Riparian Buffer Protection Standards

Board of Supervisors Work Session 2025-08-20

Work Session Overview

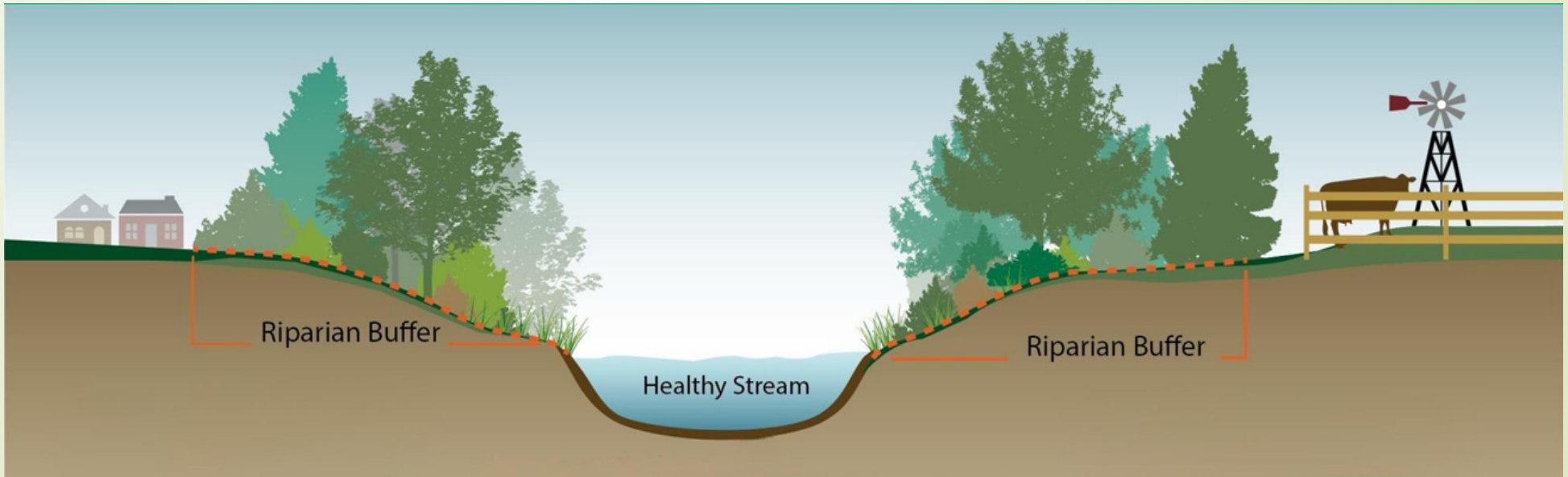
- Stream Health Initiative & Riparian Buffers
- Current Buffer Regulations
- Proposed Riparian Buffer Protection Standards (RBPS)
- Questions & Discussion
- Next Steps

Stream Health Initiative

- Community Outreach
  - Stream Health Initiative Stakeholder Work Groups
    - Set vision & goals
    - Developed final recommendations with staff
  - Community Learning Series (8 webinars/videos)
  - Online community surveys
- Result: 14 community-developed recommendations for stream-health protection

Stream Health Initiative

- Recommendation #1: Better protection of riparian buffers in Zoning Ordinance
- A riparian buffer is an area of vegetation adjacent to a stream, wetland, reservoir, or pond.
- BOS adopted Resolution of Intent to amend the Zoning Ordinance on March 16, 2022



Scope of Riparian Buffer Project

- Move riparian buffer regulations from Water Protection Ordinance (WPO) to Zoning Ordinance, in order to:
  - Protect stream health and wildlife habitat, and boost climate resiliency;
  - Address stream impairments by filtering nonpoint source pollution and reducing erosion and sedimentation; and
  - Providing clarity on uses that are permitted within stream buffers
- Implement standards that protect buffer vegetation County-wide
- Keep current exemptions for agriculture and forestry

Where are the buffers?

- Current WPO buffer locations and proposed RBPS buffer locations are the same.
- The riparian buffers extend from any applicable waterbody or wetlands to the limits show in draft section 4.23.4:

Where are the buffers?

