

Chapter 2 LAND DISTURBING OPERATIONS

ARTICLE III. BOARDS, COMMITTEES, COMMISSIONS **DIVISION 3. SUFFOLK CLEAN COMMUNITY COMMISSION**

Sec. 2-215. Objectives of commission.

The objectives of the commission shall be to promote public interest in the general improvement of the environment; to initiate, plan and coordinate programs for litter control; and to encourage the placing, planting and/or preservation of trees, flowers, plants, shrubs and other objects or ornamentation; and implement programs consistent with the Keep Suffolk Beautiful Program.

It shall be the objective of the executive board to guide and direct the activities of the commission in implementing programs consistent with the Keep Suffolk Beautiful Program. (Ord. No. 161-98, § 2-49, 12-16-1998; Ord. No. 04-O-021, 3-3-2004)

Chapter 22 CEMETERIES

ARTICLE III. REGULATIONS GENERALLY

Sec. 22-86. Injuring or defacing enclosures, trees or plants; shooting firearms.

Any person who shall injure, deface or remove any part of any cemetery enclosure or any enclosure of a burial lot or grave or any monument, tombstone, slab, urn or other appurtenance, or any inscription or device thereon, shall be guilty of a class 6 felony. Anyone who shall destroy or injure any tree, shrub, vine, plant or flower in a cemetery shall be guilty of a class 1 misdemeanor. Anyone who shall hunt with a gun, dog or otherwise in any cemetery, or shall shoot any gun, pistol or other firearms in any cemetery, for each offense shall be fined not more than \$500.00; however, this provision shall not apply to the firing of the military salute over the grave of any soldier, sailor or marine, nor to the firing of the salute on Memorial Day. (Code 1976, § 6-8)

Sec. 22-93. Stringing wires.

No wires shall be strung within the boundaries of any cemetery or passed through any trees in a cemetery, for any purpose, without the consent of the superintendent of cemeteries. Any violation of this section shall be punished as provided in section 1-14. (Code 1976, § 6-16)

Sec. 22-140. Private mausoleums.

(d) No such mausoleum shall be constructed within 1½ feet of any adjoining lot line or driveway, or be so placed as to be likely to injure any trees on adjoining lots or driveways.

...

(Code 1976, §§ 6-30, 6-46)

Chapter 34 ENVIRONMENT

ARTICLE IV. REMOVAL OF WEEDS, EXCESSIVE GROWTH OF VEGETATION, TRASH AND DEBRIS

Sec. 34-106. Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Tree means a woody perennial plant having a single stem and being of at least 15 inches in height.

Woodlands means any area of one acre or more and at least 50 feet from a public road right-of-way or residential dwelling and covered by living trees at a density of at least 250 trees per acre.

(Code 1976, § 12-23; Ord. No. 39-94, 5-4-1994)
Cross reference— Definitions generally, § 1-2.

ARTICLE V. NUISANCES

Sec. 34-143. Certain nuisances enumerated.

(a) The following acts when committed, or conditions when existing, within the city are defined and declared to be nuisances:

- ...
- (3) All trees and other appendages of or to realty kept or maintained or which are permitted by any person owning or having control to be kept or maintained in a condition unsafe, dangerous, unhealthy or injurious to the public.
- ...

...
(Code 1976, § 17-3)

ARTICLE IX. BORROW PITS

Sec. 34-363. Operation plan.

(a) At the time of filing an application for an excavation permit, each operator shall file with the planning department a plan of operation for the mining operations or borrow pit for which a permit is sought. The plan shall be submitted on a form to be prescribed by the planning department and shall contain information as he may require. The plan shall contain among other things an agreement by the operator to provide for the following in a manner satisfactory to the planning commission and city council:

- ...
- (5) Planting trees, shrubs, grasses or other plants upon the parts of such areas where revegetation is practicable.
- ...

...
(Code 1976, § 9-17)

Sec. 34-364. Operating and development requirements.

...
(c) Roadside landscape. Existing trees and ground cover along public street frontage shall be preserved, maintained and supplemented for a depth of 50 feet. The type, design and spacing of supplemental planting shall be approved by the planning department.

...
(Code 1976, § 9-18)

Chapter 35 STORMWATER MANAGEMENT

ARTICLE I. IN GENERAL

Sec. 35-2. Definitions.

In addition to the definitions set forth in 9VAC25-870-10 of the Virginia Stormwater Management Program (VSMP) regulations or its successor provision, as the same may be amended and renumbered from time to time, the definitions of which are expressly adopted and incorporated herein by reference, the following words and terms used in this chapter have the following meanings stated in this section unless the context clearly indicates otherwise:

"Best management practice" or "BMP" means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices, including both structural and nonstructural practices, to prevent or reduce the pollution of surface waters and groundwater systems.

"Chesapeake Bay Preservation Act land-disturbing activity" means a land-disturbing activity including clearing, grading or excavation that results in a land disturbance equal or greater than 2,500 square feet and less than one acre in all areas of jurisdictions designated as subject to the Chesapeake Bay Preservation Area Designation and Management Regulations (9VAC25-830), adopted pursuant to the Chesapeake Bay Preservation Act, Code of Virginia, § 62.1-44.15:67 et seq. or its successor provision, as the same may be amended and renumbered from time to time.

"Land development" or "land disturbance" or "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 subsection 35-5(b) of this chapter and Code of Virginia, § 62.1-44.15:34, or its successor provision, as the same may be amended and renumbered from time to time.

(Ord. No. 14-O-050, § 1, 6-4-2014)

Chapter 70 SOLID WASTE

ARTICLE I. IN GENERAL

Sec. 70-1. Definitions.

The following words and phrases, when used in this article, shall have the meanings respectively ascribed to them in this section:

Contractors' rubbish means building rubbish, dirt or earth from lawn construction or renovation, and tree limbs, trunks and stumps from tree trimming or removal operations of commercial tree service firms or individuals.

Rubbish means refuse, exclusive of ashes, including but not limited to paper, rags, cartons, boxes, wood, excelsior, rubber, leather, tree trimmings, grass, leaves, pine straw, tin cans, metals, mineral matter, glass, crockery, dirt, earth and dust.

(Code 1976, § 12-1)

Cross reference— Definitions generally, § 1-2.

Sec. 70-98. Preparation of tree trimmings, hedge cuttings, similar materials for collection; service limitations.

(a) Any person desiring to place tree trimmings, hedge cuttings or similar materials for collection shall either place them in approved refuse or rubbish containers as required by this article and set them out for collection with other refuse on the days designated for

regular collections, or tie them securely in bundles not more than four feet in length, nor heavier than 75 pounds, and place these bundles beside the regular refuse containers for collection on the days designated for the regular collection of refuse.

(b) Limbs from trees or shrubs in excess of two inches in diameter, homeowner-generated construction debris (which was not as a result of contracted services and has been properly bundled for collection) and household appliances such as refrigerators, sofas, or similar items placed at the curb line or road shoulder will be collected by the city's collection forces on the day designated for the regular collection of refuse. A maximum of eight cubic yards will be removed from any single property where service is requested. Rubbish in excess of eight cubic yards, not exceeding 16 cubic yards, will be considered bulk refuse and the applicable fee for removal will be charged to the property owner. Items such as large pieces of concrete, bricks and roofing shingles will not be collected by city forces.

(c) Tree trimmings, limbs, trunk wood and stumps resulting from the work of firms or individuals engaged in the business of pruning, doctoring or removing trees shall be collected, removed and disposed of by these firms or individuals, or in the event of the failure of these individuals or firms, by the owner of the property. Such tree trimmings, limbs, trunk wood and stumps resulting from the work of such firms or individuals will not be removed by the city's collection forces and shall not be placed on the streets.

(d) Collections are limited to residential dwellings and are limited to 12 collections per calendar year. The city manager or his/her designee is authorized to provide for special bulk collections for community oriented activities.

(Code 1976, § 12-21; Ord. No. 60-00, § 1, 6-21-2000; Ord. No. 91-01, § 1, 8-1-2001; Ord. No. 120-02, § 1, 12-18-2002; Ord. No. 09-O-057, 11-18-2009)

Chapter 74 STREETS AND SIDEWALKS

ARTICLE IV. OTHER PUBLIC PROPERTY

DIVISION 2. TREES, SHRUBS AND OTHER VEGETATION

Sec. 74-201. Certain vegetation deemed public property.

All trees, shrubs, plants and every other kind or type of horticultural display planted on the streets, alleys or other public property within the city are public property; and their ownership shall be in the city.

(Code 1976, § 24-25)

Sec. 74-202. Maintenance by beautification and litter control commission.

The city, in the interest of civic beautification, shall be responsible for maintaining all the trees, shrubs, plants and other horticultural displays planted on any city street, alley or other public property and designates the city beautification and litter control commission as its agent in administering its maintenance responsibility. The city beautification and litter control commission shall make such rules and regulations as it deems necessary in order to carry out this function subject to approval by the city council.

(Code 1976, § 24-26)

Sec. 74-203. Removal, pruning and cutting back.

(a) No tree, shrub, plant or other horticultural display planted on any city street, alley or other public property shall be removed, pruned or cut back without permission of the city beautification and litter control commission.

(b) If any public improvement project initiated by the city requires the removal of any tree, shrub, plant or other horticultural display under the jurisdiction of the city beautification and litter control commission, the city manager shall so inform the commission. No approval for such removal due to governmental action is required.

(Code 1976, § 24-27)

Sec. 74-204. Planting.

(a) Any person desiring to plant a tree, shrub, plant or other type of horticultural display on any city street, alley or other public property shall first apply to and secure the approval of the city beautification and litter control commission.

(b) In considering any such application, the commission shall be guided by the compatibility of the requested planting with existing planting in the surrounding area, the adequacy of the planting area, the effect, if any, the planting will have on highway safety, the desirable spacing for the type planting requested and the appropriateness of the proposed species for the intended use.

(Code 1976, § 24-28)

Sec. 74-205. Permits.

The city beautification and litter control commission is directed to establish a permit system to administer the provisions of this division. Permits for the planting, removal, pruning and cutting back of trees, shrubs, plants or other horticultural displays planted on any city street, alley or other public property shall be issued by the commission through the city manager's office.

(Code 1976, § 24-29)

Sec. 74-206. Penalties.

Any person who shall violate any provision of this division shall be subject to a fine of not less than \$5.00, nor more than \$50.00. No conviction under this division shall relieve the violator from liability for damages to the city.

(Code 1976, § 24-30)

Chapter 84 TELECOMMUNICATIONS

ARTICLE II. CABLE TELEVISION REGULATORY ORDINANCE

Sec. 84-32. Design and construction provisions.

...

(c) Use of streets

...

(15) *Tree trimming.* The grantee may trim trees or other vegetation owned by the city to prevent branches, leaves or roots from touching or otherwise interfering with its wires, cables, or other structures as approved by the city.

a. All tree/root trimming or pruning provided for herewith shall be done under the supervision and direction of the appropriate city agency and only with its prior written approval.

b. All trimming or pruning shall be at the expense of the grantee.

c. The grantee may contract for such trimming or pruning services with any person approved by the city prior to rendering of such services.

d. Any and all persons engaged by the grantee to provide tree trimming or pruning services shall be deemed, for purposes of the franchise, an employee or agent of the grantee when engaged in such activity; and in no event shall such person be deemed to be an employee of the city.

e. The grantee shall use its best efforts to obtain the prior permission of the owner of any privately-owned trees or other vegetation before it prunes or trims same.

f. The grantee shall give appropriate notice to the city and residents within a reasonable time of proposed tree/root trimming and pruning, but in no event shall such notice be given less than seven days before such commencement.

...
(21) *Acquisition of right-of-way.* In acquiring or widening public rights-of-way, the city shall determine the minimum right-of-way necessary to accommodate paved streets, pedestrian walkways, landscaping, traffic signals, drainage, water and sewer lines and other governmental facilities.
...

...
(Ord. No. 62-00, 6-21-00)

Chapter 90 UTILITIES

ARTICLE III. WATER

DIVISION 4. WATER CONSERVATION

Sec. 90-212. Procedures.

(a) The city council finds that when there exists an immediate potential for a shortage of potable water in the city's water system that increasingly more restrictive conservation measures may be required to prevent a crucial water shortage.

...
(d) Upon a determination by the city manager of the existence of the following conditions, the city manager shall take the following actions:

- ...
(3) *Condition 3.* When very limited supplies of water are available, the city manager shall order curtailment of less essential usage of water, including but not limited to one or more of the following:
- a. The watering of shrubbery, trees, lawns, grass, plants or any other vegetation, except indoor plantings, greenhouse or nursery stocks and except watering by commercial nurseries of freshly planted plants upon planting and once a week for five weeks following planting.

...
(Code 1976, § 29-37; Ord. No. 101-02, 9-18-2002)

ARTICLE VII. STORMWATER

DIVISION 1. GENERALLY.

Sec. 90-501. Definitions.

The following words and terms used in this section shall have the following meanings:

Agricultural property means land designated for the tilling, planting or harvesting of agricultural, horticultural or forest crops or land used for raising livestock and designated by the City of Suffolk Assessor as agricultural.

Best management practices (BMP) means those practices recognized by the Virginia Department of Conservation and Recreation which provide the best available and reasonable physical, structural, managerial, or behavioral activity to reduce or eliminate pollutant loads or concentrations leaving the site. BMP's also provide a means to hold water in storage to reduce peak flows and also to provide reduction in sediment being discharged into receiving streams.

(Ord. No. 05-O-115, 11-6-2005)

Unified Development Ordinance

ARTICLE 4 ZONING

PURPOSE: This Article divides the City into districts for the purpose of regulating the use, dimensions, construction, reconstruction, alteration and use of lands within the districts. This Article establishes a series of basic zoning districts, several overlay districts wherein additional standards may apply, and several "floating zones" (PD and TND districts) which may be designated at the request of the property owner. General regulations for all development (regardless of the zoning district) are set forth in Article 6. Refer to Article 7 for additional regulations applicable to particular uses.

SEC. 31-411. USE PATTERNS.

...
(e) CLUSTER PATTERN.

...
(10) DESIGN STANDARDS.

...
B. Open Space Recreation.

...
(vi) One large street tree is required along the subdivision streets spaced a maximum of 60 feet on center along roadways which do not have residential lots. Each individual residential lot within the "Cluster" development will plant one street tree per lot. The Planning Director or his designee can administratively approve variances to this plan in order to meet lot layout, right-of-way, or driveway locations matters. Street trees may be either a London Plane Tree, Red Oak, Willow Oak, Zelkova, or Red Maple, and shall be a minimum 2-inch in caliper when planted. The planting area shall be either in the right-of-way or on individual lots within ten feet of the front property line.

...
(g) TRADITIONAL NEIGHBORHOOD DEVELOPMENT (TND) USE PATTERN.

...
(10) LANDSCAPE. Trees shall be used as a design element to provide visual identity to the TND and reinforce street hierarchy. Street trees shall be planted along all streets at a maximum average spacing of 30 feet on center. Landscaping shall comply with the requirements of the landscaping standards of this Ordinance.

...
(Ord. No. 11-O-086, 10-19-2011)

SEC. 31-412. SPECIAL CORRIDOR OVERLAY DISTRICT (SCOD).

...
(g) LANDSCAPING REQUIREMENTS.

(1) GENERALLY. Except as specified herein, all applicable development shall comply with the landscaping of this Ordinance. Where a conflict between regulations exist, the most stringent requirement shall apply.

(2) YARDS ADJACENT TO PUBLIC RIGHT-OF-WAYS DESIGNATED AS A SPECIAL CORRIDOR OVERLAY DISTRICT. At minimum, a continuous 15-foot deep streetscape and screening planting strip, exclusive of easements, shall be located in the required front, side, or rear yard setback located adjacent to any public right-of-way designated as a Special Corridor Overlay District, in accordance with the landscaping standards of this Ordinance (section 31-603), provided that:

A. One large street tree measuring a minimum of three to three and one-half inches in caliper at DBH shall be required every 40 feet on center or

fraction thereof, or one medium street tree measuring two inches in caliper shall be required every 20 feet on center or fraction thereof. Street trees may be planted in multiple rows or groupings.

B. The under story shall be planted with multiple rows or groupings of streetscape and screening shrubs measuring a minimum of 24 to 30 inches in height and spaced every three feet on center or fraction thereof so as to provide the most effective opaque screening of parking areas and best landscape design. Berms three feet in height and a maximum 3:1 slope may replace shrubs to a maximum of 50 percent.

(3) YARDS ADJACENT TO PUBLIC RIGHTS-OF-WAY NOT DESIGNATED AS A SPECIAL CORRIDOR OVERLAY DISTRICT. At minimum, a continuous 15-foot deep streetscape and screening planting strip, exclusive of easements, shall be located in the required front, side, or rear yard setback located adjacent to any public right-of-way not designated as a Special Corridor Overlay District, in accordance with the landscaping standards of this Ordinance (section 31-603), provided that:

A. One large street tree measuring a minimum of three to three and one-half inches in caliper shall be required every 40 feet on center or fraction thereof, or one medium street tree measuring two inches in caliper shall be required every 20 feet on center or fraction thereof. Street trees may be planted in multiple rows or groupings.

B. The under story shall be planted with multiple rows or groupings of streetscape and screening shrubs measuring a minimum of 24 to 30 inches in height and spaced every 3 feet on center or fraction thereof so as to provide the most effective opaque screening of parking areas and best landscape design. Berms three feet in height and a maximum 3:1 slope may replace shrubs to a maximum of 50 percent.

...

...
(Ord. No. 09-O-045, § 1(Exh. B), 8-19-2009; Ord. No. 13-O-021, 2-20-2013)

SEC. 31-413. HISTORIC CONSERVATION OVERLAY DISTRICTS (HC).

...
(g) CRITERIA FOR HC OVERLAY DISTRICTS. The following additional criteria shall be applied by the HLC when reviewing a request for a Certificate of Appropriateness:

...
(4) CERTAIN MINOR ACTIONS EXEMPTED FROM REVIEW. Certain minor actions which are deemed not to permanently affect the character of the historic district are exempted from review for architectural compatibility. Such actions shall include the following and any similar actions which, in the opinion of the Administrator, will have no more effect on the character of the district than those listed:

...
D. Planting of grass, trees and shrubs, but not including landscape treatment which substantially alters the contour of a landmark site.

...

...

...
(Ord. No. 12-O-101, 12-5-2012)

SEC. 31-415. CHESAPEAKE BAY PRESERVATION OVERLAY DISTRICT (CB).

...
(c) GENERAL PERFORMANCE CRITERIA. The following standards shall apply to all development activities in the Preservation Area District.

(1) No more land shall be disturbed than is necessary to provide for the proposed use or development. Land disturbance shall be limited to the area necessary to provide for the desired use or development. In accordance with an approved development plan, the limits of land disturbance, including clearing or grading, shall be strictly defined by the construction footprint. These limits shall be clearly shown on submitted plans and physically marked on the development site.

(2) Indigenous vegetation shall be preserved to the maximum extent practicable, consistent with the use or development proposed. When forests or developed woodlands exist on the site and proposed development requires the cutting or clearing of trees areas proposed for clearing shall be identified on the proposed development plan. These plans shall be submitted as part of the development review process. A grading permit will be required prior to any clearing or cutting associated with the proposed development.

...

(d) DEVELOPMENT CRITERIA FOR RESOURCE PROTECTION AREAS.

(1) PRESERVATION AREAS. The Chesapeake Bay Preservation Area shall consist of three areas for purposes of determining applicable development restrictions: (1) a Resource Protection Area and (2) a Resource Management Area. Intensely Developed Areas may be a component of each area. These areas are defined and established as follows:

...

B. RESOURCE MANAGEMENT AREA (RMA). The Resource Management Area (RMA) is that component of the Chesapeake Bay Preservation Area that is not classified as the Resource Protection Area and may include flood plains, highly erodible soils associated with steep slopes, highly permeable soils, nontidal wetlands outside of the RPA and other lands necessary to protect water quality. Development standards for the RMA are set forth as follows:

(i) All sites for which development activities are proposed shall be subject to the requirements detailed in Subsection (c), general provisions.

(ii) When forests or developed woodlands exist on the site and proposed development requires the cutting or clearing of trees, areas proposed for clearing shall be identified on the proposed development plan. These plans shall be submitted as part of the development review process. A grading permit will be required prior to any clearing or cutting associated with proposed development.

(iii) Land disturbance shall be limited to the area necessary to provide for the desired use or development.

...

...

