipal Codes and Ordinances. Prepared by: Center for Watershed Protection for the USDA Forest Service: October 2018 [Forest-Friendly: A Worksheet for Review of Municipal Codes and Ordinances](#)

ANSI A300 Standards for Tree Care: These standards are the generally accepted industry standards for tree care practices. They are voluntary industry consensus standards developed by TCIA and written by a committee called the Accredited Standards Committee (ASC) A300, whose mission is to develop consensus performance standards based on current research and sound practice for writing specifications to manage trees, shrubs, and other woody plants.

http://www.tcia.org/TCIA/Build_Your_Business/A300_Standards/A300_Standards.aspx?hkey=96ef3b27-af56-4ada-8670-d848787d1e30&WebsiteKey=b9a41e1f-978d-4585-9172-c411c78c5c14

American Standards for Nursery Stock. *American Horticulture Industry ANSI Z60.1-2014* (www.ansi.org). www.AmericanHort.org

Forest Conservation Act - Forest Conservation, Annotated Code of Maryland Natural Resources Article Title 5, Subtitle 16 and Code of Maryland Regulations 08.19, May 2003. Any activity requiring an application for a subdivision, grading permit or sediment control permit on areas 40,000 square feet (approximately 1 acre) or greater is subject to the Forest Conservation Act and will require a Forest Conservation Plan prepared by a licensed forester, licensed landscape architect, or other qualified professional UNLESS you are subject to exemptions (determined by the State FCA Coordinator or your local Forest Conservation Program Coordinator).

Code of Maryland Regulations: *Annotated Code of Maryland Natural Resources Article: Title 5, Subtitle 16; Title 08, Subtitle 19: Forest Conservation Regulations: May 2019*

Maryland State Forest Conservation Technical Manual (Third edition, 1997):

The Forest Conservation Technical Manual outlines submittal requirements for Forest Strand Delineations and includes required information for the approval of Forest Conservation Plans such as specific forest conservation criteria and protection techniques.

<https://mdstatedocs.slrc.info/digital/collection/mdgov/id/11130/>

Code of Virginia: § 15.2-961. *Replacement of trees during development process in certain localities*

Code of Virginia: § 15.2-961.1. *Conservation of trees during land development process in localities belonging to a nonattainment area for air quality standards.*

Appendix 1 - Basic Model Ordinance Language

TITLE Chapter XX: Protection and Management of Publically Owned Trees

Be it ordained that the Governing Body of this Municipality enacted a new chapter XX of Municipal Code entitled *Protection and Management of Publically Owned Trees* on April 22, 2025 to conserve and manage tree canopy on public lands. This chapter shall become effective at 12:00 a.m. on May 1, 2025.

FINDINGS

The Governing Body finds that it is in the public interest to regulate the maintenance, protection, planting and removal of trees growing on public lands such those found in parks, governmental facilities, schools, and rights of ways maintained by the municipality. Publicly owned trees are a valuable component of our community's public infrastructure and represent a significant percentage of our community's overall tree canopy. Public trees contribute significant levels of environmental, social, economic, ecological, and human health services to the public at large. The Governing Body finds that it is important to take steps to maximize the capacity of our public tree canopy to deliver these important services in order to sustain a high quality of life and environmental health for current and future generations, and to set a good example of natural resource stewardship for our citizens to follow. At the same time, it is equally important to minimize the potential risks and disservices of public trees by establishing regulations to govern their establishment, removal, management and long-term conservation.

INTENT AND PURPOSE

This chapter establishes goals, strategies, policies, regulations, and standards necessary to ensure that the municipality will continue to realize the benefits provided public trees. The provisions of this chapter are enacted to:

- A. establish and maintain the maximum sustainable amount of tree cover on public lands;
- B. maintain public trees in a healthy and nonhazardous condition through good arboricultural practices;
- C. establish standards to protect existing tree and to minimize their unwarranted removal during the development and/or expansion of municipal lands and facilities;
- D. encourage the planting of trees to help the community achieve broad environmental, socioeconomic, and ecological goals;
- E. establish technical standards to guide the planting of trees to ensure that trees species selected:
 - 1) are planted in spaces large enough to facilitate future growth and root development needs
 - 2) do not cause significant damage to underground utilities, pavement, sidewalks, curb and gutter and other grey infrastructure
 - 3) do not conflict with overhead utilities