Development Area	Not within a water supply protection area	100 feet wide on each side of any perennial stream and contiguous nontidal wetlands
	Within a water supply protection area	The wider of either i) 100 feet on each side of any perennial or intermittent stream and contiguous nontidal wetlands, or ii) the limits of the Flood Hazard Overlay District. (Structures permitted in outer 50 feet on intermittent streams, only with mitigation plan).
Public water supply impoundments	200 feet located adjacent to and landward of any such impoundment as measured horizontally from the limits of the Flood Hazard Overlay District	
All other locations	The wider of either i) 100 feet on each side of any perennial or intermittent stream and contiguous nontidal wetlands or ii) the limits of the Flood Hazard Overlay District	

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Current Buffer Regulations

- Water Protection Ordinance - land disturbances of 10,000 square feet or more require mitigation of stream buffer impacts
- No vegetation protection for land disturbances under 10,000 square feet
- New structures requiring building permits are not permitted in buffers

Proposal: Riparian Buffer Protection Standards (RBPS)

- **4.23.1 -** Intent
- **4.23.2** – Applicability
- **4.23.3** -- Identifies administrator and powers of the Riparian Buffer Administrator (RBA)
- **4.23.4** – Sets the boundaries of the riparian buffers (same as current WPO).
- **4.23.5** – Adds the requirement for site-specific studies or surveys.
- **4.23.6** – Establishes criteria for vegetation management in the riparian buffers
- **4.23.7** – Permitted Uses
- **4.23.8** – Uses permitted by administrator approval, with mitigation plan
- **4.23.9** – Standards for mitigation plans, including bonds

What Vegetation Changes Are Permitted?

Now

- For projects with at least 10,000 square feet of disturbance, buffer vegetation can be removed/changed with a mitigation plan
- Elsewhere, any buffer vegetation can be removed

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Proposed (4.23.6)

- Except for permitted uses, “native vegetation within the riparian buffer must not be disturbed or removed”
- Buffers “must be maintained in as natural a condition as possible.”
- Guidance provided in Design Standards Manual

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RBPS would permit two categories of uses:

- By right
- By administrator approval, with a mitigation plan

RBPS: Permitted Uses

- **By Right (4.23.7):**
  - Agriculture & forestry
  - Utilities
  - Water-dependent facilities
  - Pervious passive recreation facilities
  - Historic preservation & archaeology
  - Buffer planting & management
  - Posts & poles

RBPS: Permitted Uses

- **By RBA approval, with mitigation plan (4.23.8)**
  - Temporary E&S facilities (landward 50 feet)
  - In the outer 50 feet, structures necessary for reasonable use of a lot, or DA structures on intermittent streams in water supply protection areas
  - Environmental restoration projects
  - Stream crossings for roads, streets, and driveways
  - Building sites & water/sewer facilities where the buffer would otherwise prevent reasonable use
  - Flood management facilities (with standards)
  - Stormwater outfalls
  - Impervious recreation facilities
  - Public Uses

Mitigation Plans (4.23.9)

- Restoration of disturbed area/vegetation at 2:1 ratio (area)
- Plantings must include only native species
- Buffer vegetation must be planted, established and maintained as described in the DSM.
- RBA can require bonds until plants are established

Discussion Questions

- Does this draft ordinance help to meet the goals listed in section 4.23.1?
- Does the Board have any feedback about the general performance criteria in section 4.23.6?

4.23.1 – Intent

A. **State Water Control Law.** Consistent with the State Water Control Law (Virginia Code § 62.1-44.2 *et seq.*), these Riparian Buffer Protection Standards are adopted to:

1. Protect existing high-quality state waters;
2. Restore all other state waters to a condition or quality that will permit all reasonable public uses and will support the propagation and growth of all aquatic life, including game fish, which might reasonably be expected to inhabit them;
3. Safeguard the waters of the Commonwealth from pollution;
4. Prevent any increase in pollution;
5. Maintain and improve riparian habitat;
5. Reduce existing pollution; and
6. Promote water resource conservation in order to provide for the health, safety and welfare of the present and future residents of Albemarle County and the Commonwealth of Virginia.