D. BUFFER AREA REQUIREMENTS. To minimize effects of human activities on the other components of the Resource Protection Area, state waters, and aquatic life, a 100-foot buffer area of vegetation that is effective in retarding runoff, preventing erosion, and filtering non-point source pollution from runoff shall be retained if present and established where it does not exist. The buffer shall be located adjacent to and landward of any other component of the RPA. The 100-foot buffer area shall be deemed to achieve a 75 percent reduction of sediments and a 40 percent reduction of nutrients. Notwithstanding permitted uses, encroachments, and vegetation clearing, as set forth in Subsection (d)(1)a., the 100-foot wide buffer area is not reduced in width. When agricultural or silvicultural uses within the buffer area cease, and the lands are proposed to be converted to other uses, the full 100-foot wide buffer area shall be reestablished. In reestablishing the buffer, management

measures shall be undertaken to provide woody vegetation that assures the buffer functions are maintained or established. The following additional performance criteria shall apply in the buffer area:

(i) In order to maintain the functional value of the buffer area, indigenous vegetation may be removed only, subject to approval by the City, to provide for reasonable sight lines, access paths, general woodlot management, and best management practices including those that prevent upland erosion and concentrated flows of stormwater as follows:

(a) Trees may be pruned or removed as necessary to provide for sight lines and vistas, provided that where removed, they shall be replaced with other vegetation that is equally effective in retarding runoff, preventing erosion, and filtering non-point source pollution from runoff.

(b) Any path shall be constructed and surfaced so as to effectively control erosion.

(c) Dead, diseased, or dying trees or shrubbery and noxious weeds (such as Johnson grass, Kudzu and multiflora rose) may be removed and thinning of trees allowed as permitted by the City pursuant to sound horticultural practices.

(d) For shoreline erosion control projects, trees and woody vegetation may be removed, necessary control techniques employed, and appropriate vegetation established to protect or stabilize the shoreline in accordance with the best available technical advice and applicable permit conditions or requirements.

...

...
(Ord. No. 09-O-028, Exh. A, 5-20-2009; Ord. No. 13-O-057, 6-19-2013; Ord. No. 14-O-072, 6-18-2014)

SEC. 31-419. MIXED USE DEVELOPMENT OVERLAY DISTRICT (MUD).

...
(i) DESIGN GUIDELINES REQUIRED. An application for a Mixed Use Development (MUD) Overlay District shall contain comprehensive architectural design guidelines for the master plan which address at a minimum the following:

...
(3) STREETScape. Streets are public spaces and as such include the elements of street trees, street furniture, street graphics, fountains and other gathering places. Sidewalks are typically wider—up to ten feet. Trees and planters are appropriately placed along the edge of the street. Both the buildings and the street create the public space.

...
(7) LANDSCAPING. Besides the streetscaping trees, an open space area should provide for a "soft" environment with grass, trees and shrubs. In spaces between buildings or on undeveloped parcels, landscaping should be provided. Small urban parks are also an important feature to be landscaped.

...

...
(Ord. No. 11-O-086, 10-19-2011)

ARTICLE 5 SUBDIVISION

Purpose: This Article establishes procedures for the subdivision of land. Included are requirements for plat details, plat processing, performance guarantees, dedications, plat vacation, and family transfers, as authorized by Article 6 of Chapter 22 of Title 15.2 of the Code of Virginia. Standards relating to public improvements are set forth in Article 6. Requirements for plat submissions are set forth in Appendix B to this Ordinance.

SEC. 31-511. ENGINEERING PLANS.

...

(c) **TIMING OF IMPROVEMENTS.** Except upon the written approval of the Director, no grading, removal of trees or other vegetation, land filling, construction of improvements, or other material change as may be exempt from the erosion and sediment control standards and the Erosion and Sedimentation Control Law, Code of Virginia, § 10.1-560 et seq., except for purposes of aiding in preparation of final engineering drawings or plans, shall commence on the subject property until the applicant has received the approval of the engineering plans and all necessary permits from the Director. The Director may approve such material changes with the concurrence of the erosion and sediment control plan approving authority for the City.

...

ARTICLE 6 DESIGN AND IMPROVEMENT STANDARDS

Purpose: This Article establishes development standards for applications for development involving zoning and/or subdivision approval. Included are uniform standards for public facilities capacity, architectural design, lot layout, parking, parks and open space, streets, utilities and water and wastewater. The purpose of these standards is to provide uniformity in the criteria for development approval, to implement the Comprehensive plan by tying new development to the City's capital improvements programming process, to protect the public health and safety and to protect property values and economic development.

SEC. 31-602. DESIGN STANDARDS.

...

(b) **GENERAL REQUIREMENTS.** Except as otherwise indicated or where indicated as being optional or recommended, the following requirements shall apply within all zoning districts:

...

(5) **ENCLOSURE RATIO (OPTIONAL EXCEPT FOR CBD AND VC DISTRICTS).**

A. The Enclosure Ratio refers to the ratio of building height to spaces in front of the building. Buildings serve to spatially define streets. Proper spatial definition is achieved with buildings or other architectural elements (including certain tree plantings) that make up the street edges aligned in a disciplined manner with an appropriate ratio of height to width. The condition of alignment occurs when the facades of buildings cooperate to delineate the public space, as walls form a room. Building articulation must take place primarily in the vertical plane or facade. Appendages such as porches, balconies, and bay windows are encouraged to promote the visual transition. The condition of enclosure generated by the height-width ratio of the space is related to the physiology of the human eye. If the width of a public space is such that the cone of vision encompasses less street walls than the opening to the sky, then the degree of spatial enclosure is slight. Ratios not exceeding 1:4 are considered optimal, while a 1:6 height-to-width ratio is the absolute minimum required for appropriate urban spatial definition. See P. Craighead, ed., *The Hidden Design in Land Use Ordinances* (University of Southern Maine, 1991), at 45; r. Arendt, *Rural by Design* (American Planning Association, 1994), at 10-11. An appropriate average ratio is 1:3. As a

general rule, the tighter the ratio, the stronger the sense of place. Spatial enclosure is particularly important for shopping streets, which must compete with malls which provide very effective spatial definition. In the absence of spatial definition by facades, disciplined tree planting is an alternative. Trees aligned for spatial enclosure are necessary along thoroughfares with substantial front yards.

B. The height and/or setback of buildings facing across a public right-of-way shall be adjusted to conform to the maximum enclosure ratios as set forth in Column (B) below, as measured from the front facade of buildings facing across a public right-of-way. If Streetscape Landscaping is provided in accordance with Section 31-603(g)(2)B. of this Ordinance, the enclosure ratio shall be measured from the height of the trees at maturity rather than the height of the buildings, and shall conform to Column (C), below. For the internal streets or circulation systems of subdivision plats or site plans, the Enclosure Ratio shall be computed by dividing the height of the shortest facing structure by the spaces between the buildings. For development on individual tracts adjoining a public right-of-way and not under common ownership with tracts or parcels facing across the right-of-way, the Enclosure Ratio shall apply only to the tract or parcel subject to the application for development approval.

(A) ZONING DISTRICT(S)	(B) MINIMUM ENCLOSURE RATIO (BUILDINGS)	(C) MINIMUM ENCLOSURE RATIO (STREETSCAPE TREES)
A, RR, RE*	1:9	1:5
RL, RM, RLM*	1:6	1:2
RC, RU*	1:5	1:0.75
B-1, B-2*	>1:6	1:2
CBD, VC	1:4	1:2
M-1, M-2, CP*	Not Applicable	

...

SEC. 31-603. LANDSCAPING STANDARDS.

(a) PURPOSE. The purpose of the landscaping standards is to provide visual enhancement of the City; to protect and promote the appearance, character and economic value of property; to reduce visibility of paved areas and other unsightly views from adjacent properties and public lands; to moderate climatic effects; to minimize noise and glare; to enhance public safety by defining spaces to influence traffic movement; to reduce storm water runoff, and to provide visual transition between neighboring properties.

(b) APPLICABILITY. This Section shall apply to all new major residential subdivisions, and commercial, office and industrial subdivisions and site plans. The developer shall submit a landscape plan to the Director of Planning as precedent to final site plan approval as outlined in Section 31-307 of this Ordinance. However, any development containing eighty percent (80%) or more impervious area shall include a landscape plan at the time of initial site plan submittal. In addition to the above, a sign landscape plan, which complies with this Ordinance, Section 31-714, signs, and Section 31-412(h), if applicable, shall be required.

(c) GENERAL LANDSCAPING REQUIREMENTS. The following shall apply to all Sections of the landscaping provisions of this Ordinance.

(1) TYPE. Plant materials shall be selected from the approved plant list set forth as Appendix C herein, which plant list is hereby incorporated by reference as if set forth in its entirety in this Section. All modifications shall be approved by the Director in accord with the Waivers and Modifications Section of this Ordinance. For

developments containing 300 trees or greater, no more than thirty percent (30%) of the required new planting shall consist of one family type and shall be interspersed; not more than twenty percent (20%) of the required new plantings shall consist of the same genus type and shall be interspersed, and not more than ten percent (10%) of the required new plantings shall consist of the same species type and shall be interspersed.

(2) **CONDITION.** All plant materials shall conform to the standards of the American Nursery and Landscape Association ("ANLA") (formerly the American Association of Nurserymen), The American Standard For Nursery Stock, (1996), which document is hereby incorporated by reference as if set forth in its entirety herein. Said document may be obtained by contacting ANLA at 1250 I Street NW, Suite 500, Washington, D.C. 20005 (202/789-2900). Plants shall be healthy, vigorous, well rooted and free of defects, decay, disease or infestations. After implementation, all required plant material shall be maintained by the property owner. All dead, dying or diseased plant material shall be replaced by the property owner.

(3) **BONDING.** Prior to the issuance of Certificate of Occupancy, the applicant shall provide a maintenance bond. The maintenance bond shall be in the amount of one-third (1/3) of the value of the required landscaping, and shall be held for a period of 12 months following the date of Certificate of Occupancy issuance. A Certificate of Occupancy shall not be issued until the required landscaping is planted and completed in accordance with the approved landscape plan. If planting cannot occur due to seasonal constraints, the Planning Director may accept a performance surety in lieu of installation of plantings. The performance surety may be submitted in the form of a performance bond irrevocable letter of credit, certified check, cash escrow or other surety acceptable to the City attorney as to format and manner of execution. This surety shall include the full cost of plant materials and installation costs such as, but not limited to, soil treatment, labor, and/or guying costs. Should the Planning Director accept performance surety in lieu of any or all plantings, all required landscaping shall be installed and approved by the following planting season.

(4) **PLANTING STANDARDS.** The planting of materials shall conform to the standardized landscape specifications as identified in the "Guidelines for Landscape Planting in the City of Suffolk, Virginia" or in the standards of the most recent edition of the American Nursery and Landscape Association ("ANLA") (formerly the American Association of Nurserymen), The American Standard For Nursery Stock, (1996), which document is hereby incorporated by reference as if set forth in its entirety herein (said document may be obtained by contacting ANLA at 1250 I Street NW, Suite 500, Washington, D.C. 20005 (202/789-2900), and the "Standardized Landscape Specification for the State of Virginia" by the Virginia Nurserymen's Association. All trees shall have tops which display a natural growing shape or condition. Trunks shall be healthy and free of defects or mutations such as, but not limited to, over guying.

(5) **PROTECTION STANDARDS.**

A. Landscaped areas shall be protected from vehicular encroachment by planter islands such as, but not limited to, 8"× 8" new treated timbers, concrete curb stops, and curb/gutter or as approved by the Director. Planting islands shall contain a minimum of one hundred (100) square feet for each tree and a minimum of ten (10) square feet for each shrub. The Director may consider the advice of the City Engineer, Department of Public Works, Department of Public Utilities, Virginia Department of Transportation, and any other agencies in determining the final design of planter islands.

B. Unless other requirements of this Ordinance are greater, all new trees shall be mulched within a minimum two and one-half-foot (2½') radius planting area. All shrubs shall be mulched within a one-half-foot area of the plant. Mulching shall consist of a minimum depth of two (2) inches and shall be completed within two (2) days of planting or at final inspection. Acceptable mulching materials are listed in the "Guidelines for Landscape Planting in the City of Suffolk, Virginia."

(6) VISIBILITY. The landscape plan shall identify a visibility triangle at all intersections including parking access aisles and roads. No trees, shrubs or other materials shall be placed where this will impede visibility above 2½ feet within the visibility triangle or as required by the Virginia Department of Transportation or by the City of Suffolk Public Works Department. The Director of Planning shall consider the comments from other agencies prior to final approval of the landscape plan.

(d) MINIMUM PLANT SPECIFICATIONS.

(1) PRESERVATION OF EXISTING TREES. Preservation of existing trees and shrubs shall be maximized to provide for continuity and improved buffering ability. Effort shall be made to preserve all existing trees within twenty (20) feet of existing water bodies such as lakes, streams and wetlands. Except for tree canopy requirements, trees retained for compliance with this Ordinance shall not be less than six (6) feet in height, shall be noted on the landscape plan, and shall comply with the following:

A. Prior to landscape plan approval, the property owner shall sign a statement stating protective measures to be taken and agreement to replacement of the trees should any removal or death occur during and/or after construction;

B. The landscape plan shall identify the protection area and method of protection for retained trees. The minimum radius of protection area shall be determined by multiplying the tree diameter at breast height in inches by one foot or by delineation of the drip line of the tree, whichever is greater;

C. The protection area shall be identified during construction with high visibility fencing and/or chain link fencing. There shall be no encroachment including, but not limited to, earth disturbing activities such as grading and/or stockpiling of soil or materials within this area;

D. Any vegetation removed before, during or after construction shall be replaced with newly planted vegetation which meets the minimum requirements outlined in this Ordinance.

(2) NEW TREES. Required tree plantings shall conform to the following minimum standards with caliper measurements taken six inches above grade. At time of planting:

A. Large street trees shall measure a minimum of 1½- to 2-inch caliper;

B. Medium street trees shall measure a minimum of one- to 1½-inch caliper;

C. Screening trees shall measure a minimum of 4½ to six feet in height.

(3) NEW SHRUBS.

A. Streetscape shrubs shall be container grown in not less than three gallons and shall not be less than 24 inches in height at time of planting and shall not be pruned to less than 24 inches in height.

B. Screening shrubs shall not be less than 30 inches at time of planting and shall not be pruned to less than five (5) feet in height.

(e) TREE CANOPY. Canopy calculations for new plantings shall be calculated from the official tree canopy maintained in the City of Suffolk Department of Planning. All new and existing vegetation applied to canopy requirements shall comply with the plant specifications and standards of this Ordinance

(1) MINIMUM REQUIREMENTS. The landscape plan shall include the planting and/or replacement of trees on site to the extent that, after ten years from the date of planting, tree canopies shall be at least:

- A. Ten percent (10%) tree canopy for a site zoned office, business or industrial;
- B. Ten percent (10%) tree canopy for a residential site zoned twenty (20) or more units per acre;
- C. Fifteen percent (15%) tree canopy for a residential site zoned more than ten, but less than twenty units per acre; and
- D. Twenty percent (20%) tree canopy for a residential site zoned ten (10) units or less per acre.

(2) EXISTING VEGETATION.

- A. Existing plant material exceeding five feet in height may be applied toward tree canopy or tree cover requirements. Preserved trees shall conform to the plant specifications and standards of this Ordinance except for size.
- B. Credit shall be calculated by multiplying 1.25 times the undisturbed wooded area.
- C. Effort shall be made to preserve all existing vegetation within twenty (20) feet of existing water bodies, such as but not limited to lakes, streams and wetlands or as required by the Chesapeake Bay Preservation Area Overlay District.

(3) EXEMPTIONS. The following land area shall be exempt from the area to be calculated:

- A. Areas devoid of plant material exceeding five (5) feet in height;
- B. Dedicated school sites or other publicly dedicated lands;
- C. Playing fields and other non-wooded recreation area;
- D. Wetlands areas.

(f) SCREENING.

...
(2) MINIMUM REQUIREMENTS.

- B. Where only vegetation is used, screening shall consist of a double staggered row of evergreen trees spaced 20 feet on center, or a triple staggered row of evergreen screening shrubs spaced ten feet on center.

...
(3) REQUIREMENTS FOR OFFICE, BUSINESS OR INDUSTRIAL DISTRICTS ADJACENT TO A RESIDENTIAL DISTRICT.

- A. Where only vegetation is used, screening shall consist of a double staggered row of evergreen screening trees spaced twenty (20) feet on center, or a triple staggered row of evergreen screening shrubs spaced ten (10) feet on center.
- B. In addition to the above, office, business or industrial uses, such as, but not limited to, loading docks, parking areas and the like, which, in the opinion of the Director of Planning and Community Development are objectionable, abut a residential district, berming shall be required.
 - (i) Requirements for residential districts:
 - a. Where RU, RC, RM, RLM or RL residential districts, as defined in Article 4, abut A, RR or RE districts, additional landscaping shall be required.
 - b. Landscaping shall consist of a 15-foot screening strip of either a single row of screening trees spaced 20 feet on center or a single row of screening shrubs spaced ten feet on center.

(4) REQUIREMENTS FOR SUPERSTORES AND BIG BOX RETAIL USES. Retail uses subject to Section 31-715 of this Ordinance shall comply with the following standards:

A. LANDSCAPING.

(i) PERIPHERAL. A 30-foot wide landscaped buffer shall be provided along the front property line and along all abutting arterial roadways with breaks for approved access points. A minimum 15-foot wide landscape buffer shall be planted along all other property lines and along all internal roadways. No parking is permitted within these required buffer area or landscape areas.

(ii) BUILDING FACADE. The minimum setback for any building facade shall be 35 feet. Where the facade faces adjacent residential uses, an earthen berm, no less than six feet in height, containing at minimum, evergreen trees planted at intervals of 20 feet on center, or in clusters or clumps and shrubbery, shall be provided.

(iii) PARKING LOT. A minimum of ten percent (10%) of the parking area shall be landscaped. Landscaped areas shall be dispersed throughout the parking lot. Landscaped areas shall be protected by raised curbs and shall be a minimum of 200 square feet in size, except that ten percent of the planting areas may contain a minimum of 100 square feet. Where used, parking lot islands between parallel parking rows shall be a minimum of nine (9) feet in width and shall run the length of the parking aisle capped at each end by the termination of the island. In all cases parking aisles shall be landscaped at each end. For other types of parking configurations, landscaping, screening and buffer yard standards shall prevail.

(iv) REQUIRED PLANTINGS.

a. STREET TREE SPACING. Trees shall be planted on 30-foot centers. For variety, trees may be occasionally grouped to accent an area.

b. NUMBERS OF TREES AND SHRUBS PER 100 SQUARE FEET. Trees and shrubs shall be provided consistent with the landscaping standards of this Ordinance.

c. GROUND COVER AREAS. All areas shall be planted at a minimum with turf or grass. Ground covering such as ivy or similar material shall be used to accent planting areas.

(5) EXEMPTIONS.

A. Principal agricultural uses shall be exempt from screening requirements, with the exception of uses such as sawmills and feedlots and other uses which, in the opinion of the Director of Planning and Community Development, are objectionable.

(g) STREETScape LANDSCAPING.

(1) APPLICABILITY. In addition to the above, all developments with five (5) or more parking spaces and/or subject to site plan review shall provide streetscape landscaping. The requirements of this Section shall apply to all expansions, reuse and/or modifications of existing development. Should existing site conditions and/or existing development of the property limit applicability of this Section, the developer may submit a Waiver or Modification request in accordance with the Waivers and Modifications Section of this Ordinance.

(2) MINIMUM REQUIREMENTS.

A. At minimum, a continuous ten-foot (10') wide Streetscape planting strip, exclusive of easements, shall be located in areas adjacent to an existing or

proposed public road provided, however, that a lower width may be permitted by the street improvement standards, Section 31-612(c)(3) (Street Patterns) in order to balance median and sidewalk widths. Up to five (5) feet of this planting strip may be devoted to sidewalk. The planting strip shall be located generally parallel to the existing or proposed road and shall not be located in areas identified for road widening, road projects, drainage areas, BMP areas or other public improvement projects. Minor encroachments in the planting strip by drainage easements may be approved by the Director of Planning and Community Development.

B. Street trees shall be required to be planted within the ten-foot planting strip. One large street tree shall be required every 50 feet or fraction thereof, or, one medium street tree shall be required every 25 feet or fraction thereof. Street trees shall be planted in an even, linear spacing. If minor shifts to the linear spacing are required due to the location of existing infrastructure, development or required sight distance, these shifts may be approved by the Director of Planning.

C. A single row of streetscape shrubs, planted three feet on center, shall be placed within the ten foot planting strip. Effort shall be made to locate this vegetation so to provide most effective screening of parking areas. Berms, three feet in height and a maximum 2:1 slope, may replace streetscape shrubs to a maximum of 50 percent.

...

SEC. 31-605. LOT LAYOUT STANDARDS.

...

(k) LOT GRADING AND LANDSCAPING STANDARDS. The following standards shall be followed in establishing the grading plan for a development:

...

(5) LANDSCAPING. All disturbed areas within the dedicated right-of-way and easements of any subdivision street shall be restored with vegetation as required by 24 VAC § 30-90-290 (Landscaping). Street trees shall be planted or, where permitted trees already existing, maintained and protected between the paved areas and sidewalks or, where no sidewalks are required, between the paved areas and the edge of the right-of-way, consistent with the Landscaping Standards of this Ordinance.