- 4) can tolerate the range of environmental conditions found where they will be planted
- 5) do not display invasive characteristics
- 6) are selected and planted in manner that minimizes sight distance and overhead hazards for pedestrians and bikers
- 7) are structurally strong and resistant to storm damage
- 8) are resistant to pests and diseases, and
- 9) are long-lived;

F. establish and maintain appropriate diversity in tree species and age classes to provide a stable and sustainable urban forest;

G. establish the roles and responsibilities of municipal departments and positions charge with administering the Chapter; and,

H. establish the role and responsibilities of a citizen-based tree advisory board chartered to provide recommendations, reports, and advice to the Governing Body concerning the administration of this chapter and any trends or emerging conditions that could affect its administration and long-term success.

Section 1. Definitions

For the purposes of this chapter, the following words and phrases shall have the meanings respectively ascribed to them by this section.

Forests: "Forests" are defined herein as forested areas on public land that are comprised of self-supporting tree and woody plants that exceed five feet in height at time of development plan submission and meet criteria for health, condition and suitability set by the Public Tree Technical Manual published by the Municipality. Areas that meet this definition typically represent native forest or woodland plant communities that typically consist of multiple layers of vegetation and other natural features including: super and sub-canopy tree species; woody shrubs, herbaceous plants, vines, non-vascular plants and epiphytes; decaying leaf litter, root mass, fungi, soil biota; and abiotic components which the vegetation is dependent upon such as: soils, hydrologic conditions, and underlying geomorphic features.

Park Trees: "Park trees" are herein defined as trees and all other tall woody vegetation in public parks, and all areas owned by the Municipality to which the public has free access as a park.

Public Trees: "Public Trees" are herein defined as trees and all other tall woody vegetation in public parks, and all areas owned by the Municipality. Public Trees include Park, Street Trees and trees that occur in Public Forests which are further defined herein. In any case, the city forester shall have the right to determine whether any specific woody plant shall be considered a tree or a shrub. Such determination shall be final and not subject to appeal.

Street trees: "Street trees" are herein defined as trees and other tall woody vegetation on land lying within or bisect by the right of way property lines on either side of all streets, avenues, roads or ways within the Municipality.

Tree Preservation: Public trees designated to be preserved should survive construction in a manner that substantially retains their predevelopment level of biological function, health and structural condition.

Section 2. Creation and Establishment of Citizen-based Tree Advisory Board

There is hereby created and established a Public Tree Advisory Board which shall consist of five members, citizens and residents of this city, who shall be appointed by the mayor with the approval of the Governing Body.

Section 3. Term of Office

The term of the five persons to be appointed by the mayor shall be three years except that the term of two of the members appointed to the first board shall be for only one year and the term of two members of the first board shall be for two years. In the event that a vacancy shall occur during the term of any member, his successor shall be appointed for the unexpired portion of the term.

Section 4. Compensation

Members of the board shall serve without compensation.

Section 5. Duties and Responsibilities

It shall be the responsibility of the Public Tree Advisory Board (Board) to study, investigate, council and develop and/or update annually, and administer a written plan for the care, preservation, pruning, planting, replanting, removal or disposition of trees and shrubs in parks, along streets and in other public areas. Such plan will be presented annually to the City Commission and upon their acceptance and approval shall constitute the official comprehensive City Tree Plan for the Municipality. The Board, when requested by the City Commission, shall consider, investigate, make finding, report and recommend upon any special matter of question coming within the scope of its work.

Section 6. Operation

The Board shall choose its own officers, make its own rules and regulations and keep minutes of its proceedings. A majority of the members shall constitute a quorum and this number of members will be needed in person, or through an accepted means of telecommunication for the transaction of business.

Section 7. Public Tree Care

The City shall have the right to plant, prune, maintain and remove trees, plants and shrubs within the lines of all streets, alleys, avenues, lanes, squares and public grounds, as may be necessary to insure public safety or to preserve or enhance the symmetry and beauty of such public grounds.