B. **Additional purposes.** These Riparian Buffer Protection Standards are further intended to protect riparian buffers by:

1. Limiting development and land disturbance adjacent to surface watercourses and contiguous nontidal wetlands; and
2. Encouraging retention of native vegetation as necessary to:
   a. Protect public and private water supplies;
   b. Trap sediment and other pollutants in surface runoff;
   c. Promote stream/river bank stabilization;
   d. Protect fish and wildlife habitat;
   e. Provide for storm and flood mitigation; and
   f. Preserve scenic and recreational resources.

4.23.6 – General Performance Standards

A. Landcovers. Permitted landcovers and changes thereto are subject to the Engineering Design Standards Manual's "Permitted Landcover Change Matrix."

B. Buffer management. Except for any structures, improvements, and/or activities authorized by Sections 4.23.7 or 4.23.8, each riparian buffer must be managed as follows:

1. Native vegetation in the riparian buffer must not be disturbed or removed, regardless of the size of the area affected.
2. Each riparian buffer must be maintained in as natural a condition as possible. The preferred vegetative cover is a native riparian forest with ground cover, shrub, understory, and tree canopy layers.
3. Stream buffer vegetation must be installed at the planting densities recommended in the Virginia Department of Conservation and Recreation's most current Riparian Buffers Modification & Mitigation Guidance Manual when any activities permitted in section 4.23.7(B) cease or are converted to a use not permitted in that section.

C. Performance standards. Any use, development, or redevelopment of land in riparian buffers must meet the following performance standards:

1. No more land may be disturbed than is necessary to provide for the proposed use, development, or redevelopment;
2. Native vegetation must be preserved to the maximum extent practicable based on the use, development, or redevelopment proposed;
3. Impervious cover must be minimized consistent with the use, development, or redevelopment proposed;
4. Any land disturbing activity must comply with all applicable County requirements;
5. Structures and improvements must be constructed to minimize erosion;
6. For developments providing common areas (including open space), either:
   a. Riparian buffers must be located outside individual building lots; or
   b. The Riparian Buffer Administrator may authorize riparian buffers on individual building lots if a permanent easement or other legal instrument requires preservation of the buffer consistent with section 4.23.
7. Where a development includes a riparian buffer, the developer must install signage to identify the landward boundary of the buffer. For purposes of this subsection, the term "development" means a subdivision creating one or more lots or a construction activity requiring a site plan, and does not apply to property principally devoted to bona fide agricultural production. The Riparian Buffer Administrator will determine the appropriate number, size, location, and wording of the signage, based on guidelines in the Engineering Design Standards Manual (DSM).

Next Steps

- Collect comments on the draft ordinance from this work session
- Prepare the final draft ordinance
- Plan for implementation, including possible delayed implementation
- Schedule a Planning Commission public hearing on the revised ordinances
- Schedule a Board of Supervisors public hearing on the draft ordinances
- If ordinance is adopted, track workload and evaluate resource needs.

		Proposed Landcover Within Riparian Buffer							
		Conservation Management			**Forestry**		**Agriculture**		**Other**
		Hardwood or mixed forest	Native grassland, Piedmont prairie	Wetland	Hardwood or mixed forest	Pine	Pasture	Crop	Land-scaping
	Existing Landcover Within Riparian Buffer								
Conservation Management	Hardwood or Mixed Forest Management: 1, 3	P*	N	P	P*	P*	P	P	N
	Native grassland, Piedmont prairie Management: 2	P	P	P	P*	P*	P	P	N
Forestry	Hardwood or mixed forest Management: 3	P*	P	P	P*	P*	P	P	N
	Pine Management: 3	P	P	P	P*	P*	P	P	N
Agriculture	Pasture	P	P	P	P*	P*	P	P	N
	Crop	P	P	P	P*	P*	P	P	N
Other	Landscaping (lawn, grass, mowed lawn with trees/shrubs, mowed or bush-hogged field, etc.) Management: 4	P	P	P*	P*	P	P	P	P