SEC. 31-606. PARKING AND LOADING STANDARDS.

(a) OFF-STREET PARKING.

...

(12) LARGE SHOPPING CENTERS, SUPERSTORES AND BIG BOX RETAIL. Pedestrian accessibility opens auto-oriented developments to the neighborhood, thereby reducing traffic impacts and enabling the development to project a friendlier, more inviting image. This Section sets forth standards for public sidewalks and internal pedestrian circulation systems that can provide user-friendly pedestrian access as well as pedestrian safety, shelter, and convenience within the center grounds.

...

B. Continuous internal pedestrian walkways, not less than eight (8) feet in width, shall be provided from the public sidewalk or right-of-way to the principal customer entrance of all principal buildings on the site. At a minimum, walkways shall connect focal points of pedestrian activity including, but not limited to, transit stops, street crossings, building and store entry points, and shall feature adjoining landscaped areas that include trees,

shrubs, benches, flower beds, ground covers, or other such materials for no less than fifty percent (50%) of its length.

...

...

...

SEC. 31-607. PARKS AND OPEN SPACE.

...

(e) PARK DEDICATION/RESERVATION REQUIREMENTS.

...

(8) **PRESERVATION OF OPEN SPACE.** Open-space areas shall be maintained so that their use and enjoyment as open space are not diminished or destroyed. Open-space areas may be owned, preserved, and maintained as determined by the Decisionmaker by any of the following mechanisms or combinations thereof:

A. In the design and during subsequent construction, the applicant shall protect and preserve the following existing features: large trees (as set forth in Appendix C of this Ordinance) native vegetation, watercourses and other water areas, historic sites, scenic points and other features within the areas designated for passive open space. Not more than fifty percent (50%) of such features may be removed in areas designated for active open space. All lands located in the Chesapeake Bay Preservation area shall be subject to natural features protection or preservation standards contained in Section 31-415 of this Ordinance in addition to those contained in this Section. This provision shall not affect the validity of any local Ordinance which may establish reasonable rules and regulations and schedules for the planting of new trees in and along areas dedicated for public use, where trees and other natural growth have been destroyed in the construction process.

...

(9) **CERTAIN ACTIVITY FORBIDDEN.** Following dedication of lands as provided herein, no person shall remove trees, vegetation or topsoil therefrom, nor shall the lands be used for the purpose of stockpiling of earth or construction material, or disposal of construction debris, without the written consent of the Department of Parks and Recreation.

...

SEC. 31-612. STREET IMPROVEMENT STANDARDS.

...

(c) STREET CLASSIFICATION.

...

Collector. Collectors serve as a long-distance, medium-speed vehicular corridor which traverses an urbanized area. It is usually lined by wide sidewalks, or side medians planted with trees. Center medians may be continuously planted or have trees in individual planting areas. Buildings uniformly line the edges. Option 1 is designed to provide a relatively high-volume entryway to a proposed development. Option 2 provides for parking on one side of the street, provides a lower volume link between internal centers, and may be used to maintain scenic views. Option 3 allows for parking on both sides of the streets and provides a link between external description and internal centers.

Main Street (Minor Collector). The main street serves as a small-scale, low-speed connector. Main streets provide frontage for high-density buildings such as offices (zoning district O-I), shops (zoning districts B-1 and B-2), and apartment buildings, rowhouses and other multi-family dwellings (zoning districts RC, RU and Rowhouse

land use category of a TND). A main street is also appropriate for the CBD or VC zoning districts or the Town Center of a TND. A main street is urban in character, with raised curbs, closed drainage, wide sidewalks, parallel parking, trees in individual planting areas, and buildings aligned on short setbacks.

Local Streets (Urban). The local street serves as a small-scale, low-speed connector. Local streets provide frontage for medium-to-low-density residential buildings such as detached homes and duplexes. A local street is urban in character, with raised or rolled curbs, closed drainage, sidewalks, occasional parallel parking on one side, trees in continuous planting areas, and buildings aligned on medium setbacks. Local Streets are pedestrian-oriented in character with sidewalks and parallel parking. Parking may be restricted, for example, to one side of the street to define an edge between parks and open space. This street design is appropriate in most residential zoning districts, such as RL, RLM, RM, RC, and RU, as well as for multi-family and residential development on lots not exceeding 10,000 square feet in mixed use districts such as CBD, VC, PD, and TND district or TND option developments.

Rural Roads. The rural road serves as a small-scale, low-speed connector. Rural roads provide frontage for low-density residential buildings such as rural residential, and rural estate zoning. A rural road is rural in character, with raised or rolled curbs, closed drainage, trees in continuous planting areas, and buildings aligned on medium setbacks.

...
(i) RIGHT-OF-WAY WIDTHS.

(1) GENERALLY. Minimum roadway widths shall comply with the Street Pattern specifications of Subsection (c) of this Section and the PFM, or if no specification is provided, with 24 VAC § 30-90-380. However, where local street capacity is needed to accommodate the LOS standard prescribed in § 31-601, capacity shall be provided in the form of cross-streets and diverter roads rather than through the addition of additional roadway lanes.

(2) HAMLET OR TND MODIFICATIONS. In order to promote development patterns which support pedestrian activity and which minimize stormwater runoff, a Decisionmaker shall not approve a subdivision plat or site plan with right-of-way or pavement widths which do not comply with this Subsection unless:

A. The proposed development is certified by the Director as a TND or Hamlet option, or is submitted pursuant to a TND zoning district; and

B. The pavement width requirements of this Subsection and 24 VAC § 30-90-380 would preclude:

...
(iii) The establishment of street trees consistent with the Landscaping Standards of this Ordinance.

...
(m) TRAFFIC VISIBILITY STANDARDS. A Traffic Visibility Zone shall be maintained on each corner of property at the intersection of streets. Material impediment to visibility is defined as any impediment which might conceal a child on a bicycle from a driver approaching the intersection.

(1) PROHIBITED OBSTRUCTIONS. A Traffic Visibility Zone shall contain no fence, structure, earth bank, hedge, planting, wall or other obstruction between a height of two and one-half (2½) feet and nine feet above the property line grade as established by the Director of Public Works. The following are exempted from this provision:

...

B. Trees trimmed (to the trunk) to a height at least nine feet above the level of the intersection.

...

...

APPENDIX "A" - DEFINITIONS

Terms defined. Words contained in this Appendix are those having a special meaning relative to the purposes of this Ordinance. Words not listed in this Appendix shall be defined by reference to: (1) Chapter 2 of the Uniform Statewide Building Code or, if not defined therein, in (2) the Webster's Third New International Dictionary, unabridged, 1993 or, if not defined therein, (3) the Virginia Code or Virginia Administrative Code, which documents are hereby incorporated by reference as if set forth in their entirety herein. Words and terms defined elsewhere in this Ordinance shall be given the meanings set forth therein.

AGRICULTURE: The use of land for a bona fide agricultural operation such as the raising of crops, horticulture, the keeping of animal, bees, and fowl, or any other similar agricultural activity, and including the customary accessory uses which are normally associated with such activities.

AGRICULTURAL BUILDING: A structure utilized to store farm implements, hay, feed, grain or other agricultural or horticultural products or to house poultry, livestock or other farm animals. Such structure shall not include habitable or occupiable spaces, spaces in which agricultural products are processed, treated or packaged, nor shall an agricultural building be a place of occupancy by the general public. (Source: Uniform Statewide Building Code)

AGRICULTURAL LANDS: Those lands used for the planting and harvesting of crops or plant growth of any kind in the open; pasture; horticulture; dairying; floriculture; or raising of poultry and/or livestock.

BEST MANAGEMENT PRACTICE (BMP): A practice, or a combination of practices, that is determined by a state or designated area-wide planning agency to be the most effective, practical means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals. The term "best management practice" also includes schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of surface waters. BMPs also include treatment requirements, operating procedures, and practices to control plant site run-off, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. (Source: Virginia Administrative Code)

BUFFER: An area, fencing, landscaping, or a combination thereof which is used to separate one use from another or to shield or block noise, lights, glare, pollutants or other potential or actual nuisances.

BUFFER AREA: 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.

BUFFERYARD: A strip of land established to protect one type of land use from another land use or to provide screening. Normally, a bufferyard is landscaped and developed in open space areas.

CALIPER: The diameter of a tree trunk measured six (6) inches above ground level for nursery stock and 4 1/2 feet above ground level for all other trees.

CHESAPEAKE BAY PRESERVATION AREA: Any land designated by the City pursuant to Part III of the Chesapeake Bay Preservation Area Designation and Management Regulations 10.1-2107 or its successor regulations of the Chesapeake Bay Preservation Act. A Chesapeake Bay Preservation Area shall consist of a Resource Protection Area and a Resource Management Area. (Source: Virginia Administrative Code)

CLEAR-CUTTING: The removal of more than twenty-five percent (25%) of the trees, shrubs, or undergrowth from a site with the intention of preparing real property for nonagricultural development purposes. This definition shall not include the selective removal of non-native tree and shrub species when the soil is left relatively undisturbed, removal of dead trees or normal mowing operations.

EASEMENT: A grant by one property owner to another, evidenced by a deed recorded with the clerk of the circuit court, of the right to use the described land for a specific purpose. The term "easement" also includes a grant of a right to use property of an owner for specific, limited use or purpose. (Source: Virginia Administrative Code)

EASEMENT, NON-ACCESS: An easement prohibiting access from a public street.

ENVIRONMENTAL CONSTRAINTS: Features, natural resources, or land characteristics that are sensitive to development activities or installation of improvements and may require conservation measures or the application of creative development techniques to prevent degradation of the environment when developed.

EXTERNAL BUFFER: A vegetated area along the exterior boundaries of a development which is maintained as open space in order to eliminate or minimize conflicts between such development and adjacent land uses.

IMPERVIOUS SURFACE: A surface that has been compacted or covered with a layer or layers of material so that it is resistant to infiltration of water into the soil. Impervious surfaces include limerock, gravel, or clay as well as most conventionally surfaced roofs, buildings, streets, parking areas, and any concrete or asphalt.

LAND-DISTURBING ACTIVITY: Any change in or reconfiguration of the land surface or vegetation on the land surface through vegetation clearing or earth moving activities including but not limited to clearing, grading, excavating,

LANDSCAPE YARD: A designated area within which trees, plants and lawns are cultivated and also including other natural materials such as rock, wood chips, mulch, and decorative features, including sculpture, trellises, fountains and other natural features.

LANDSCAPING: The improvement of a lot or parcel with grass, ground covers, shrubs, trees, other vegetation or ornamental objects. Landscaping may include earth forms, flower beds, ornamental objects such as trellises or fountains and other natural features.

NUISANCE: An activity which unreasonably interferes with an individual's or the public's comfort, convenience or enjoyment such that it interferes with the rights of others by causing damage, annoyance, or inconvenience. (Source: Virginia Administrative Code)

NURSERY: A place where plants are raised, acquired, and maintained for transplanting or sale. It may also include, either exclusively or in conjunction with the above activities, the sale of materials commonly used for landscaping purposes, such as soil, rock, bark, mulch and other materials determined by the Director to be landscaping materials. Sale or rental of small landscaping tools and supplies may be an accessory use. Also includes the phrase "Landscaping Materials."

PLANT NURSERY: The use of land buildings, or structures for the growth and production of plant materials for sale.

PLANT NURSERY, RETAIL SALES: The use of land, buildings, or structures for the sales of plant materials, landscape materials, and fertilizer, excluding production of plant materials.

PLANTING AREA: The area within which vegetation is installed which provides a sufficient bed to maintain and ensure the survival of trees and other vegetation.

PUBLIC RIGHT-OF-WAY: Any street, road, highway, alley, or pedestrian/bicycle way or other special purpose way or utility installation owned by, or reserved to, the public for present or future public use.

RIGHT-OF-WAY: Land reserved, used, or to be used for a highway, street, alley, walkway, drainage facility, or other public purpose. The right-of-way includes the total width of land dedicated or reserved for public or restricted travel, including appurtenant facilities located therein, such as pavement, ditches, curbing, gutters, bikeways, sidewalks, shoulders, and sufficient land for the maintenance thereof. The term "right-of-way" also includes the land, property, or interest therein, usually in a strip, acquired for or devoted to a public street designated to become part of the secondary system of state highways. (Source: Virginia Administrative Code)

RUBBISH: Combustible or slowly putrescible discarded materials which include but are not limited to trees, wood, leaves, trimmings from shrubs or trees, printed matter, plastic and paper products, grass, rags and other combustible or slowly putrescible materials not included under the term "garbage." (Source: Virginia Administrative Code)

SHRUB: A relatively low growing woody plant typified by having several permanent stems instead of a single trunk. For purposes of meeting the landscaping requirements of this chapter, shrubs shall be further defined as follows:

- (1) Deciduous shrub. Any shrub which sheds its foliage during a particular season.
- (2) Evergreen shrub. Any shrub which retains its green foliage throughout the entire year.

SILVICULTURAL ACTIVITY: Any forest management activity, including but not limited to the harvesting of timber, the construction of roads and trails for forest management purposes, and the preparation of property for reforestation that are conducted in accordance with the silvicultural best management practices developed and enforced by the state forester pursuant to Section 10.1-1105 of the Code of Virginia and are located on property defined as real estate devoted to forest use under Section 58.1-3230 or its successor regulations of the Code of Virginia. (Source: Code of Virginia, § 10.1-1181.1 or its successor regulations)

TREE: A woody perennial plant generally with one main stem or trunk, but including multiple stemmed plants, which develops many branches, generally at some height above

the ground. For the purpose of meeting the landscaping and preservation requirements of this chapter, the types of trees shall be defined as follows:

- (1) Deciduous tree. Any shade, flowering or ornamental tree which sheds its foliage during a particular season.
- (2) Evergreen tree. Any tree which retains its green foliage year round.
- (3) Heritage tree. Any tree which has been designated by Ordinance of the City Council as having notable historic or cultural significance to any site or which has been so designated in accordance with an Ordinance adopted pursuant to Section 15.1-503.2, Code of Virginia or its successor regulations.
- (4) Mature tree. Any deciduous or evergreen tree with a minimum diameter (caliper) of fourteen (14) inches when measured four and one-half (4½) feet above ground level.
- (5) Memorial tree. Any tree which has been designated by ordinance to be a special commemorating memorial.
- (6) Significant tree. Any deciduous or coniferous tree with a minimum diameter (caliper) of twenty-two (22) inches when measured four and one-half (4½) feet above ground level.
- (7) Specimen tree. Any tree which has been designated by Ordinance of the City Council to be notable by virtue of its outstanding size and quality for its particular species.

TREE COVER: The area directly beneath the crown and within the drip line of a tree.

TREE CROWN: The aboveground parts of a tree consisting of the branches, stems, buds, fruits, and leaves. Also referred to as "Tree Canopy."

(Ord. No. 09-O-045, § 1(Exh. C), 8-19-2009; Ord. No. 09-O-055, Exh. A, 11-18-2009; Ord. No. 10-O-068, Exh. A, 10-20-2010; Ord. No. 12-O-101, 12-5-2012; Ord. No. 13-O-117, 12-18-2013; Ord. No. 14-O-072, 6-18-2014; Ord. No. 15-O-068, 6-17-2015)

APPENDIX C SIGHT TRIANGLES; APPROVED PLANT LISTS, TREE CANOPY CALCULATIONS; AND APPROVED PLANT LISTS FOR STORMWATER MANAGEMENT

APPROVED STREETScape AND SCREENING TREES AND SHRUBS

LARGE TREES (1.5- to 2-inch caliper when planted)

Botanical Name	Common Name
<i>Acer saccharum</i> "Columnare"	Column Sugar Maple
<i>Acer saccharum</i> "Green Mountain"	"Green Mountain" Sugar Maple
<i>Fraxinus pennsylvanica</i>	Green Ash
<i>Fraxinus pennsylvanica</i> "Marshall Seedless"	"Marshall"s Seedless Green Ash
<i>Ginkgo biloba</i>	Ginkgo (Male Cultivars only)
<i>Liquidambar styraciflua</i> "Rotundiloba"	Seedless Sweet Gum
<i>Magnolia grandiflora</i>	Southern Magnolia
<i>Metasequoia glyptostroboides</i>	Dawn Redwood
<i>Nyssa sylvatica</i>	Black Gum
<i>Platanus x acerifolia</i> "Bloodgood"	"Bloodgood" London Plane Tree
<i>Platanus occidentalis</i>	Americian Sycamore
<i>Quercus alba</i>	White Oak
<i>Quercus falcata</i>	Red Oak
<i>Quercus phellos</i>	Willow Oak
<i>Zelkova serrata</i>	Zelkova Village Green

MEDIUM TREES (1 to 1.5 inch caliper when planted)

Botanical Name	Common Name
<i>Acer palmatum</i>	Japanese Maple
<i>Acer platanoides</i> "Columnare"	Columnar Norway Maple
<i>Acer rubrum</i> "Columnare"	Columnar Red Maple
<i>Acer rubrum</i> "October Glory"	"October Glory" Red Maple
<i>Carpinus betulus</i> "Fastigiata"	Thornless Common Honeylocust
<i>Carpinus caroliniana</i>	American Hornbeam or Muscledwood
<i>Cercidiphyllum japonicum</i>	Katsuratree
<i>Cercis canadensis</i>	Eastern Redbud
<i>Chionanthus virginicus</i>	White FringeTree
<i>Cornus florida</i>	Flowering Dogwood
<i>Cornus kousa</i>	Kousa Dogwood
<i>Crataegus phaenopyrum</i>	Washington Hawthorn
<i>Koelreuteria paniculata</i>	Goldenraintree
<i>Lagerstroemia indica</i>	Crapemyrtle (mildrew resistant only)
<i>Malus floribunda</i>	Japanese Flowering Crabapple
<i>Ostrya virginiana</i>	American Hophornbeam
<i>Oxydendrum arboreum</i>	Sourwood
<i>Prunus serrulata</i> "Kwanzan"	Kwanzan Cherry
<i>Prunus cerasifera</i>	Flowering Plum (named cultivars only)
<i>Pyrus calleryana</i>	Callery Pears (cultivars only-no Bradfords)
<i>Quercus acutissima</i>	Saw Tooth Oak
<i>Quercus palustris</i>	Pin Oak
<i>Quercus robur</i>	English Oak
<i>Quercus robur</i> "Fastigiata"	Pyramidal English Oak
<i>Syringa reticulata</i>	Japanese Lilac Tree
<i>Tilia americana</i>	American Linden
<i>Tilia cordata</i>	Littleleaf Linden
<i>Tilia tomentosa</i>	Silver Linden

APPROVED SCREENING TREES (4.5 to 6 feet high when planted)

Botanical Name	Common Name
<i>Abies concolor</i>	White fir
<i>Cedrus atlantica</i> "Glauca"	Atlas Cedar
<i>Cedrus deodara</i>	Deodar Cedar
<i>Chamaecyparis</i> (ssp)	Falsecypress
X <i>Cupressocyparis leylandii</i>	Leyland Cypress
<i>Ilex opaca</i>	American Holly
<i>Juniperus virginiana</i>	Eastern Redcedar
<i>Magnolia grandiflora</i>	Southern Magnolia
<i>Pinus bungeana</i>	Lace Bark Pine
<i>Pinus elliotti</i>	Slash pine
<i>Pinus nigra</i>	Austrian Pine
<i>Pinus parviflora</i>	Japanese White Pine
<i>Pinus strobus</i>	Eastern White Pine
<i>Pinus taeda</i>	Loblolly Pine
<i>Pinus thunbergiana</i>	Japanese Black Pine
<i>Pinus virginiana</i>	Virginia Pine
<i>Taxus baccata</i>	English Irish Yew
<i>Taxus cuspidata</i>	Japanese Yew
<i>Thuja occidentalis</i>	Eastern Arborvitae
<i>Tsuga caroliniana</i>	Caroliniana Hemlock
<i>Tsuga canadensis</i>	Canadian Hemlock

APPROVED SCREENING SHRUBS (2.5 feet high when planted)

Botanical Name	Common Name
<i>Abelia x grandiflora</i>	Glossy Abelia
<i>Amelanchier canadensis</i>	Serviceberry
<i>Berberis thunbergii</i>	Japanese Barberry
<i>Buxus sempervirens</i>	Boxwood
<i>Camellia japonica</i>	Camelia
<i>Cleyera japonica</i>	Japanese Cleyera
<i>Elaeagnus angustifolia</i>	Russian Olive
<i>Elaeagnus pungens</i>	Thorny Elaeagnus
<i>Euonymus japonicus</i>	Japanese Euonymus
<i>Ilex crenata</i>	Japanese Holly
<i>Ilex glabra</i>	Inkberry
<i>Ilex x Nellie R. Stevens</i>	Nellie R. Stevens Holly
<i>Ilex verticillata</i>	Winterberry
<i>Ilex vomitoria</i>	Yapon Holly
<i>Juniperus torulosa</i>	Hollywood Juniper
<i>Ligustrum japonicum</i>	Japanese Privet
<i>Myrica cerifera</i>	Southern Waxmyrtle
<i>Osmanthus heterophyllus 'Gulftide'</i>	Gulftide Osmanthus
<i>Photinia x fraseri</i>	Redtipped Photinia
<i>Prunus caroliniana</i>	Carolina Cherrylaurel
<i>Thuja occidentalis</i>	Eastern Arborvitae
<i>Viburnum rhytidophyllum</i>	Leatherleaf viburnum