The Public Tree Advisory Board may remove or cause or order to be removed, any tree or part thereof which is in an unsafe condition or which by reason of its nature is injurious to sewers, electric power lines, gas lines, water lines, or other public improvements, or is affected with any injurious fungus, insect or other pest.

This Section does not prohibit the planting of Street Trees by adjacent property owners providing that the selection and location of said trees is in accordance with Sections 7 through 11 of this Chapter.

Section 8. Unacceptable Pruning Practices

It shall be unlawful as a normal practice for any person, firm, or city department to top any Street Tree, Park Tree, or other tree on public property. Topping is defined as the severe cutting back of limbs to stubs larger than three inches in diameter within the tree's crown to such a degree so as to remove the normal canopy and disfigure the tree. Trees severely damaged by storms or other causes, or certain trees under utility wires or other obstructions where other pruning practices are impractical may be exempted from this ordinance at the determination of the Public Tree Advisory Board.

Section 9. Pruning Corner Clearance

Every owner of any tree overhanging any street or right-of-way within the City shall prune the branches

so that such branches shall not obstruct the light from any streetlamp or obstruct the view of any street intersection and so that there shall be a clear space of eight feet (8') above the surface of the street or sidewalk. Said owners shall remove all dead, diseased or dangerous trees, or broken or decayed limbs which constitute a menace to the safety of the public. The Municipality shall have the right to prune any tree or shrub on private property when it interferes with the proper spread of light along the street from a streetlight or interferes with visibility of any traffic control device or sign.

Section 10. Protection of Public Trees during the Development of Public Lands

Any Municipal agency or department that develops or expands public lands within the Municipality shall take steps in the early planning stages of development projects to examine ways to preserve existing trees to maximum extent practical as determined and approved by the Governing Body. Tree preservation areas shall be delineated on proposed development plans and presented to the Director of Public Works for approval or denial recommendations to the Governing Body.

Section 11. Dead or Diseased Tree Removal on Private Property

The City shall have the right to cause the removal of any dead or diseased trees on private property within the city, when such trees constitute a hazard to life and property, or harbor insects or disease which constitute a potential threat to other trees within the city. The Public Tree Advisory Board will notify in writing the owners of such trees. Removal shall be done by said owners at their own expense within sixty days after the date of service of notice. In the event of failure of owners to comply with such provisions, the City shall have the authority to remove such trees and charge the cost of removal on the owner's property tax notice.

Section 12. Removal of Stumps

All stumps of street and park trees shall be removed below the surface of the ground so that the top of the stump shall not project above the surface of the ground.

Section 13. Interference with Municipal Planting, Maintenance, and Removal Unlawful

No person, firm or corporation shall interfere with the Director of public works or persons acting under the Director's authority while engaged in planting, mulching, pruning, or removing any tree, shrub or plant in any street on public lands within the Municipality.

Section 14. Interference with Public Tree Advisory Board

It shall be unlawful for any person to prevent, delay or interfere with the Public Tree Advisory Board, or any of its agents, while engaging in and about the planting, cultivating, mulching, pruning, spraying, or removing of any Street Trees, Park Trees, or trees on private grounds, as authorized in this ordinance.

Section 15. Arborists License and Bond

It shall be unlawful for any person or firm to engage in the business or occupation of pruning, treating, or removing trees within the Municipality without first applying for and procuring a license. The license fee shall be \$25 annually in advance; provided, however, that no license shall be required of any public service company or Municipal employee doing such work in the pursuit of their public service endeavors. Before any license shall be issued, each applicant shall first file evidence of possession of liability insurance in the minimum amounts of \$50,000 for bodily injury and \$100,000 property damage indemnifying the Municipality or any person injured or damaged resulting from the pursuit of such endeavors as herein described.

Section 16. Review by Governing Body

The Governing Body shall have the right to review the conduct, acts and decisions of the Public Tree Advisory Board. Any person may appeal from any ruling or order of the Public Tree Advisory Board to the Governing Body who may hear the matter and make final decision.

Section 17. Penalty

Any person violating any provision of this ordinance shall be, upon conviction or a plea of guilty, subject to a fine not to exceed \$XXX per violation and \$XXX per day of noncompliance.