RECOMMENDED STREETSCAPE SHRUBS (3 gallon/ 2 foot)

In addition to the shrubs listed under Recommended Screening Shrubs, the following shrubs may be utilized:

Botanical Name	Common Name
<i>Buddlia davidii</i>	Butterfly-bush
<i>Calycanthus floridus</i>	Sweetshrub
<i>Chaenomeles speciosa</i>	Flowering Quince
<i>Cotinus coggygria</i>	Smokebush
<i>Cotoneaster apiculatus</i>	Cranberry Cotoneaster
<i>Cotoneaster lucidus</i>	Hedge Cotoneaster
<i>Deutzia gracilis</i>	Slender Deutzia
<i>Enkianthus campanulatus</i>	Enkianthus
<i>Euonymus alata 'compacta'</i>	Firebush
<i>Forsythia x intermedia</i>	Forsythia
<i>Hibiscus syriacus</i>	Rose of Sharon
<i>Kolkwitzia amabilis</i>	Beautybush
<i>Mahonia bealei</i>	Leatherleaf Mahonia
<i>Mahonia fortunei</i>	Chinese Mahonia
<i>Philadelphus coronarius</i>	Sweet Mockorange
<i>Pieris japonica</i>	Japanese Pieris
<i>Pyracantha coccinea</i>	Scarlet Firethorn
<i>Rhododendron schlippenbachii</i>	Royal Azalea
<i>Spirea x vanhouttei</i>	Bridalwreath Spirea
<i>Syringa vulgaris</i>	Common Lilac
<i>Viburnum carlesii</i>	Korean Spice Shrub

NON-ACCEPTABLE TREE SPECIES

Botanical Name	Common Name	Problem
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<i>Acer negundo</i>	Box Elder	Weak wood, insects, short-lived
<i>Acer saccharinum</i>	Silver Maple	Weak wood, shallow roots, prolific seeding
<i>Ailanthus altissima</i>	Tree of Heaven	Offensive odor (male), poor landscape qualities
<i>Albizia julibrissin</i>	Mimosa	Mimosa wilt disease
<i>Betula papyrifera</i>	Paper Birch	Insects, susceptible to heat
<i>Celtis occidentalis</i>	Hackberry	Distorted growth habit
<i>Catalpa bignonioides</i>	Southern Catalpa	Messy flowers, seed pods
<i>Ginkgo biloba</i>	Ginkgo (female only)	Offensive fruit odor
<i>Laburnum anagyroides</i>	Golden Chain Tree	Environmental stress
<i>Liriodendron tulipifera</i>	Tulip Poplar	Messy seed pods
<i>Melia azedarach</i>	Chinaberry	Weak wood, seeds, suckers
<i>Morus</i> (spp)	Mulberries	Objectionable fruit
<i>Paulownia tomentosa</i>	Empress Tree	seed pods
<i>Picea abies</i>	Norway Spruce	Environmental stress
<i>Populus alba</i>	White/Silver Poplar	Weak wood, diseases
<i>Pyrus calleryana</i> "Bradfordii"	Bradford Pear	Poor branching, other cult. much better
<i>Prunus serotina</i>	Wild Black Cherry	Objectionable fruit, insects
<i>Salix</i> (spp.)	Willow	Weak wood, roots
<i>Ulmus americana</i>	American Elm	Dutch elm disease
<i>Ulmus pumila</i>	Siberian Elm	Short lived, insect

APPROVED PLANT LIST—TREES

PLANT NAME COMMON NAME Botanical Name	Foliage				Habitat			Soil			Light*			Growth			Size		Primary Use					
	Evergreen	Semi-Evergreen	Deciduous	Herbaceous	Upland	Bottomland	Shore	Dry	Moist	Wet	Sun	Shade	Either	Slow	Moderate	Rapid	Mature Height (ft)	Mature Width (ft)	Disturbed Areas	Stabilize Streams	Wildlife habitat	Stabilize Shore	Wind Barrier	Erosion Control
AMERICAN BEECH Fagus grandifolia			X		X	X		X				X	X				70	50			X		X	
AMERICAN HOLLY Ilex opaca	X				X	X		X				X	X				40	20			X		X	
AMERICAN HORNBEAM Carpinus caroliniana			X			X		X				X		X			40	25		X				
AMERICAN MOUNTAIN ASH Sorbus americana			X		X			X			X				X		35	20			X			
BALD CYPRESS Taxodium distichum			X			X		X	X	P		X		X			80	50		X		X		
BASSWOOD Tilia americana			X		X			X				X			X		60	40	X				X	
BLACK CHERRY Prunus serotina			X		X	X		X		X					X		75	45			X			
BLACK GUM Nyssa sylvatica	>		X		X	X		X	X	X				X			60	40		X	X			
BLACK LOCUST Robinia pseudoacacia			X		X			X	X		X				X		60	40	X				X	X
BLACK WILLOW Salix nigra			X			X		X	X	X					X		40	25		X				

CANADIAN HEMLOCK Tsuga canadensis	X				X					X				X		X		60	25	X					X
CUCUMBER TREE Magnolia acuminata			X		X					X				X		X		75	45						X
EASTERN COTTONWOOD Populus deltoides			X			X				X	X	X				X		80	50		X	X			
EASTERN HOPHORNBEAM Ostrya virginiana			X			X				X		P		X		X		40	25		X				X
EASTERN REDCEDAR Juniperus virginiana	X				X	X				X						X		45	20	X		X			X
EUROPEAN BLACK ALDER Alnus glutinosa			X		X	X				X	X	X	X			X		50	30	X	X				
EUROPEAN MOUNTAIN ASH Sorbus aucuparia			X		X					X						X		45	30				X		
FLOWERING DOGWOOD Cornus florida			X		X	X				X			P	X		X		30	25				X		
GREEN ASH Fraxinus pennsylvanica			X		X	X				X						X		70	45		X				
HACKBERRY Celtis occidentalis			X		X	X				X				X		X		60	45				X		
HONEY LOCUS Gleditsia triacanthos			X		X	X				X						X		60	40				X		

JAPANESE BLACK PINE Pinus thunbergiana	X					X	X	X	X		X				X		30	15				X	X	
LAUREL OAK Quercus laurifolia		X				X	X	X	X		P		X		X		60	40		X	X	X		
LITTLELEAF LINDEN Tilia cordata			X		X	X			X		X				X	X	50	35	X				X	
LOBLOLLY PINE Pinus taeda	X					X	X	X	X	X	X					X	90	40	X			X	X	
NORTHERN READ OAK Quercus rubra			X		X	X		X	X		X				X		70	55			X		X	>
PIN OAK Quercus palustris			X		X	X		X	X		X				X		65	50			X		X	
POSSUMHAW Ilex decidus			X			X	X	X	X	X	P		X		X		20	15		X	X	X		
RED MAPLE Acer rubrum			X		X	X	X	X	X	X	P		X		X		60	45	X	X			X	
RIVER BIRCH Betula nigra			X			X	X	X	X	X	P		X			X	50	30		X		X		
SARGENT CRABAPPLE Malus sp.			X		X	X			X		X				X		15	10			X		X	
SASSAFRAS Sassafras albidum			X		X	X		X	X		P		X		X		40	25	X					
SAWTOOTH OAK Quercus acutissima			X		X	X		X	X		X				X		60	40			X		X	
SOUTHERN RED OAK Quercus falcata			X		X	X		X	X		X				X		70	50			X		X	
SOUTHERN WAX MYRTLE Myrica cerifera	X						X		X	X	X					X	15	10			X	X		

SWAMP CHESTNUT OAK <i>Quercus michauxii</i>			X			X	X		X	X	X				X		70	45		X		X		
SWEET BAY <i>Magnolia virginiana</i>		X	X				X		X	X	X				X		30	15		X		X		
SWEETGUM <i>Liquidambar styraciflua</i>			X		X	X		X	X	X	P		X		X		80	40			X		X	
SYCAMORE <i>Platanus occidentalis</i>			X		X	X			X		P		X			X	80	15		X			X	
VIRGINIA PINE <i>Pinus virginiana</i>	X				X			X	X		X			X			40	20	X				X	
WATER OAK <i>Quercus nigra</i>			X		X	X			X	X	P		X		X		70	45		X	X		X	
WATER TUPELO <i>Nyssa aquatica</i>			X			X			X	X	X				X		75	45		X			X	
WEeping WILLOW <i>Salix babylonica</i>			X		X	X		X	X	X	X					X	40	35		X				
WHITE PINE <i>Pinus strobus</i>	X				X	X		X	X		X					X	80	40	X				X	
WILLOW OAK <i>Quercus phellos</i>			X		X	X		X	X		X				X		70	45			X		X	
YELLOW POPLAR <i>Liriodendron tulipifera</i>			X		X	X			X		X					X	90	50	X				X	

APPROVED PLANT LIST—SHRUBS

PLANT NAME COMMON NAME Botanical Name	Foliage				Habitat			Soil			Light*			Growth			Size		Primary Use					
	Evergreen	Semi-Evergreen	Deciduous	Herbaceous	Upland	Bottomland	Shore	Dry	Moist	Wet	Sun	Shade	Either	Slow	Moderate	Rapid	Mature Height (ft)	Mature Width (ft)	Disturbed Areas	Stabilize Streams	Wildlife habitat	Stabilize Shore	Wind Barrier	Erosion Control
AMERICAN CRANBERRY BUSH <i>Viburnum trilobum</i>			X		X	X		X			X				X		10	10			X			
AMUR HONEYSUCKLE <i>Lonicera maackii</i>			X		X	X		X	X			X			X		12	12			X			
AUTUMN OLIVE <i>Elaeagnus umbellata</i>			X		X	X	X	X		P		X			X		18	12	X	X	X	X		X
"BANKERS" DWARF WILLOW <i>Sally cotteti</i>			X			X	X	X	X	X					X		10	10		X		X		X
BAYBERRY <i>Myrica pensylvanica</i>		X	X			X	X	X	X	X					X		8	8	X	X	X	X		
BICOLOR LESPEDEZA "NATOB" <i>Lespedeza bicolor</i>				X	X	X		X	X		X				X		12	6			X			X
BORDER FORSYTHIA			X		X	X		X	X		P		X			X	10	10						X

Forsythia intermedia																								
BURKWOOD VIBURNUM Viburnum burkwoodii		X			X	X			X	X				X		10	6							X
CALIFORNIA PRIVET Ligustrum ovalifolium		X			X	X		X	X	P		X		X	12	6							X	
DAHOON HOLLY Ilex cassino	X				X	X		X	X	X	P		X		X	12	8		X					
DROOPING LEUCOTHOE Leucothoe fontanesiana	X				X	X			X			X		X		6	4		X					X
FIRETHORN Pyracantha coccinea	X				X	X		X	X		X				X	15	10			X				X
HIGHBUSH BLUEBERRY Vaccinium corymbosum			X		X	X			X	X	X			X		12	12		X	X				
INKBERRY Ilex glabra	X				X	X	X		X	X	P		X	X		8	10		X					
LEATHERLEAF VIBURNUM Viburnum rhytidophyllum	X				X	X		X	X			X			X	10	8			X				
MOUNTAIN LAUREL Kalmia latifolia	X				X	X			X			P	X	X		10	6			X				

PAMPAS GRASS Cortaderia selloana	X					X		X	X		P		X			X	10	10						X
PFITZER JUNIPER Juniperus chinensis "Pfitzerana"	X				X	X		X	X		X				X		6	8						X
REDOSIER DOGWOOD Comus stolonifera			X		X	X			X	X	P		X		X		10	10		X	X			X
ROSEBAY RHODODENDRON Rhododendron maximum	X				X	X			X			X		X			25	25		X			X	
RUGOSA ROSE Rose rugosa			X		X	X	X	X	X		X				X		5	5			X	X		
SCHIPKA LAUREL CHERRY Prunus laurocerasus "Schipkaensis"	X				X	X		X	X		P		X		X		4	6			X			X
SCOTCH BROOM Cytisus scoparius			X		X	X		X	X		P		X		X		6	4		X				X
SHRUB LESPEDA Lespedeza hunbergii VA-70				X	X	X		X	X		X				X		6	4		X	X			X
SMOOTH SUMAC Rhus glabra			X		X	X		X	X		P		X		X		10	6			X			X
STAGHORN SUMAC Rhus typhina			X		X			X	X		X			X			15	15	X					X

PURPLEOSIER WILLOW <i>Salix purpurea</i>			X		X	X			X	X			X		X		10	6		X	X				X
SWAMP AZALEA <i>Rhododendron piscosum</i>			X			X			X	X		P	X		X		6	4		X					
TARTARIAN HONEYSUCKLE <i>Lonleera tatarica</i>			X		X	X			X	X		P	X		X		10	8			X				
WEeping FORSYTHIA <i>Forsythia suspensa</i>			X		X	X			X	X		P	X		X		10	15							X
WINTERBERRY <i>Ilex verticillata</i>			X		X	X			X	X	X	P	X		X		10	6		X					
WINTER JASMINE <i>Jasminum nudiflorum</i>			X		X	X			X	X		P	X		X		4	6	X						X

TREE CANOPY CALCULATIONS

Botanical Name Common Name (Min. Cal./Ht.)	Height at Planting (X)	Total Height in 10 Years X + Y = T	Total Width in 10 Years (R)T = D	AREA OF CANOPY (D) ² 3.14 = (2)
Large Shade Trees				
Acer saccharum Sugar Maple (1½ - 2 in. cal.)	14'	22.214'	14.617'	168 sq. ft.
	(x)	x + 8.214'	T(.658)	
Fraxinus pennsylvanica Green Ash (1½ - 2 in. cal.)	12'	27'	22.95'	413 sq. ft.
	(x)	x + 15'	T(.85)	
Ginkgo biloba Ginkgo Tree (1½ - 2 in. cal.)	11'	21'	14'	154 sq. ft.
	(x)	x + 10'	T(.667)	
Liquidambar styraciflua Sweetgum Tree (1½ - 2 in. cal.)	12'	32.3'	23.26'	424 sq. ft.
	(x)	x + 20.3'	T(.72)	
Magnolia grandiflora Southern Magnolia (1½ - 2 in. cal.)	7'	17'	9.69	74 sq. ft.
	(x)	x + 10	T(.57)	
Metasequoia glyptostroboides Dawn Redwood (1½ - 2 in. cal.)	13'	38'	28.5	638 sq. ft.
	(x)	x + 25'	T(.75)	
Nyssa sylvatica Black Gum Tree (1½ - 2 in. cal.)	11'	23'	15.34'	185 sq. ft.
	(x)	x + 12'	T(.667)	
Platanus x acerifolia London Plane Tree (1½ - 2 in. cal.)	11'	28.5'	21.66'	368 sq. ft.
	(x)	x + 17.5	T(.76)	
Platanus occidentalis Sycamore (1½ - 2 in. cal.)	14'	31.5'	27.09'	576 sq. ft.
	(x)	x + 17.5'	T(.76)	
Quercus alba White Oak (1½ - 2 in. cal.)	10'	22'	17.6'	243 sq. ft.
	(x)	x + 12'	T(.8)	
Quercus falcata Red Oak (1½ - 2 in. cal.)	11'	31'	20.677'	335 sq. ft.
	(x)	x + 20'	T(.667)	
Quercus phellos Willow Oak (1½ - 2 in. cal.)	11'	31'	22'	380 sq. ft.
	(x)	x + 20'	T(.7)	
Zelkova serrata Japanese Zelkova (1½ - 2 in. cal.)	13'	33'	25'	490 sq. ft.
	(x)	x + 20'	T(.759)	
Medium Shade Trees				
Acer palmatum Japanese Maple (1" - 1½" cal.)	6'	18.5	16.6	434 sq. ft.
	(x)	x + 12.5	T(.90)	
Acer platanoides Norway Maple (1" - 1½" cal.)	12'	25.75'	20.6'	333 sq. ft.
	(x)	x + 13.75'	T(.80)	
Acer rubrum Red (Swamp) Maple (1" - 1½" cal.)	9'	26.14'	19.082'	286 sq. ft.
	(x)	x + 17.14'	T(.73)	

Carpinus betulus European Hornbeam (1" - 1½" cal.)	7'	17'	12.75'	128 sq. ft.
	(x)	x + 10'	T(.75)	
Carpinus caroliniana American Hornbeam or Muscledwood (1" - 1½" cal.)	9'	18'	16.2'	206 sq. ft.
	(x)	x + 9'	T(.9)	
Cercidiphyllum japonicum Katsuratree (1" - 1½" cal.)	7.5'	16.5'	9.075'	65 sq. ft.
	(x)	x + 9'	T(.55)	
Cercis canadensis Eastern Redbud (1" - 1½" cal.)	7'	23.7'	22.47'	396 sq. ft.
	(x)	x + 16.7'	T(.95)	
Chionanthus virginicus White Fringe Tree (1" - 1½" cal.)	7'	19.5'	19.5'	298 sq. ft.
	(x)	x + 12.5	T	
Cornus florida Dogwood (1" - 1½" cal.)	7'	19'	14.06'	155 sq. ft.
	(x)	x + 12'	T(.74)	
Cornus kousa Kousa Dogwood (1" - 1½" cal.)	7'	19'	14.06'	155 sq. ft.
	(x)	x + 12'	T(.74)	
Crataegus phaenopyrum Washington Hawthorn (1" - 1½" cal.)	6'	13'	11.7	107 sq. ft.
	(x)	x + 7'	T(.9)	
Koelreuteria paniculata Goldenraintree (1" - 1½" cal.)	7'	27'	27'	72 sq. ft.
	(x)	x + 20'	T	
Lagerstroemia indica Crape Myrtle (1" - 1½" cal.)	6'	20'	18'	259 sq. ft.
	(x)	x + 14'	T(.9)	
Malus (Spp.) Crab Apple (1" - 1½" cal.)	6.5'	26.5'	17.5'	240 sq. ft.
	(x)	x + 20'	T(.66)	
Ostrya virginiana American Hophornbeam or Ironwood (1" - 1½" cal.)	7'	15.33'	9.90'	77 sq. ft.
	(x)	x + 8.33'	T(.646)	
Oxydendrum arboreum Sourwood (1" - 1½" cal.)	7'	18.66'	13.248'	138 sq. ft.
	(x)	x + 11.66'	T(.71)	
Prunus (Spp.) Cherry (1" - 1½" cal.)	6.5'	26.5'	17.5'	240 sq. ft.
	(x)	x + 20'	17.5'	
Pyrus calleryana Callery Pear (1" - 1½" cal.)	7'	22'	15.62'	191 sq. ft.
	(x)	x + 15'	T(.71)	
Quercus acutissima Sawtooth Oak (1" - 1½" cal.)	12'	24'	15.6'	191 sq. ft.
	(x)	x + 12'	T(.65)	
Quercus palustris Pin Oak (1" - 1½" cal.)	11'	33.5'	21.1'	349 sq. ft.
	(x)	x + 22.5'	T (.63)	
Quercus robur English Oak (1" - 1½" cal.)	11'	31'	20.677'	335 sq. ft.
	(x)	x + 20'	T(.667)	
	11'	26'	5.2'	21 sq. ft.

Quercus robur "Fastigiata" English Oak (1" - 1½" cal.)	(x)	x + 15'	T(.2)	
Syringa reticulata Japanese Lilac Tree (1" - 1½" cal.)	6'	21'	16.611'	216 sq. ft.
	(x)	x + 15'	T(.791)	
Tilia americana American linden (1" - 1½" cal.)	11'	30.25'	17.82'	249 sq. ft.
	(x)	x + 19.25'	T(.6)	
Tilia cordata Little Leaf Linden (1" - 1½" cal.)	12'	27'	18'	254 sq. ft.
	(x)	x + 15'	T(.667)	
Tilia tomentosa Silver Linden (1" - 1½" cal.)	10'	23'	14.49'	165 sq. ft.
	(x)	x + 13'	T(.63)	
Screening Trees				
Abies concolor White Fir (4½' - 6 feet)	4.5'	21.5'	8.6	116 sq. ft.
	(x)	x + 17'	(.4)	
Cedrus atlantica "Glauca" Atlas Cedar (4½ - 6 feet)	4.5'	14.5'	9.265'	67 sq. ft.
	(x)	x + 10'	T(.639)	
Cedrus deodara Deodar Cedar (4½ - 6 feet)	4.5'	24.5'	13.646	146 sq. ft.
	(x)	X + 20'	T(.557)	
Chamaecyparis lawsoniana Lawson Falsacypress (4½ - 6 feet)	4.5'	24.5'	13.646'	146 sq. ft.
	(x)	x + 20'	T(.557)	
X Cupressocyparis leylandii Leyland Cypress (4½ - 6 feet)	4.5'	34.5'	7.76'	47 sq. ft.
	(x)	x + 30'	T(.225)	
Ilex opaca American Holly (4½ - 6 feet)	4.5'	14.5'	8.41'	55 sq. ft.
	(x)	x + 10'	T(.58)	
Juniperus virginiana Eastern Red Cedar (4½ - 6 Feet)	4.5'	14.5'	4.5'	16 sq. ft.
	(x)	x + 10'	T(.311)	
Magnolia grandiflora Southern Magnolia (4½ - 6 feet)	4.5'	14.5'	8.265'	54 sq. ft.
	(x)	x + 10'	T(.57)	
Pinus bungeana Lace Bark Pine (4½ - 6 Feet)	4.5'	21.5'	8.6'	116 sq. ft.
	x	x + 17'	T(.4)	
Pinus elliotti Slash Pine (4½ - 6 feet)	4.5'	24.5'	12.32'	119 sq. ft.
	(x)	x + 20	T(.503)	
Pinus nigra Austrian Pine (4½ - 6 Feet)	4.5'	22'	11.73'	108 sq. ft.
	(x)	x + 17.5'	T(.5335)	
Pinus parviflora Japanese White Pine (4½ - 6 feet)	4.5'	24.5'	12.32'	119 sq. ft.
	(x)	x + 20'	T(.503)	
	4.5'	24.5'	12.324'	119 sq. ft.

Pinus strobus Eastern White Pine (4½ - 6 Feet)	(x)	x + 20'	T(.503)	
Pinus taeda Loblolly Pine (4½ - 6 Feet)	4.5'	22'	11.73'	108 sq. ft.
	(x)	x + 17.5'	T(.5335)	
Pinus thunbergiana Japanese Black Pine (4½ - 6 feet)	4.5'	22'	11.73'	108 sq. ft.
	(x)	x + 17.5'	T(.5335)	
Pinus virginiana Virginia Pine (4½ - 6 feet)	4.5'	24.5'	12.32	119 sq. ft.
	(x)	x + 20	T(.503)	
Taxus baccata English Irish Yew (4½ - 6 Feet)	4.5'	13.5'	8.434'	56 sq. ft.
	(x)	x + 9'	T(.624)	
Taxus cuspidata Japanese Yew (4½ - 6 feet)	4.5'	14'	16.8'	222 sq. ft.
	(x)	x + 9.5'	T(1.2)	
Thuja occidentalis Eastern Arborvitae (4½ - 6 feet)	4.5'	14.5'	3.625'	10 sq. ft.
	(x)	x + 10'	T(.575)	
Tsuga caroliniana Carolina Hemlock (4½ - 6 feet)	4.5'	21.16'	12.17	116 sq. ft.
	(x)	x + 16.16'	T(.575)	
Tsuga canadensis Canadian Hemlock (4½ - 6 feet)	4.5'	21.16'	12.17'	116 sq. ft.
	(x)	x + 16.16'	T(.575)	

PLANTS FOR STORMWATER MANAGEMENT

Notes	Botanical Name	Common Name	Mature Height/Width	Tolerance for Inundation ²	Preferred Soils ³	ph Range	Light ⁴	Growth ⁵	E&S	Disturbed Areas	Infiltration Trench	Detention Basin(Dry Pond)	Native	Available
Large Deciduous Trees														
PI	<i>Acer plantanoides</i>	Norway Maple	40'–50' / 30'–40'	Temporary	D/M/W	6.5–7.5	sS-S	F	X				No	Yes
	<i>Acer rubrum</i>	Red Maple	50'–80' / 40'–50'	Seasonal	D/M/W; poorly-drained	4.5–7.5	sS-S	F	X			X	Yes	Yes
	<i>Acer saccharum</i>	Sugar Maple	10'–75' / 40'	Temporary	D/M/W	6.5–7.5	sS-S	M	X				Yes	Yes
	<i>Betula nigra</i>	River Birch	20'–90' / 16'–20'	Seasonal	D/M; poorly-drained	4.0–5.0	sS-S	F	X			X	Yes	Yes
	<i>Celtis laevigata</i>	Sugar Hackberry	80'–90'	Seasonal	D/M/W	6.5–7.5	sS-S	F	X				Yes	No
	<i>Celtis occidentalis</i>	Common Hackberry	30'–50' / 25'–40'	Seasonal	D; poorly-drained		sS-S	F					Yes	Yes
	<i>Fagus grandifolia</i>	American Beech	80'–100' / 50'–70'	Temporary	D/M	6.5–7.5	sS-S	S	X				Yes	No
	<i>Fraxinus pennsylvanica</i>	Green Ash, Red Ash	30'–80' / 10'	Seasonal	D; poorly-drained		S	F				X	Yes	Yes
	<i>Ginkgo biloba</i>	Ginkgo (male)	80' / 40'	Seasonal	D/M	6.0–6.5	S	S	X	X			No	Yes
	<i>Gleditsia triacanthos</i>	Honey Locust	70'–80' / 35'–40'	Seasonal	D/M/W	6.5–7.5	S	F	X				Yes	Yes
	<i>Liquidambar styraciflua</i>	Sweetgum	50'–70' / 40'	Seasonal	D/M/W	6.0–7.5	sS-S	M	X			X	Yes	Yes
	<i>Liriodendron tulipifera</i>	TulipPoplar	90' / 50'	Seasonal	M		S	M		X			Yes	Yes
	<i>Nyssa sylvatica</i>	Blackgum/Tupelo	70'–100' / 40'–60'	Seasonal	D/M; poorly-drained	5.0–6.0	S	M	X			X	Yes	Yes
	<i>Nyssa sylvatica</i> var. <i>biflora</i>	Blackgum/Tupelo	90'	Seasonal	M/W	5.0–6.0	sS-S	M	X				Yes	Yes
	<i>Platanus acerifolia</i>	London Plane Tree	70'–100' / 65'–80'	Seasonal	M	6.5–7.5	sS-S	F/VF	X				No	Yes
	<i>Platanus occidentalis</i>	Sycamore	80' / 15'	Seasonal	M		sS-S	F				X	Yes	Yes

	<i>Pyrus calleryana</i>	Callery Pear	50'—60' /15'—20'	Temporary	M/W	6.5— 7.5	sS- S	M	X				No	Yes
PI	<i>Quercus acutissima</i>	Sawtooth Oak	35'—40' /30'—35'	Temporary	D/M		sS- S	M					No	Yes
	<i>Quercus alba</i>	White Oak	60'—80'	Temporary	D/M/W	6.5— 7.5	sS- S	S/M	X				Yes	Yes
	<i>Quercus bicolor</i>	Swamp Oak	60'	Seasonal	M		sS- S	S/M					Yes	Yes
	<i>Quercus coccinea</i>	Scarlet Oak	70' /40'—50'	Temporary	D/M/W	6.0— 6.5	sS- S	VF	X				Yes	No
	<i>Quercus falcata</i>	Southern Red Oak	70'/50'	Temporary	D/M/W	4.0— 5.0	S	M	X				Yes	Yes
	<i>Quercus michauxii</i>	Swamp Chestnut Oak	80' /30'—40'	Seasonal	D/M/W	6.0— 6.5	sS- S	M	X				Yes	Yes
	<i>Quercus nigra</i>	Water Oak	70'/45'	Seasonal	M/W		sS	M					Yes	Yes
L	<i>Quercus palustris</i>	Pin Oak	50'—90' /50'	Seasonal	D/M/W	5.5— 6.5	sS- S	VF	X				Yes	Yes
	<i>Quercus phellos</i>	Willow Oak	50'—90' /30'—40'	Seasonal	D/M/W	4.0— 6.5	sS- S	F	X			X	Yes	Yes
L	<i>Robinia pseudo-acacia</i>	Black Locust	30'—50'	Temporary	D/M/W	5.0— 7.5	S	F	X	X			Yes	Yes
L	<i>Salix babylonica</i>	Weeping Willow	40'/35'	Seasonal	D/M/W		S	F					No	Yes
	<i>Salix nigra</i>	Black Willow	30'—50' /25'	Seasonal	M/W		S	F					Yes	Yes
	<i>Taxodium distichum</i>	Bald Cypress	60'—100' /30'—50'	Seasonal	M/W; poorly- drained		sS- S	F				X	Yes	Yes
	<i>Tilia americana</i>	Basswood	60'/40'	Temporary	M		s- sS- S	F		X			Yes	No
	<i>Ulmus alata</i>	Winged Elm	45'	Temporary	D/M		s- sS- S	M					Yes	No
	<i>Ulmus parvifolia</i>	Chinese Elm	60'—75' /40'—50'	Seasonal	D; poorly- drained		sS- S	M/F					No	Yes
	<i>Zelkova serrata</i>	Zelkova	80'/80'	Temporary	D/M	6.0— 6.5	S	M	X				No	Yes
Large Evergreen Trees														
	<i>Cedrus atlantica</i>	Atlas Cedar	40'—60' /30'—40'	Temporary	D/M		sS- S	M					No	Yes
L	<i>Cedrus deodara</i>	Deodara Cedar	60'—100' /40'—50'	Temporary	D/M		sS- S	F					No	Yes
	<i>Cedrus libani</i>	Cedar of Lebanon	75'/50'	Temporary	D/M		sS- S	M					No	No

	<i>Chamaecyparis thyoides</i>	White Cedar	100'/40'	Seasonal	M/W		S	F					Yes	Yes
	<i>Cryptomeria japonica</i>	Cryptomeria	100'/25'–30'	Seasonal	M		S	S					No	Yes
	<i>Cupressocyparis leylandii</i>	Leyland Cypress	60'–70'/10'–15'	Temporary	M		sS-S	VF			X		No	Yes
PI	<i>Magnolia grandiflora</i>	Southern Magnolia	80'100'/50'–80'	Seasonal	D/M/W	4.0–7.0	sS-S	S/M	X				Yes	Yes
	<i>Magnolia virginiana</i>	Sweet Bay / Swamp Magnolia	80'–100'/20'–40'	Seasonal	M/W; poorly-drained		sS-S	S/M					Yes	Yes
	<i>Pinus echinata</i>	Shortleaf Pine	80'–100'	Temporary	D/M	4.0–6.5	S	F	X				Yes	No
L	<i>Pinus elliotti</i>	Slash Pine	75'–100'/30'–40'	Seasonal	D/M/W		sS-S	F					No	Yes
	<i>Pinus taeda</i>	Loblolly Pine	75'–100'/30'–40'	Seasonal	D/M; poorly-drained	4.0–6.5	S	F	X	X		X	Yes	Yes
	<i>Quercus laurifolia</i> <i>Darlingtonia</i>	Darlington Oak	50'/40'–50'	Temporary	M		S	S					No	Yes
L	<i>Quercus virginiana</i>	Live Oak	40'–80'/60'–100'	Temporary	D/M		sS-S	S					Yes	Yes
	<i>Thuja occidentalis</i>	Arbor Vitae "Pyramidalis"	60'/10'–12'	Seasonal	M/W		S	M					Yes	Yes
Small Deciduous Trees														
	<i>Acer campestre</i>	Maple Hedge	20'–30'	Temporary	D/M/W	6.5–7.5	sS-S	S	X				No	No
	<i>Amelanchier arborea</i>	Shadbush, C. Serviceberry	20'–30'/12'–15'	Temporary	M/W		sS-S	VF					Yes	Yes
	<i>Carpinus caroliniana</i>	American Hornbeam	40'/25'	Seasonal	M	6.5–7.5	sS-S	S	X				Yes	No
	<i>Cercis canadensis</i>	Eastern Redbud	20'–30'/25'–35'	Temporary			sS-S						Yes	Yes
	<i>Chionanthus virginicus</i>	Fringe Tree	10'–20'	Temporary	M		sS-S	S					Yes	Yes
	<i>Cornus florida</i>	Flowering Dogwood	15'–30'/12'–20'	Temporary	M	5.0–6.5	sS-S	M	X				Yes	Yes
	<i>Cornus kousa</i>	Korean Dogwood 'Kousa'	20'/15'–18'	Temporary	M		sS-S	M					No	Yes
	<i>Crataegus</i> spp.	Hawthorne	15'–25'	Temporary	M	6.0–7.5	sS-S	F	X				?	Yes
	<i>Diospyros virginiana</i>	Persimmon	30'	Temporary	D		sS-S	S/M					Yes	No
	<i>Franklinia altamaha</i>	Franklinia	20'–30'/15'–20'	Temporary	M		S	S					No	Yes
	<i>Halesia carolina</i>	Carolina Silverbell	30'/20'	Temporary	M		sS-S	M					Yes	No

	<i>Ilex opaca</i>	American Holly	30' /12'–20'	Seasonal	D/M/W; poorly- drained	4.0– 6.0	sS- S	S	X					Yes	Yes
	<i>Koelreuteria paniculata</i>	Golden Rain Tree	20'–30' /25'–35'	Temporary	M/W	6.0– 6.5	sS- S	M	X					No	Yes
	<i>Lagerstroemia indica</i>	Crape Myrtle	30' /15'–20'	Temporary	M/W		S	M				X		No	Yes
	<i>Malus angustifolia</i>	Crabapple	15'–20' /10'	Temporary	M	6.5– 7.5	S	M	X					No	Yes
	<i>Ostrya virginiana</i>	Eastern Hophornbeam	40'/25'	Seasonal	M		S	M						Yes	No
	<i>Oxydendrum arboreum</i>	Sourwood	to 60'	Temporary	D	5.5– 6.5	sS- S	S						Yes	Yes
	<i>Prunus cerasifera pissardi</i>	Pissard/Purple–leaf Plum	15'–30' /20'–25'	Temporary	M		S	M/F				X		No	Yes
L	<i>Prunus serrulata 'Kwanzan'</i>	Japanese "Kwanzan" Cherry	15'–25' /15'–20'	Temporary	M	6.5– 7.5	sS- S	M						No	Yes
	<i>Sassafras albidum</i>	Common Sassafras	40'/25'	Temporary	D/M		sS- S	M			X			Yes	No
	<i>Styrax japonica</i>	Japanese Snowbell	20'–30' /15'–20'	Temporary	M		sS- S	S						No	Yes
Small Evergreen Trees															
	<i>Juniperus virginiana</i>	Eastern Red Cedar	45'/20'	Temporary	D/M/W	6.0– 6.5	S	M	X	X			X	Yes	Yes
	<i>Osmanthus americanus</i>	Devilwood	to 45'	Temporary	M/W		s- sS- S	S/M						Yes	No
	<i>Persea borbonia</i>	Redbay	to 60'	Seasonal	D/M		sS- S	M						Yes	No
	<i>Prunus caroliniana</i>	Carolina Cherry- Laurel	20'–30' /15'–20'	Temporary	M; poorly- drained		s- sS- S	VF						No	Yes
Deciduous Shrubs															
	<i>Alnus serrulata</i>	Common/Tag Alder													
	<i>Aronia arbutifolia</i>	Red Chokeberry	3'–6'	Seasonal	D/M/W									Yes	Yes
	<i>Baccharis halimifolia</i>	Groundsel Bush	to 9'	Seasonal	M/W		sS- S	M						Yes	Yes
PI	<i>Berberis thunbergi</i>	Japanese Barberry	4'/4'	Temporary	M		sS- S	M				X	X	No	Yes
	<i>Callicarpa americana</i>	Purple Beautyberry	to 9'	Temporary	M									Yes	Yes
	<i>Calycanthus floridus</i>	Carolina Allspice	6'/5'–8'	Temporary	M		s-S	M						Yes	Yes

	<i>Cephalanthus occidentalis</i>	Buttonbush	6'—9'	Seasonal	M/W		S							Yes	Yes
	<i>Comptonia peregrina</i>	Sweet Fern	2'—4'	Temporary	Droughty to mod.—well—drained	5.0—6.0	S							Yes	No
	<i>Cornus amomum</i>	Silky Dogwood	4'—10'	Seasonal	M/W		s	M/F						Yes	Yes
	<i>Corylus americana</i>	American Filbert	3'—9'	Temporary	D/M		sS-S	M/F						Yes	No
PI	<i>Cytisus scoparis</i>	Scotch Broom	6'/4'	Temporary	D/M		sS-S	M	X		X	X		No	Yes
PI	<i>Elaeagnus angustifolia</i>	Russian Olive	to 20'	Temporary	M		S	M/F				X		No	Yes
PI	<i>Elaeagnus umbellata</i>	Autumn Olive	10'—20'/20'	Temporary	M; droughty to mod.—well—drained	4.5—7.0	S	F	X	X				No	Yes
PI	<i>Euonymus alata</i>	Burning Bush/Winged Euonymous	8'—10'/8'—10'	Temporary	M		sS-S	M						No	Yes
	<i>Forsythia intermedia</i>	Border Forsythia	8'—10'/3'—5'	Temporary	D/M		S	F	X			X		No	Yes
	<i>Hamamelis virginiana</i>	Witch Hazel	10'/10'	Temporary	M		s	S						Yes	Yes
	<i>Ilex decidua</i>	Possumhaw	20'—15'	Seasonal	D/M/W		sS-S	M						Yes	Yes
	<i>Ilex verticillata</i>	Winterberry	8'—10'/6'	Seasonal	M/W; well to poorly—drained	5.0—6.0	sS-S	S			X			Yes	Yes
	<i>Jasminum nudiflorum</i>	Winter Jasmine	4'/6'	Temporary	D/M		sS-S	M	X	X				No	Yes
PI	<i>Lespedeza bicolor</i>	Bicolor Lespedeza "Natob"	12'/6'	Temporary	D/M; droughty to mod.—well—drained	4.5—6.5	S	M	X	X				No	Yes
PI	<i>Lespedeza striata thunberg</i>	Shrub Lespedeza		Temporary	D; moderately—well—drained						X			No	Yes
	<i>Lindera benzoin</i>	Spice Bush	12'—25'	Seasonal	M/W; rich		s	S/M						Yes	No
PI	<i>Lonicera maackii</i>	Amur Honeysuckle/Rem Red	12'/12'	Temporary	D/M; droughty to somewhat—prly.—dr.	6.5—8.0	sS-S	M			X			No	No
PI	<i>Lonicera tatarica</i>	Tartarian Honeysuckle	10'/8'	Temporary	D/M; well to mod.—well—drained	6.5—8.0	sS-S	F			X		X	No	No

	<i>Myrica pensylvanica</i>	Northern Bayberry	6'–9' /6'–10'	Seasonal	D/M/W; droughty to mod.-well- dr.	5.0– 6.0	sS- S	M		X	X		Yes	Yes
	<i>Rhus glabra</i>	Smooth Sumac	10'/6'	Temporary	D/M		S	F	X	X			Yes	No
	<i>Sambucus canadensis</i>	Elderberry	3'–12'	Seasonal	D/M/W; well to poorly- drained	6.0– 7.5	sS- S			X			Yes	No
	<i>Spiraea prunifolia</i>	Double Bridal Wreath	4'– 6'/5'–8'	Temporary	M		s-S	F			X		No	Yes
	<i>Vaccinium corymbosum</i>	Highbush Blueberry	12'/12'	Seasonal	M/W		S	S					Yes	Yes
	<i>Viburnum dentatum</i>	Southern Arrowwood	to 10'	Seasonal	M/W		sS						Yes	Yes
	<i>Vitex agnus-castus</i>	Chaste Tree	9'–10' /10'–12'	Temporary	D/M		sS- S	F					No	Yes
	<i>Weigelia florida</i>	Weigelia	6'–8' /6'–8'	Temporary	M						X		No	Yes
Evergreen Shrubs														
	<i>Abelia grandiflora</i>	Glossy Abelia	5'–7' /4'–6'	Temporary	M		s-S	F			X	X	No	Yes
	<i>Berberis julianae</i>	Wintergreen Barberry	3'–6' /2'–5'	Temporary	M		sS- S	F			X		No	Yes
	<i>Ilex cornuta</i> "Burfordi"	Burford Holly	10'–12' /6'–8'	Temporary	M; sandy, well-drained		sS- S	M			X		No	Yes
	<i>Ilex crenata</i>	Japanese Holly	3'–6' /3'–6'	Temporary	M		s-S	S/M			X		No	Yes
	<i>Ilex glabra</i> "Compacta"	Compact Inkberry	3'–6'	Temp./Seas.	M/W								Yes	Yes
	<i>Ilex serrata</i>	Sparkleberry (female)	15' /10'–15'	Temporary	M/W		sS- S	M					No	Yes
	<i>Ilex vomitoria</i>	Yaupon Holly	15'–20' /5'–10'	Seasonal	D; poorly- drained		s-S	M			X		Yes	Yes
	<i>Juniperus chinensis pfitzeriana</i>	Pfitzer Juniper	3'–6' /8'–12'	Temporary	D/M		S	F	X		X	X	No	Yes
	<i>Kalmia latifolia</i>	Mountain Laurel	5'–10'/6'	Temporary	M; acidic		sS	S					Yes	Yes
PI	<i>Ligustrum japonicum</i>	Japanese Privet	6'–12' /6'–8'	Seasonal	M		s- sS- S	M		X		X	No	Yes
	<i>Myrica cerifera</i>	Southern Wax Myrtle	12'/15'	Seasonal	D/M		sS- S	M				X	Yes	Yes
	<i>Nandina domestica</i>	Nandina	3'–7' /2'–5'	Temporary	M		sS- S	F				X	No	Yes

	Osmanthus heterophyllus	Holly Osmanthus	15'–20' / 12'–18'	Sesaonal	M		sS-S	M			X		No	Yes
	Prunus laurocerasus	English Laurel "Otto Luykens"	3'–4' / 4'–6'	Temporary	M		sS-S	M			X		Yes	Yes
	Pyracantha coccinea	Firethorn	15'/10'	Temporary	D/M; droughty to mod.-well-drained	6.0–8.0	S	F	X	X			No	Yes
	Raphiolepis indica	Indian Hawthorne	3'–5' / 4'–5'	Temporary	M		sS-S	M			X		No	Yes
	Rhododendron viscosum	Swamp Azalea	6'/4'	Seasonal	M/W		sS	M					Yes	No
Deciduous Groundcovers / Vines														
	Adiantum pedatum	Maidenhair Fern	1.5'	Seasonal	M/W		s	M					Yes	Yes
PI	Artemisia stelleriana	Dusty Miller/Beach Wormwood	1'–2'/2'	Temporary	Droughty to mod.-well-dr.	6.0–7.5	S	M	X				No	Yes
	Asarum canadense	Wild Ginger		Temporary	D/M								Yes	No
	Clematis virginiana	Virgin's Bower	6'–9'	Temporary	M								Yes	No
	Convallaria majalis	Lily-of-the-Valley	1'	Temporary	D/M; droughty to smwht.-prly.-dr.	4.5–6.0	sS-S	M	X				No	Yes
PI	Coronilla varia	Crownvetch	3'	Temporary	D/M; well-drained		S	M/F	X	X			No	Yes
	Hemerocallis sp.	Daylily	3'/3'	Temporary	M/W; droughty to poorly-drained	6.0–8.0	sS-S	F	X	X			No	Yes
PI	Lathyrus latifolius	Perennial Pea 'Lancer'	2'/3'	Temporary	D/M; well-drained		sS-S	M	X	X			No	No
PI	Lathyrus sylvestris	Flatpea	2.5'	Temporary	D/M; well-drained		s-sS-S	S	X	X			No	No
PI	Lespedeza cuneata	Lespedeza 'Appalow'	2'–4'/6'	Temporary	D/M; well-drained		S	M	X	X			No	No
	Lonicera sempervirens	Coral Honeysuckle	50'	Temporary	D/M/W		sS-S	VF					Yes	Yes
PI	Lotus corniculatus	Birdsfoot Trefoil	1'–2'	Temporary	D/M; poorly-drained		S	M	X	X			No	Yes
	Monarda didyma	Beebalm/Oswegontea		Temporary	M								Yes	Yes
	Osmunda cinnamomea	Cinnamon Fern	3'–4'/3'	Seasonal	M; poorly-drained		s-sS	S					Yes	No

	Parthenocissus quinquefolia	Virginia Trumpet Creeper	50'/15'; sprawling	Seasonal	D/W; droughty to mod.-well-dr.	5.0—7.5	S-S-S	F	X				Yes	Yes
	Rudbeckia hirta	Black-eyed Susan	3'	Temporary	D/M		S	F	X	X			Yes	Yes
	Rosa wichuraiana	Memorial Rose		Temporary	D								No	No
	"Sedum x "Autumn Joy"	Stonecrop	1'½'	?	D/M		S	M					No	Yes
	Teucrium canadense	Germander		Seasonal	M/W								Yes	No
	Wisteria frutescens	Native Wisteria		Temporary	M/W								Yes	Yes
Evergreen Groundcovers / Vines														
PI	Ajuga reptans	Bugleweed	.5'	Temporary	M; well to mod.-well-drained	6.0—7.5	S-S-S	F	X				No	Yes
	Arctostaphylos uva-ursi	Bearberry	.6'/10'	Temporary	M; droughty to well-drained	4.5—6.0	S-S	S	X				Yes	No
	Dryopteris goldiana	Goldie's Wood Fern		Temporary									Yes	No
	Dryopteris marginalis	Marginal Shield Fern		Temporary	M/W; high organic		S-S	M	X				Yes	No
	Gelsemium sempervirens	Carolina Jasmine	80'/10'	Seasonal	M/W		S-S	M					Yes	Yes
PI	Hedera helix	English Ivy	.5'	Temporary	M; droughty to mod.—well—drained	6.0—8.0	S-S-S	M	X				No	Yes
PI	Hedera helix 'Baltica'	Baltic Ivy		Temporary	M								No	Yes
	Juniperus conferta	Shore Juniper "Emerald Sea"	1.5'/5'	Temporary	D/M; droughty to well-drained	5.0—6.0	S-S	F	X				No	Yes
	Juniperus horizontalis	Creeping Juniper	1.5'/3'	Temporary	D/M; droughty to well-drained		S	F	X				No	Yes
	Juniperus procumbens	Common Juniper	1'¼'	Temporary	D/M; well-drained		S	M					No	Yes
	Liriope muscari/spicata	Lilyturf	6"—1' /6"—1"	Temporary	D/M; droughty to smwht-prly.—dr.	4.5—6.0	S-S-S	M	X				No	Yes

	Pachysandra terminalis	Japanese Spurge 'Pachysandra'	.75'	Temporary	M; well to moderately—well dr.	4.5—5.5	s	M	X				No	Yes
	Polystichum acrostichoides	Christmas Fern	2'/2'—3'	Seasonal	M		s-sS	S	X				Yes	Yes
	Polystichum munitum	Western Swordfern		Temporary	Organic		sS	M	X				No	No
PI	Vinca minor	Periwinkle 'Vinca'	.5'	Temporary	M; well to moderately—well dr.	6.0—7.5	sS-S	F	X				No	Yes
Semi-Evergreen Groundcovers/Vines														
	Hypericum calycinum	St. Johnswort /Aaron's Beard	1'	Temporary	D/M; sandy		sS-S	F	X				No	Yes
Grasses														
PI	Agrostis alba	Redtop	18"	Temporary	Very acid, infertile	4.0—7.5	S	F	X	X			No	Yes
	Ammophila breviligulata	American Beachgrass	3'—4'	Temporary	D/M		S	F	X				Yes	Yes
	Avena sativa	Oats		Temporary	D	5.5—7.0			X				Yes	Yes
PI	Cynodon dactylon	Bermudagrass	1'	Seasonal	D/M		S	F	X	X			No	Yes
PI	Festuca arundinacea	Tall Fescue "Kentucky 31"		Temporary	D/M	5.5—8.0	sS-S	F	X	X			No	Yes
PI?	Festuca rubra	Red Fescue	18"	Temporary	D/M	4.5—6.5	s-sS-S	M	X				Yes	Yes
PI?	Lolium multiflorum	Ryegrass, annual		Temporary	M	5.5—7.5	sS-S		X				No	Yes
PI?	Lolium perenne	Ryegrass, perennial	1'—2'	Temporary	M	5.5—7.5	S	F	X	X			No	Yes
	Panicum amarum	Atlantic Coastal Panicgrass	3'	Temporary	D/M		S	F	X	X			Yes	No
	Panicum virgatum	Switchgrass	6'	Temporary	D/M		S	M	X	X			Yes	Yes
	Phalaris arundinacea	Reed Canary Grass		Seasonal	W; muck and peat	5.0—7.5			X				Yes	Yes
PI	Poa pratensis	Kentucky Bluegrass		Temporary	D/M	6.0—7.0	S		X				Yes	Yes
	Spartina alterniflora	Smooth Cordgrass	4'—7' or 4"—20"	Seasonal	M/W		S	M	X				Yes	Yes
	Spartina patens	Saltmeadow Cordgrass/Hay	3'	Seasonal	M/W		S	M	X				Yes	Yes
	Uniola paniculata	Sea Oats	4'	Temporary	D/M		S	M	X				Yes	Yes

Submergent Wetland Plants														
	<i>Ceratophyllum demersum</i>	Coontail		Seasonal									Yes	Yes
	<i>Potamogeton</i> spp.	Pond Weed		Seasonal									Yes	Yes
Emergent Wetland Plants														
	<i>Acorus calamus</i>	Sweet Flag	2'–5'	Seasonal									Yes	Yes
	<i>Andropogon virginicus</i>	Broomsedge		Seasonal									Yes	Yes
	<i>Cephalanthus occidentalis</i>	Buttonbush		Seasonal									Yes	Yes
	<i>Hibiscus moscheutos</i>	Marsh Hibiscus		Seasonal									Yes	Yes
PI	<i>Iris pseudoacorus</i>	Water Iris		Seasonal									No	Yes
	<i>Leersia oryzoides</i>	Rice Cutgrass		Seasonal									Yes	Yes
	<i>Nasturtium officinale</i>	Water Cress		Seasonal									No	No
	<i>Nuphar luteum</i>	Spatterdock		Seasonal									Yes	Yes
	<i>Panicum virgatum</i>	Switchgrass		Seasonal									Yes	Yes
	<i>Peltandra virginica</i>	Arrow Arum/Duck Corn	2'–6'+	Seasonal									Yes	Yes
PI	<i>Polygonum</i> spp.	Smartweed		Seasonal									Yes	Yes
	<i>Pontederia cordata</i>	Pickerelweed	2'–4'	Seasonal									Yes	Yes
	<i>Sagittaria latifolia</i>	Arrowhead/Duck Potato	1.5'–3'	Seasonal									Yes	Yes
	<i>Saururus cernuus</i>	Lizard's Tail		Seasonal									Yes	Yes
	<i>Scirpus americanus</i>	Common Three–Square		Seasonal									Yes	Yes
	<i>Scirpus validus</i>	Soft-Stem Bulrush		Seasonal									Yes	Yes
	<i>Typha</i> spp.	Cattail		Seasonal									Yes	Yes

¹Notes:

L = Plant species has a limitation for use in Hampton Roads / PL = Plant species is potentially invasive in Hampton Roads

²Tolerance for Inundation

⁵Growth:

Temporary: Means the plant can only tolerate short periods of inundation (2 to 3 hours)

S = slow / Seasonal: Means the plant can tolerate extended periods of inundation (seasonal wet ponds) / F = fast

³Preferred Soils:

VF = very fast / D = Dry / M = Moderate / W = Wet

⁴Light:

s = shade / sS = partial shade / S = full sun

WETLAND PLANTS OF THE VIRGINIA LOWER COASTAL PLAIN

Botanical Name	Common Name
* <i>Acer rubrum</i>	Red Maple
* <i>Alisma subcordatum</i>	Water Plantain
<i>Alnus rugosa</i>	Speckled Alder
* <i>Alnus serrulata</i>	Common Alder/Tag Alder
<i>Althea officinalis</i>	Marshmallow
* <i>Amelanchier arborea/canadensis</i>	June Berry/Shad Bush
<i>Ampelopsis arborea</i>	Peppervine
<i>Apios americana</i>	Groundnut/Potato Bean/Indian Potato
<i>Arisaema triphyllum</i>	Jack-in-the-Pulpit
* <i>Aronia arbutifolia</i>	Red Chokeberry
* <i>Arundinaria gigantea</i>	Cane
* <i>Asclepias incarnata</i>	Swamp Milkweed
* <i>Baccharis halimifolia</i>	Groundsel Tree/Sea Myrtle
<i>Berchemia scandens</i>	Rattan/Supple Jack
* <i>Betula nigra</i>	River Birch
* <i>Bidens laevis</i>	Beggar Ticks
<i>Bignonia capreolata</i>	Crossvine
<i>Brasenia schreberi</i>	Water-shield
* <i>Caltha palustris</i>	Marsh Marigold
* <i>Carpinus caroliniana</i>	American Hornbeam/Blue Beech
<i>Carya aquatica</i>	Water Hickory
* <i>Cephalanthus occidentalis</i>	Buttonbush
* <i>Chamaecyparis thyoides</i>	Atlantic White Cedar
* <i>Clethra alnifolia</i>	Sweetpepper Buah/Summer Sweet
* <i>Cornus amomum</i>	Silky Dogwood/Red Willow
* <i>Cornus stricta</i>	Swamp Dogwood
<i>Cypripedium acuate</i>	Pink Lady Slipper
<i>Cyrilla racemiflora</i>	Titi/Leatherwood
<i>Decodon verticillatus</i>	Swamp Loosestrife/Water Willow
* <i>Eleocharis obtusa/falax</i>	Spike Rush
* <i>Equisetum hyemale</i>	Scouring Rush
<i>Eriocaulon parkeri</i>	Pipewort/White Buttons
* <i>Eupatorium maculatum</i>	Joe-Pye Weed
* <i>Eupatorium perfoliatum</i>	Boneset
<i>Fraxinus caroliniana</i>	Water Ash
* <i>Fraxinus pennsylvanica</i>	Green Ash
* <i>Hibiscus moscheutos</i>	Rose Mallow/Wild Cotton
<i>Hydrocotyle umbellata</i>	Hydrocotyle
<i>Hypericum virginicum</i>	Marsh St. Johns Wort
<i>Ilex decidua</i>	Possumhaw
* <i>Ilex glabra</i>	Inkberry
<i>Ilex laevigata</i>	Smooth Winterberry
* <i>Ilex verticillata</i>	Winterberry
<i>Impatiens capensis</i>	Jewelweed/Spotted Touch-Me-Not
<i>Iris prismatica</i>	Slender Blue Flag
* <i>Iris virginica</i>	Blue Flag/Wild Iris
<i>Itea virginica</i>	Virginia Willow/Sweetspire
* <i>Iva frutescens</i>	Marsh Elder
<i>Kalmia angustifolia</i>	Lambkill/Sheep Laurel
<i>Leucothoe racemosa</i>	Fetter Bush
<i>Lilium superbum</i>	Turk's Cap Lily
<i>Limnobium spongia</i>	Frog Bit
* <i>Lindera benzoin</i>	Spicebush

* <i>Lobelia cardinalis</i>	Cardinal Flower
* <i>Ludwigia palustris</i>	Water Purslane
<i>Lycopodium alopecuroides</i>	Foxtail Cedar
<i>Lyonia ligustrina</i>	Maleberry/Male Blueberry
<i>Lysimachia terrestris</i>	Yellow Loosestrife/Swamp Candles
* <i>Magnolia virginiana</i>	Sweet Bay/ Swamp Magnolia
<i>Mentha arvensis</i>	Mint
<i>Mikania scandens</i>	Climbing Hempweed
<i>Mitchella repens</i>	Partridge Berry
* <i>Myrica cerifera</i>	Wax Myrtle
* <i>Myrica pensylvanica</i>	Bayberry
<i>Nelumbo lutea</i>	American Lotus/Yellow Nelumbo
* <i>Nuphar luteum</i>	Yellow Pond Lily/Cow Lily
<i>Nymphaea tuberosa</i>	Fragrant Water Lily/Pond Lily
<i>Nymphoides cordata</i>	Floating Heart
* <i>Nyssa aquatica</i>	Water Tupelo
* <i>Nyssa sylvatica</i>	Blackgum/Sourgum
<i>Onoclea sensibilis</i>	Sensitive Fern
* <i>Orontium aquaticum</i>	Golden Club
<i>Osmunda cinnamomea</i>	Cinnamon Fern
<i>Osmunda regalis</i>	Royal Fern
* <i>Peltandra virginica</i>	Arrow-Arum
<i>Persea borbonia</i>	Redbay
* <i>Platanus occidentalis</i>	Sycamore
* <i>Polygonum arifolium/sagittatum</i>	Tearthumb (Smartweed, Knotweed)
<i>Polygonum punctatum</i>	Water Smartweed
* <i>Pontederia cordata</i>	Pickerelweed
<i>Populus deltoides</i>	Eastern Cottonwood
<i>Populus heterophylla</i>	Swamp Cottonwood
* <i>Quercus michauxii</i>	Swamp Chestnut Oak
* <i>Quercus nigra</i>	Water Oak
* <i>Quercus palustris</i>	Pin Oak
<i>Rhododendron atlanticum</i>	Dwarf Azalea
<i>Rhododendron viscosum</i>	Swamp Azalea/Clammy Azalea
* <i>Rosa palustris</i>	Swamp Rose
* <i>Sagittaria latifolia</i>	Duck Potato/Wapato
<i>Sagittaria subulata</i>	Grassy Duck Potato/Wapato
<i>Salicornia virginica</i>	Glasswort, perennial
* <i>Salix nigra</i>	Black Willow
* <i>Sambucus canadensis</i>	Common Elder/Elderberry
<i>Sarracenia flava</i>	Trumpets/Watches/Biscuit Flower
<i>Sarracenia purpurea</i>	Pitcher Plant
* <i>Saururus cernuus</i>	Lizard's Tail
* <i>Scirpus cyperinus</i>	Woolgrass/Bulrush
* <i>Scirpus robustus</i>	Bulrush
* <i>Spartina alterniflora</i>	Saltmarsh/Smooth Cordgrass
* <i>Spartina patens</i>	Saltmeadow Hay
<i>Spirodela polyrrhiza</i>	Duckweed
<i>Symplocarpus foetidus</i>	Skunk Cabbage
* <i>Taxodium distichum</i>	Bald Cypress
* <i>Typha angustifolia</i>	Narrow-leaved Cattail
* <i>Typha latifolia</i>	Broad-leaved Cattail
<i>Vaccinium corymbosum</i>	Highbush Blueberry
* <i>Vernonia noveboracensis</i>	Ironweed
<i>Viburnum dentatum/recognitum</i>	Arrowwood
* <i>Viburnum nudum</i>	Possumhaw Viburnum

<i>Xyris caroliniana</i>	Yellow-eyed Grass
<i>Zenobia pulverulenta</i>	Zenobia
<i>Zephyranthes atamasco</i>	Atamasco Lily/Easter Lily
<i>Zizaniopsis miliacea</i>	Southern Wild Rice

An asterisk (*) denotes that the plant is commercially available in Hampton Roads.
Sources:
(1) College of William and Mary, Virginia Institute of Marine Science - Wetlands Program. Gloucester Point, VA.
(2) Lonergan, Gregory L. "Tidal Wetland Plants: Lower Coastal Plain." VA Tech Extension Horticulturist, Virginia Beach Department of Agriculture - Virginia Beach, VA; 1/8/92.

WILDFLOWER PLANTING GUIDE

Notes ¹	Botanical Name	Common Name	Flowering Period	Mature Height	Habitat
	<i>Acnida cannabina</i>	Water Hemp	July—October	up to 8'	Salt and brackish marshes
P	<i>Agrostemma githago</i>	Corn Cockle / Purple Cockle	June—September	1'—3'	Grain fields, roadsides"
PI, NW	<i>Allium ampeloprasum</i>	Wild Garlic	June	3'	Roadsides, fields
PI, NW	<i>Allium canadense</i>	Wild Onion / Wild Garlic	May—June	8"—2'	Open woods, roadsides, fields
	<i>Anemone quinquefolia</i>	Wood Anemone/Windflower	April—June	2"—1'	Moist woods, wood borders
	<i>Anemone virginiana</i>	Thimbleweed/Windflower	June—July	1'—3'	Open woods, wood borders
	<i>Apios americana</i>	Groundnut/Indian Potato	July—August	2'—10'	Rich woods, moist thickets
	<i>Arctium minus</i>	Common Burdock/Clotbur	July—October	2'—5'	Roadsides, fields, pastures
P	<i>Arisaema triphyllum</i>	Jack—in—the—Pulpit	March—June	6"—3'	Wet woods, swamps
P	<i>Asclepias lanceolata</i>	Red Milkweed	June—August	3.5'—4'	Wet pine woods and grassy areas, swamps, brackish marshes
P	<i>Asclepias syriaca</i>	Common Milkweed	June—August	6'	Roadsides, fields
	<i>Asclepias tuberosa</i>	Butterfly Weed / Pleurisy Root	June—August	1'—2'	Roadsides, fields
	<i>Asclepias variegata</i>	White Milkweed	May—July	8"—4'	Woods, wood borders
R	<i>Aster puniceus</i>	Purplestem Aster	August—October	1'—8'	Wet woods and meadows, marshes
	<i>Belamcanda chinensis</i>	Blackberry Lily	June—July	1'—3'	Roadsides, fields
	<i>Bignonia capreolata</i>	Cross Vine	May	up to 50'	Moist woods, low streambanks
	<i>Callicarpa americana</i>	Beautyberry/French Mulberry	August—October	1.5'—6'	Moist woods and wood borders
	<i>Caltha palustris</i>	Marsh Marigold	April—June	8"—2'+	Marshes, swamps, wet meadows, shallow water

	<i>Cardamine bulbosa</i>	Spring Cress	March—June	6"—2'	Wet woods or meadows, shallow water
PI, NW	<i>Carduus nutans</i>	Musk/Nodding Thistle	June—October	2'—5'+	Roadsides, fields
R	<i>Cassia fasciculata</i>	Partridge Pea	June—September	6"—2'	Roadsides, fields, open woods, sandy soils
	<i>Cenchrus tribuloides</i>	Sandspur/Burgrass	July—October	8"—2' long	Dunes, sandy roadsides, and fields
	<i>Chamaelirium luteum</i>	Devil's Bit/Fairy Wand	May—June	1'—2'+	Moist woods
	<i>Chelone glabra</i>	Turtlehead/Snakehead	July—September	2'—7'	Streamsides, wet woods, ditches, and pastures
	<i>Chrysogonum virginianum</i>	Green and Gold	April—June	up to 2'	Woods
	<i>Cichorium intybus</i>	Chicory / Blue Sailors	June—October	1'—6'+	Roadsides, fields
	<i>Cirsium horridulum</i>	Yellow Thistle	April—July	8"—2.5'+	Roadsides, fields, meadows
	<i>Claytonia virginica</i>	Spring Beauty	March—May	2"—1'	Moist woods, clearings, wood borders
	<i>Clematis crispa</i>	Blue Jasmine	May—August	Climbing	Wet woods, swamps
P	<i>Clematis virginiana</i>	Virgin's Bower	July—September	Climbing	Moist woods and roadsides, streamsides
	<i>Clitoria mariana</i>	Butterfly Pea	June—August	up to 3' long	Dry and open woods, wood borders, clearings
P	<i>Cnidocolus stimulosus</i>	Tread—softly	June—September	3"—2'+	Open, sandy woods and fields
	<i>Collinsonia canadensis</i>	Horse Balm/Richweed	July—September	1.5'—5'	Moist woods, streamsides
	<i>Coreopsis lanceolata</i>	Lance—leaved Tickseed	May—July	8"—3'+	Roadsides, dry woods, fields
	<i>Coreopsis tinctoria</i>	Calliopsis/Tickseed	June—August	up to 4'	Roadsides, fields, meadows
	<i>Corydalis flavula</i>	Yellow Harlequin	March—May	5"—1.5'	Rich woods, moist slopes, streamsides
	<i>Cunila origanoides</i>	Dittany/Stone Mint	August—October	8"—1.5'	Open woods, rocky slopes
	<i>Cuphea petiolata</i>	Clammy Waxweed	July—October	6"—1'+	Roadsides, fields, pastures, meadows
	<i>Cyperus retrofractus</i>	Sweet Rush/Galingale	June—August	8"—2.5'	Dry and sandy soil
P	<i>Cypripedium acaule</i>	Pink Lady's Slipper	April—July	6"—2'	Moist to dry woods, swamps
P	<i>Cypripedium calceolus</i>	Yellow Lady's Slipper	April—June	8"—2.5'+	Moist woods, swamps
P	<i>Delphinium ajacis</i>	Rocket Larkspur	May—September	3'	Roadsides, fields

	<i>Dichromena colorata</i>	Star Rush/White Top Sedge	June—September	3'	Open and wet areas, swamps, shallow water
PI	<i>Dipsacus sylvestris</i>	Teasel	July—September	2'—9'	Roadsides, fields, pastures
	<i>Drosera rotundifolia</i>	Round—leaved Sundew	June—September	1"	Bogs, swamps
	<i>Duchesnea indica</i>	Indian Strawberry/Snakeberry	March—September	1"	Moist woods and roadsides, lawns
	<i>Elephantopus carolinianus</i>	Elephant's—foot	August—October	6"—3'	Open woods
	<i>Epigaea repens</i>	Trailing Arbutus/Mayflower	February—April	1'	Sandy or rocky woods
	<i>Erigeron pulchellus</i>	Robin's Plantain	April—May	4"—2'	Open woods, meadows, roadsides
	<i>Erigeron strigosus</i>	Daisy Fleabane	May—September	1'—4'	Roadsides, fields, wood borders, pastures
	<i>Eriophorum virginicum</i>	Tawny Cotton Grass	July—September	2'—4'	Bogs
	<i>Eupatorium coelestinum</i>	Mistflower/Ageratum	July—October	1'—3'	Streamsides, wet woods and meadows
P	<i>Euphorbia cyparissias</i>	Cypress/Cemetery Spurge	April—July	6"—2'	Roadsides, fields, wood borders
	<i>Euphorbia heterophylla</i>	Wild Poinsettia/ Painted Leaf	July—September	up to 3'	Roadsides, fields, lawns
P	<i>Euphorbia marginata</i>	Snow-on-the-Mountain	June—October	1'—3'	Roadsides, fields, streamsides
	<i>Foeniculum vulgare</i>	Fennel	June—August	3'—7'	Roadsides, fields, pastures
	<i>Fumaria officinalis</i>	Fumitory/Earth Smoke	April—August		Roadsides, fields
	<i>Gaultheria procumbens</i>	Wintergreen/Teaberry	July—August	3"—8"	Dry or moist woods
	<i>Gaura biennis</i>	Gaura	June—October	4'—7'	Open woods, meadows, roadsides
P	<i>Gelsemium sempervirens</i>	Yellow Jessamine	March—May	Climbing	Woods, thickets, roadsides
	<i>Geranium molle</i>	Dovesfoot Cranesbill	April—July	4"—2'	Lawns, roadsides, fields
	<i>Gerardia pedicularia</i>	False Foxglove	August—September	1.5'/3'	Dry woods, wood borders, clearings
	<i>Gerardia purpurea</i>	Gerardia	August—September	1'—4'	Moist, open woods and roadsides, streamsides, meadows
	<i>Goodyera pubescens</i>	Rattlesnake Plantain	July—August	8"—1.5'	Dry or moist woods

	<i>Habenaria ciliaris</i>	Yellow Fringed Orchid	July—August	1'—3'+	Bogs, wet woods, thickets, streamsides
	<i>Habenaria clavellata</i>	Wood/Club—spur Orchid	June—August	4"—1.5'	Bogs, wet woods, and meadows
	<i>Habenaria lacera</i>	Green—fringed/Ragged Orchid	June—August	8"—2.5'+	Wet woods and meadows, bogs, marshes
	<i>Helenium nudiflorum</i>	Sneezeweed	June—September	1'—3'+	Moist roadsides and fields
P	<i>Helenium tenuifolium</i>	Bitterweed	June—November	6"—2'+	Roadsides, fields, pastures
	<i>Hepatica americana</i>	Liverwort	February—April	4"	Wooded slopes, wood borders
	<i>Heteranthera dubia</i>	Water Stargrass	June—September	Submerged	Shallow water or very wet banks
	<i>Hibiscus moscheutos</i>	Rose Mallow/Wild Cotton	June—September	3'—7'	Marshes, wet meadows
	<i>Hibiscus trionum</i>	Flower—of—an—Hour	June—September	2'—3'	Roadsides, fields
	<i>Hieracium pratense</i>	King Devil/Hawkweed	May—July	1'—3'	Roadsides, fields, open woods
	<i>Houstonia caerulea</i>	Bluets/Quaker Ladies	April—June	2"—8"	Woods, fields, meadows, roadsides
	<i>Hydrocotyle verticillata</i>	Water Pennywort	June—August	3"	Wet woods, shallow water, wet pond and stream banks
	<i>Hypericum punctatum</i>	Spotted St. Johnswort	June—September	1'—3'+	Roadsides, fields, open woods
	<i>Hypericum virginicum</i>	Marsh St. Johnswort	July—August	6"—2'	Bogs, marshes
	<i>Hypochoeris radicata</i>	Cat's-ear	May—August	8"—2'	Roadsides, fields, lawns
	<i>Hypoxis hirsuta</i>	Yellow Stargrass	March—September	2"—2'	Open woods, meadows, roadsides
	<i>Impatiens capensis</i>	Jewelweed	June—September	2'—5'	Moist woods, marshes, streamsides
PI	<i>Ipomoea coccinea</i>	Red Morning Glory	August—October	2'—10'	Roadsides, fields, fencerows, thickets
PI	<i>Ipomoea hederacea</i>	Ivyleaf Morning Glory	July—October	3'—6'	Roadsides, fields, wood borders
PI	<i>Ipomoea pandurata</i>	Man-Root/Man-of-the-Earth	June—September	Sprawling	Roadsides, fields, dry woods
	<i>Iris verna</i>	Dwarf Iris	March—May	2"—6"	Open sandy or rocky woods
	<i>Kosteletzkya virginica</i>	Seashore Mallow	July—September	2'—3'	Brackish marshes

	<i>Krigia virginica</i>	Dwarf Dandelion	April—June	2"—15"	Dry or sandy woods, roadsides, fields
	<i>Lamium amplexicaule</i>	Henbit/Dead Nettle	March—October	4"—1'+	Roadsides, fields, lawns
	<i>Lamium purpureum</i>	Purple Dead Nettle	March—August	3"—1.5'+	Roadsides, fields, lawns
	<i>Lathyrus venosus</i>	Vetchling/Wild Pea	May—July	Climbing	Moist to dry woods, thickets
	<i>Liatris graminifolia</i>	Blazing Star	September—October	up to 5'	Open woods, roadside banks, fields
	<i>Lilium superbum</i>	Turk's Cap Lily	July—August	10'+	Wet woods and meadows, low roadsides
	<i>Linaria canadensis</i>	Old Field Toadflax	April—September	8"—2.5'	Roadsides, old fields
	<i>Linum medium</i>	Flax	June—August	2'	Dry or moist and open soils, sandy roadsides
	<i>Lobelia cardinalis</i>	Cardinal Flower	July—September	2'—7'	Marshes, streamsides, wet woods and meadows
P	<i>Lobelia siphilitica</i>	Blue Cardinal Flower	July—September	5'	Streamsides, wet woods and meadows
PI	<i>Lotus corniculatus</i>	Birdsfoot Trefoil	June—September	1"—1'	Roadsides, fields
P	<i>Lupinus perennis</i>	Wild Lupine	April—June	6"—2'	Roadsides, wood borders, open woods, clearings
	<i>Lychnis alba</i>	White Campion	May—August	1.5'—4'	Roadsides, fields
	<i>Lychnis coronaria</i>	Mullein Pink	June—August	up to 3'	Roadsides, wood borders
	<i>Lysimachia ciliata</i>	Fringed Loosestrife	June—August	6"—3'+	Marshes, wet meadows, streamsides
PI	<i>Lysimachia nummularia</i>	Moneywort/Creeping Charlie	June—August	1"—1'	Streamsides, moist woods and roadsides
	<i>Medeola virginiana</i>	Indian Cucumber—root	May—June	8"—3'	Moist woods
PI, P	<i>Melilotus alba</i>	White Sweet Clover	May—September	8"—4'	Marshes, dry or moist sandy soils
	<i>Mimulus ringens</i>	Monkey Flower	June—September	2'—4'+	Bogs, marshes, wet meadows, streamsides
	<i>Mitchella repens</i>	Partridge Berry/Running Box	May—July	Sprawling	Rich woods, streamsides
	<i>Modiola caroliniana</i>	Modiola	April—June	Sprawling	Lawns, roadsides, fields
	<i>Monotropa hypopithys</i>	Pinesap/False Beech-drops	May—October	3"—1'+	Litter or moist or dry woods

	<i>Nuphar advena</i>	Spatterdock/Yellow Pond Lily	May—October	Sprawling	Ponds, pond margins, swamps, streams
	<i>Nymphaea odorata</i>	Fragrant Water Lily/Pond Lily	June—September	Sprawling	Quiet water
	<i>Oenothera laciniata</i>	Evening Primrose	April—August	6"—2'+	Fields, roadsides
	<i>Orchis spectabilis</i>	Showy Orchis	April—June	3"—1'	Rich woods
P	<i>Ornithogalum umbellatum</i>	Star-of-Bethlehem	April—May	5"—1'+	Roadsides, fields, lawns, streamsides
	<i>Orontium aquaticum</i>	Golden Club	April—June	1'—2'	Shallow water, wet pond or stream banks
P	<i>Oxalis rubra</i>	Red Wood Sorrel	March—September	3"—8"	Lawns, fields, roadsides
	<i>Oxalis stricta</i>	Yellow Wood Sorrel	April—October	5"—1'	Lawns, fields, open woods
	<i>Papaver dubium</i>	Poppy	May—June	1'—2'	Roadsides, fields
	<i>Parthenocissus quinquefolia</i>	Virginia Creeper/Woodbine	June—July	Climbing	Dry or moist woods
	<i>Passiflora incarnata</i>	Passion Flower/Maypops	June—September	Climbing	Fields, roadsides, thickets
	<i>Passiflora lutea</i>	Yellow Passion Flower	June—August	10'+	Woods, wood borders
	<i>Phacelia dubia</i>	Scorpion Weed/Phacelia	March—May	3"—1.5'	Moist or dry woods, streamsides, clearings
	<i>Phlox drummondii</i>	Drummon/Annual Phlox	April—July	6"—2'	Roadsides, fields, wood borders
	<i>Phlox subulata</i>	Moss Pink/Rock Pink	April—May	Sprawling	Roadsides, sandy or rocky soils
P	<i>Physalis heterophylla</i>	Ground Cherry	May—August	6"—3'	Woods, fields, roadsides
	<i>Physostegia denticulata</i>	False Dragonhead	June—July	1.5'—3.5'	Wet ditches, marshes, low roadsides, swamp borders
P	<i>Phytolacca americana</i>	Pokeberry/Pigeonberry	June—October	4'	Roadsides, fields, pastures, moist woods
	<i>Plantago lanceolata</i>	English/Buckhorn Plantain	April—October	6"—2'	Lawns, roadsides, fields
	<i>Pluchea purpurascens</i>	Marsh Fleabane	August—October	1'—4'+	Brackish marshes
P	<i>Podophyllum peltatum</i>	May Apple/Mandrake	March—June	6"—1.5'	Moist woods, roadsides, meadows
	<i>Pogonia ophioglossoides</i>	Rose Pogonia/Snake Mouth	May—July	4"—2'+	Bogs, wet meadows, pond margins with peat
	<i>Polygala cruciata</i>	Cross Milkwort/Drum Heads	June—September	4"—15"	Bogs, marshes, wet meadows

	<i>Polygala lutea</i>	Candyweed/ Yellow Milkwort	May—October	6"—1.5'	Bogs, swamps, wet open woods
	<i>Polygonatum biflorum</i>	Solomon's Seal	May—June	1'—3', up to 7'	Moist woods
P	<i>Polygonum persicaria</i>	Lady's Thumb/Heart's Ease	June—October	8"—3'	Moist or dry roadsides, fields, wood borders
	<i>Pontederia cordata</i>	Pickernelweed/Tuckahoe	June—November	1'—3'+	Marshes, shallow water, wet banks of streams and ponds
	<i>Ponthieva racemosa</i>	Shadow Witch	September—October	Sprawling	Wooded pond margins and streamsides
	<i>Potentilla canadensis</i>	Cinquefoil/Five Finger	March—May	Sprawling	Dry woods and fields, roadsides
	<i>Ranunculus hispidus</i>	Hispid Buttercup	March—May	6"—1.5'	Woods, wood borders, meadows
PI, NW, P	<i>Raphanus raphanistrum</i>	Wild Radish/Jointed Charlock	April—October	1'—2'+	Roadsides, fields
	<i>Rhexia virginica</i>	Meadow Beauty	June—September	7"—3'+	Wet meadows, bogs, wet ditches
	<i>Rhododendron nudiflorum</i>	Pinxter—flower/Wild Azalea	April—May	2'—7'	Dry or moist woods, swamps
PI	<i>Rubus phoenicolasius</i>	Wineberry/Wine Raspberry	May—June	up to 6'	Open woods, wood borders, roadsides
R	<i>Rudbeckia triloba</i>	Three—lobed Coneflower	June—October	1.5'—6'	Woods, fields, roadsides
	<i>Ruellia caroliniensis</i>	Ruellia	June—September	6"—3'	Open woods, roadsides, fields
	<i>Sabatia angularis</i>	Rose Pink/Bitter Bloom	July—August	8"—3'	Woods, fields, marshes
	<i>Sagittaria latifolia</i>	Duck Potato	July—September	up to 4'	Ponds, streams, very wet soils
P	<i>Salsola kali</i>	Saltwort/Russian Thistle	July—October	8"—2.5'	Sea beaches
	<i>Salvia lyrata</i>	Cancer Weed	April—June	1'—2'	Roadsides, fields, open woods
P	<i>Sanguinaria canadensis</i>	Bloodroot/Red Puccoon	March—April	2"—15"	Open woods, roadside banks
	<i>Sarracenia flava</i>	Yellow Pitcher Plant	April—May	1'—3'+	Bogs, wet roadside ditches
	<i>Saururus cernuus</i>	Lizard's Tail/Water Dragon	June—August	1.5'—3'	Swamps, marshes, wet woods, streamsides
	<i>Scutellaria integrifolia</i>	Narrow—leaved Skullcap	June—July	6"—2.5'+	Roadsides, wood borders, fields
P	<i>Senecio aureus</i>	Golden Ragwort/Squaw Weed	April—July	up to 4'	Wet woods and meadows, swamps

	<i>Sericocarpus asteroides</i>	White—topped Aster	June—September	8"—2'	Dry woods and roadsides
	<i>Sherardia arvensis</i>	Field Madder	April—August	4"—2'	Roadsides, fields, lawns
	<i>Silene caroliniana</i>	Wild Pink/Catchyfly	April—June	2"—10"	Sandy or rocky woods or wood borders
	<i>Silene cucubalus</i>	Bladder Champion	April—August	1'—3'+	Roadsides, fields
	<i>Sisyrinchium angustifolium</i>	Blue—eyed Grass	March—June	8"—2'	Woods, thickets, meadows
P	<i>Solanum dulcamara</i>	Nightshade/Bittersweet	May—September	Climbing	Roadsides, thickets, stream banks
	<i>Solidago bicolor</i>	Silverrod/White Goldenrod	July — October	6"—3'+	Open woods, roadsides, fields
	<i>Solidago caesia</i>	Wreath Goldenrod	September—October	1'—3'+	Moist woods, wood borders, streamsides
	<i>Solidago juncea</i>	Goldenrod	June—October	1'—4'+	Roadsides, fields, open woods
	<i>Sonchus asper</i>	Spiny—leaved Sow Thistle	March—July	1'—6'+	Roadsides, fields, pastures
	<i>Spiranthes vernalis</i>	Spring Ladies' Tresses	May—September	8"—4'	Marshes, dry or moist sandy soils
	<i>Stylosanthes biflora</i>	Pencil Flower	June—September	4"—1.5'+	Roadsides, fields
P	<i>Symplocarpus foetidus</i>	Skunk Cabbage	February—April	2"	Swamps, wet woods and meadows
	<i>Tephrosia spicata</i>	Hoary Pea	May—August	Sprawling	Roadsides, open woods, fields
	<i>Thaspium barbinode</i>	Meadow Parsnip	April—June	1'—4'	Dry or moist woods
	<i>Tradescantia ohimensis</i>	Spiderwort	April—June	6"—3'+	Wood borders, roadsides, meadows
	<i>Trifolium arvense</i>	Rabbit Foot/Old Field Clover	May—September	4"—1.5'	Fields, roadsides
	<i>Trifolium procumbens</i>	Low Hop Clover/Hop Trefoil	April—September	2"—1'	Roadsides, fields, lawns
R	<i>Trillium pusillum</i>	Trillium	April	2"—1'	Low and wet woods
	<i>Uniola paniculata</i>	Sea Oats	June—November	3'—6'	Dunes, coastal sands
	<i>Uvularia sessilifolia</i>	Merry Bells/Wild Oats	March—September	2"—2'	Open woods, meadows, roadsides
R	<i>Vaccinium macrocarpon</i>	American Cranberry	June—July	Sprawling	Bogs, pond margins with peat moss
	<i>Valerinella radiata</i>	Corn Salad/Lamb's Lettuce	April—May	6"—2'+	Roadsides, fields, and wood borders
	<i>Verbena hastata</i>	Blue Vervain/Simpler's Joy	June—September	2'—5'	Moist fields, thickets, swamps

	Vernonia noveboracensis	Ironweed	July—September	3'—7'	Wet woods, marshes, meadows, streamsides
	Veronica persica	Bird's Eye/Speedwell	March—August	Sprawling	Roadsides, fields, lawns
	Vicia angustifolia	Common Vetch	March—June	Sprawling	Roadsides, fields
	Vicia dasycarpa	Smooth Vetch	May—September	Sprawling	Roadsides, fields
	Vinca major	Greater Periwinkle	April—May	up to 3'+	Roadsides, wood borders
	Viola arvensis	Wild/European Field Pansy	March—June	2"—1'	Roadsides, fields, wood borders
	Viola kitaibeliana	Field Pansy	March—May	2"—1'	Roadsides, fields, lawns
	Viola pedata	Bird—foot Violet	March—May	3"	Rocky or sandy woods, roadsides
R	Zenobia pulverulenta	Zenobia	May—June	3'—6'	Swamps, bogs, wet wood borders, wet soils
	Zephranthes atamasco	Atamasco/Rain Lily	April—May	6"—1'+	Moist woods and wood borders, moist meadows

¹Notes:

NW = Plant species is listed on the Virginia Noxious Weeds List.

P = Plant species has poisonous characteristics, i.e., skin irritant, non-edible, etc. Care should be taken when planting or working around these species.

PI = Plant species is potentially invasive in Hampton Roads.

R = Plant species has been listed as rare (or rare variety of a more common species) in the State of Virginia by the Virginia Department of Conservation and Recreation, Division of Natural Heritage.

TREES WITH LIMITATIONS FOR USE

Notes ¹	Botanical Name	Common Name	Limitations
	Cedrus deodara	Deodara Cedar	Top die-back over long-term
	Pinus elliotii	Slash Pine	Poor structure, much snow damage
	Prunus serrulata "Kwanzan"	Japanese "Kwanzan" Cherry	Insects
	Quercus palustris	Pin Oak	Fungus, decline
	Quercus virginiana	Live Oak	Cold damage in northern/western reaches of region
P	Robinia pseudoacacia	Black Locust	Invasive, sharp thorns, insects
P	Salix babylonica	Weeping Willow	Shallow roots, extensive/invasive roots system

¹P = Prohibited

POTENTIALLY INVASIVE PLANT LIST

The following list is intended to caution the user about potential problems which may be associated with a particular species in Hampton Roads—as identified by the State of Virginia or another state—due to its invasive behavior and/or aggressive dominance of native plant habitat.

Botanical Name	Common Name	Listing Reason
<i>Acer platanoides</i>	Norway Maple	*, W
<i>Agrostis alba</i>	Redtop	*, R, W
<i>Ajuga reptans</i>	Bugleweed	*, W
<i>Allium</i> spp.	Wild Onion/Wild Garlic	R, W
<i>Artemisia stelleriana</i>	Dusty Miller/Beach Wormwood	
<i>Berberis thunbergii</i>	Japanese Barberry	*, W
<i>Cardus nutans</i>	Musk Thistle	P, W
<i>Coronilla varia</i>	Crownvetch	*, W
<i>Cynodon dactylon</i>	Bermudagrass	R, W
<i>Cytisus scoparis</i>	Scotch Broom	*, W
<i>Dipsacus sylvestris</i>	Common Teasel	*, W
<i>Elaeagnus angustifolia</i>	Russian Olive	** , * , L
<i>Elaeagnus umbellata</i>	Autumn Olive	** , * , L
<i>Euonymus alata</i>	Winged Euonymus	*, L
<i>Festuca</i> spp.	Fescue varieties	
<i>Festuca arundinacea</i>	Kentucky "31" Tall Fescue	R, W
<i>Hedera helix</i>	English Ivy	
<i>Hedera helix</i> "Baltica"	Baltic Ivy	
<i>Ipomoea</i> sp.	Morning Glory	*, W
<i>Iris pseudacorus</i>	Water Iris	
<i>Lathyrus latifolius</i>	Perennial Pea "Lancer"	
<i>Lespedeza bicolor</i>	Bicolor Lespedeza "Natob"	
<i>Lespedeza cuneata</i>	Lespedeza "Appalow"	*, W
<i>Lespedeza striata</i> thunb.	Shrub Lespedeza	
<i>Ligustrum japonicum</i>	Japanese Privet	
<i>Lonicera maackii</i>	Amur Honeysuckle	*, L
<i>Lonicera tatarica</i>	Tartarian Honeysuckle	*, W
<i>Lotus corniculatus</i>	Birdsfoot Trefoil	*, L
<i>Lysimachia nummularia</i>	Moneywort	*, W
<i>Magnolia grandiflora</i>	Southern Magnolia	
<i>Melilotus alba</i>	White Sweet Clover	*, W
<i>Poa pratensis</i>	Kentucky Bluegrass	
<i>Polygonum</i> spp.	Smartweed varieties	*, W
<i>Raphanus</i> spp.	Radish varieties	R, W
<i>Rubus phoenicolasius</i>	Wineberry	*, W
<i>Quercus acutissima</i>	Sawtooth Oak	*, A
<i>Vinca minor</i>	Periwinkle	*, W

¹Key:
R = Restricted noxious weed seed
W = Widespread distribution in VA
L = Local distribution in VA
* = Invasive in other states and may be in VA
** = elected for development of Fact Sheet by DCR-NHP

PLANTS TO AVOID

Notes ¹	Botanical Name	Common Name	Reasons to Avoid
P	<i>Acer negundo</i>	Box Elder	Weak wood, short-lived, insects
P	<i>Acer saccharinum</i>	Silver Maple	Weak wood, insects, shallow roots, prolific seeding
P	<i>Ailanthus altissima</i>	Tree of Heaven	Male species has offensive odor, poor landscaping qualities, invasive
P	<i>Albizzia julibrissin</i>	Mimosa	Mimosa wilt disease, short-lived
	<i>Betula pendula</i>	European White Birch	Insects
P	<i>Betula papyrifera</i>	Paper Birch	Insects

P	Catalpa bignonioides	Southern Catalpa	Messy flowers, seed pods
P	Ginkgo biloba	Ginkgo (female)	Messy fruit with offensive odor
	Laburnum anagyroides	Golden Chain Tree	Environmental stress
P	Melia azedarach	China Berry	Weak wood, seeds, suckers, short-lived
P	Morus sp.	Mulberries	Objectionable fruit
P	Nerium oleander	Oleander	Highly poisonous, fatal if ingested
P	Paulownia tomentosa	Empress Tree	Seed pods
P	Picea abies	Norway Spruce	Environmental stress (heat, poor drainage)
P	Picea pungens	Blue Spruce	Environmental stress (heat, poor drainage), short-lived, site-specific
P	Pinus strobus	White Pine	Decline and wilt diseases (poor drainage)
P	Pinus sylvestris	Scotch Pine	Environmental stress (heat, poor drainage), insects, short-lived
	Pinus thunbergii	Japanese Black Pine	Insects, early die-back
P	Populus alba	White/Silver Poplar	Weak wood, diseases, invasive
P	Populus deltoides	Eastern Cottonwood	Weak wood, extensive root system, prolific seeding
P	Populus nigra	Lombardy Poplar	Extensive root system, short-lived, disease, hazards from falling limbs
P	Populus tremuloides	Quaking Aspen	Short-lived, diseases, insects
P	Prunus serotina	Black Cherry	Objectionable fruit, insects
P	Ulmus americana	American Elm	Dutch Elm disease
P	Ulmus pumila	Siberian Elm	Short-lived, insects
	Ulmus rubra	Slippery Elm	Dutch Elm disease
¹ P = Prohibited			

Key to Tables

H =	High Tolerance.	FAC =	Faculative—Equally likely to occur in wetlands or non-wetlands.
M =	Medium Tolerance.	> FACU =	Faculative Upland—Usually occurs in non-wetlands, but occasionally found in wetlands.
L =	Low Tolerance.	FACW =	Faculative Wetland—Usually occurs in wetlands, but occasionally found in non-wetlands.

Recommended Plant Species for Use in Bioretention—Shrub Species

Species SCIENTIFIC NAME Common Name	Moisture Regime		Tolerance						Morphology			General Characteristics		
	Indicator Status	Habitat	Ponding (Days)	Salt	OM/Grease	Metals	Insects Disease	Exposure	Form	Height	Root System	Native	Non-Native	Wildlife
BERBERIS KOREANA Barberry	FAC	Mesic	2–4	H	H	H	M	Sun to partial sun	Oval shrub	4–6'	Shallow	—	Yes	Low
BERBERIS THUNBERGII Japanese Barberry	FAC	Mesic	2–4	H	H	H	M	Sun	Rounded, broad dense shrub	5–7'	Shallow		Yes	Medium
CLETHRA ALNIFOLIA Sweet Pepperbush	FAC	Mesic to Wet Mesic	2–4	H	—	—	H	Sun to partial sun	Ovoid shrub	6–12'	Shallow	Yes	—	Medium
CORNUS SANGUINEA Red Osler Dogwood	FAC W	Mesic-Hydric	2–4	H	H	H	M	Sun or shade	Arching, spreading shrub	8–10'	Shallow	Yes	—	High
EUONYMUS ALATUS Winged Euonymous	FAC	Mesic	1–2	H	H	H	M	Sun or shade	Flat, dense horizontal branching shrub	5–7'	Shallow	—	Yes	No
EUONYMOUS EUROPAEUS Spindle Tree	FAC	Mesic	1–2	M	M	M	M	Sun to partial sun	Upright dense oval shrub	10–12'	Shallow	—	Yes	No
HAMAMELIS VIRGINIANA Witch Hazel	FAC	Mesic	2–4	M	M	M	M	Sun or shade	Vase-like compact shrub	4–6'	Shallow	Yes	—	Low
HYPERICUM DENSIFLORUM Common St. John's Wort	FAC	Mesic	2–4	H	M	M	H	Sun	Ovoid shrub	3–6'	Shallow	Yes	—	Medium

ILEX GLABRA Inkberry	FAC W	Mesic to wet Mesic	2-4	H	H	-	H	Sun to partial sun	Upright dense shrub	8- 12'	Shallow	Yes	-	High
ILEX VERTICILLATA Winterberry	FAC W	Mesic to wet Mesic	2-4	L	M	-	H	Sun to partial sun	Spreading shrub	8- 12'	Shallow	Yes	-	High
JUNIPERUS COMMUNIS Common Juniper	FAC	Dry Mesic to Mesic	1-2	M	H	H	M-H	Sun	Mounded shrub	3-6'	Deep taproot	-	Yes	High
JUNIPERUS HORIZONTALIS Creeping Juniper	FAC	Dry Mesic to Mesic	1-2	M	H	H	M-H	Sun	Matted shrub	0-3'	Deep taproot	-	Yes	High
LINDERA BENZOIN Spicebush	FAC W	Mesic to wet Mesic	2-4	H	-	-	H	Sun	Upright shrub	6- 12'	Deep	Yes	-	High
MYRICA PENSYLVANICA Bayberry	FAC	Mesic	2-4	H	M	M	H	Sun to partial sun	Rounded, compacted shrub	6-8'	Shallow	Yes	-	High
PHYSOCARPUS OPULIFOLIUS Ninebark	FAC	Dry Mesic to wet Mesic	2-4	M	-	-	H	Sun	Upright shrub	6- 12'	Shallow	Yes	-	Medium
VIBURNUM CASSINOIDES Witherod Viburnum	FAC W	Mesic	2-4	H	H	H	H	Sun to partial sun	Rounded, compacted shrub	6-8'	Shallow	Yes	-	High
VIBURNUM DENTATUM Arrow Wood	FAC	Mesic	2-4	H	H	H	H	Sun to partial sun	Upright, multi- stemmed shrub	8- 10'	Shallow	Yes	-	High
VIBURNUM LENTAGO Nannyberry	FAC	Mesic	2-4	H	H	H	H	Sun to partial sun	Upright, multi- stemmed shrub	8- 10'	Shallow	Yes	-	High
QUERCUS FALCATA Shumard's Red Oak	FAC	Mesic	2-4	H	H	H	M	Sun to partial sun	Large spreading tree	60- 80'	Deep taproot	No	-	High
ROBINA PSEUDE ACACIA Black Locust	FAC	Mesic- Xeric	2-4	H	H	H	M	Sun	Typically tall and slender	30- 50'	Shallow	Yes	-	Low
SOPHORA JAPONICA Japanese Pagoda Tree	FAC	Mesic	1-2	M	M	-	M	Sun	Shade tree	40- 70'	Shallow	-	Yes	Low

TAXODIUM DISTICHUM Bold Cypress	FAC W	Mesic- Hydric	4–6	–	–	M	H	Sun to partial sun	Typically single stem tree	75– 100'	Shallow	Yes	–	Low
THUJA OCCIDENTALIS Arborvitae	FAC W	Mesic to wet Mesic	2–4	M	M	M	H	Sun to partial sun	Dense single stem tree	50– 75'	Shallow	–	Yes	Low
ZELKOVA SERRATA Japanese Zelkova	FAC U	Mesic	1–2	M	M	–	H	Sun	Dense shade tree	60– 70'	Shallow	–	Yes	Low

Recommended Plant Species for Use in Bioretention—Tree Species

Species	Moisture Regime		Tolerance						Morphology			General Characteristics		
	Indicator Status	Habitat	Ponding (Days)	Salt	OM/ Grease	Metals	Insects Disease	Exposure	Form	Height	Root System	Native	Non-Native	Wildlife
ACER RUBRUM Red Maple	FAC	Mesic- Hydric	4–6	H	H	H	H	Partial sun	Single to multi-stem tree	50– 70'	Shallow	Yes	–	High
AMELANCHIER CANADENSIS Shadbush	FAC	Mesic	2–4	H	M	-	H	Partial sun	Single to multi- stemtree	35– 50'	Shallow	Yes	–	High
BETULA NIGRA River Birch	FAC W	Mesic- Hydric	4–6	–	M	M	H	Partial sun	Single to multi- stemtree	50– 75'	Shallow	Yes	–	High
BETULA POPULIFOLIA Gray Birch	FAC	Xeric- Hydric	4–6	H	H	M	H	Partial sun	Single to multi-stem tree	35– 50'	Shallow to deep	–	Yes	High
FRAXINUS AMERICANA White Ash	FAC	Mesic	2–4	M	H	H	H	Sun	Large tree	50– 60'	Deep	Yes	-	Low
FRAXINUS PENNSYLVANICA Green Ash	FAC W	Mesic	4–6	M	H	H	H	Partial sun	Large tree	40– 65'	Shallow to deep	Yes	–	Low
GINKO BILOBA Maidenhair Tree	FAC	Mesic	2–4	H	H	H	H	Sun	Large tree	50– 60'	Shallow to deep	–	Yes	Low
GLEDITSIA TRICANTHOS Honey Locust	FAC	Mesic	2–4	H	M	–	M	Sun	Small canopied large tree	50– 75'	Shallow to deep variable taproot	Yes	–	Low
JUNIPERUS VIRGINIANA Eastern Red Cedar	FAC U	Mesic- Xeric	2–4	H	H	–	H	Sun	Dense single stem tree	50– 75'	Taproot	Yes	–	Very High

KOELREUTERIA PANICULATA Golden Rain Tree	FAC U	Mesic	2—4	H	H	H	H	Sun	Round, dense shade tree	20— 30'	Shallow	—	Yes	No
LIQUIDAMBAR STYRACIFLUA Sweet Gum	FAC	Mesic	4—6	H	H	H	M	Sun	Large tree	50— 70'	Deep taproot	Yes	—	High
NYSSA SYLVATICA Black Gum	FAC W	Mesic- Hydric	4—6	H	H	H	H	Sun	Large tree	40— 70'	Shallow to deep taproot	Yes	—	High
PLATANUS X ACERIFOLIA London Plane Tree	FAC W	Mesic	2—4	H	—	—	M	Sun	Large tree	70— 80'	Shallow	—	Yes	Low

SAMPLE LANDSCAPING PLANS FOR STORMWATER MANAGEMENT

This sample landscaping plan can be keyed to the illustration "Key to Landscaping Zones in Stormwater Management Areas" which follows.

Zone 2—Shallow Water Bench (6—12 Inches Deep; Emergent Aquatic Plants)

Trees/Shrubs

Cephalanthus occidentalis	Buttonbush
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Zone 3—Shoreline Fringe (Regularly Inundated Area)

Trees/Shrubs

Aronia arbutifolia	Red Chokeberry
Betula nigra	River Birch
Cephalanthus occidentalis	Buttonbush
Cornus stolonifera	Red-Osier Dogwood
Magnolia virginiana	Swamp Magnolia, Sweetbay
Nyssa sylvatica vari biflora	Tupelo
Salix nigra	Black Willow
Taxodium distichum	Bald Cypress

Zone 4—Riparian Fringe (Periodically Inundated Area; Wet Soils)

Trees/Shrubs

Acer rubrum	Red Maple
Aronia arbutifolia	Red Chokeberry
Betula nigra	River Birch
Cephalanthus occidentalis	Buttonbush
Chionanthus virginicus	Fringe Tree
Cornus amomum	Silky Dogwood
Cornus stolonifera	Red-osier Dogwood
Fraxinus pensylvanica	Green Ash, Red Ash
Gleditsia triacanthos	Honey Locust
Hamamelis virginiana	Witch Hazel
Ilex laevigata	Winterberry
Liquidambar styraciflua	Sweetgum
Magnolia virginiana	Swamp Magnolia, Sweetbay
Nyssa sylvatica	Blackgum
Nyssa sylvatica vari biflora	Tupelo
Plantanus occidentalis	Sycamore
Quercus bicolor	Swamp Oak
Quercus palustris	Pin Oak

<i>Quercus phellos</i>	Willow Oak
<i>Rhododendron viscosum</i>	Rhododendron
<i>Salix nigra</i>	Black Willow
<i>Sambucus canadensis</i>	Elderberry
<i>Taxodium distichum</i>	Bald Cypress
<i>Viburnum dentatum</i>	Southern Arrowwood
<i>Viburnum trilobum</i>	High Bush Cranberry

Zone 5—Floodplain Terrace (Infrequently Inundated; Moist Soils)

Trees/Shrubs

<i>Acer rubrum</i>	Red Maple
<i>Alnus glutinosa</i>	Alder
<i>Amelanchier arborea</i>	Shadbush, Common Serviceberry
<i>Aronia arbutifolia</i>	Red Chokeberry
<i>Cephalanthus occidnetalis</i>	Buttonbush
<i>Chionanthus virginicus</i>	Fringe Tree
<i>Cornus amomum</i>	Silky Dogwood
<i>Cornus stolonifera</i>	Red-osier Dogwood
<i>Diospyros virginiana</i>	Persimmon
<i>Fraxinus pensylvanica</i>	Green Ash, Red Ash
<i>Gleditsia triacanthos</i>	Honey Locust
<i>Hamamelis virginiana</i>	Witch Hazel
<i>Ilex laevigata</i>	Winterberry
<i>Ilex opaca</i>	American Holly
<i>Lindera benzoin</i>	Spicebush
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Liriodendron tulipifera</i>	Tulip Tree
<i>Nyssa sylvatica</i>	Blackgum
<i>Nyssa sylvatica vari biflora</i>	Tupelo
<i>Salix nigra</i>	Black Willow
<i>Plantanus occidentalis</i>	Sycamore
<i>Prunus virginiana</i>	Chokecherry
<i>Quercus bicolor</i>	Swamp Oak
<i>Quercus palustris</i>	Pin Oak
<i>Quercus phellos</i>	Willow Oak
<i>Rhododendron sp.</i>	Rodedendron

<i>Sambucus canadensis</i>	Elderberry
<i>Viburnum dentatum</i>	Southern Arrowwood
<i>Viburnum trilobum</i>	High Bush Cranberry

Zone 6—Upland Slopes (Seldom or Never Inundated; Moist to Dry Soils)

Note: Most trees will fit into this zone, although some have been specifically recommended for Zones 2–5.

Trees/Shrubs

<i>Acer rubrum</i>	Red Maple
<i>Alnus glutinosa</i>	Alder
<i>Amelanchier arborea</i>	Shadbush, Common Serviceberry
<i>Cornus amomum</i>	Silky Dogwood
<i>Diospyros virginiana</i>	Persimmon
<i>Elaeagnus umbellata</i>	Autumn Olive
<i>Fagus grandifolia</i>	American Beech
<i>Gleditsia triacanthos</i>	Honey Locust
<i>Ilex opaca</i>	American Holly
<i>Kalmia latifolia</i>	Mountain Laurel
<i>Lindera benzoin</i>	Spicebush
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Nyssa sylvatica</i>	Blackgum
<i>Plantanus occidentalis</i>	Sycamore
<i>Prunus virginiana</i>	Chokecherry
<i>Quercus palustris</i>	Pin Oak
<i>Quercus phellos</i>	Willow Oak
<i>Rhododendron</i> spp.	Rhododendron
<i>Sambucus canadensis</i>	Elderberry
<i>Viburnum trilobum</i>	High Bush Cranberry

Sources:

- (1) Commonwealth of Virginia, Department of Forestry. Portsmouth Office, 1992.
- (2) Schueler, Thomas R. Controlling Urban Runoff: A Practical Manual For Planning and Designing Urban BMPs. Metropolitan Washington Council of Governments, Department of Environmental Programs—Washington, D.C.; 7/87.