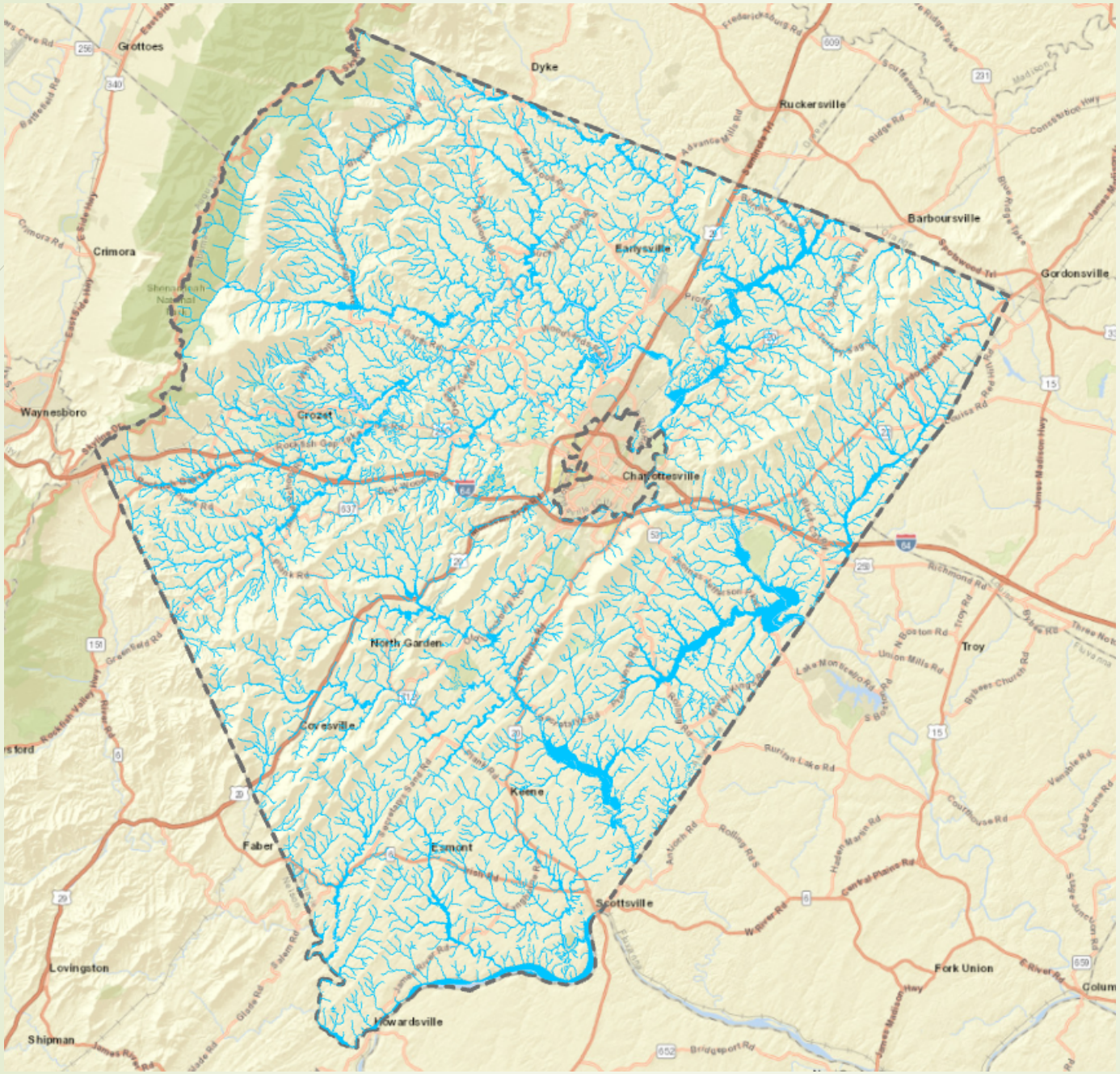
		Proposed Landcover Within Riparian Buffer							
		Conservation Management			Forestry		Agriculture		Other
		Hardwood or mixed	Native grassland	Wetland	Hardwood or mixed forest	Pine	Pasture	Crop	Land-scaping
	Existing Landcover Within Ripa Buffer								
Conservation Management	Hardwood o Mixed Forest Managemen								
	Native grass Piedmont pr Managemen								
Forestry	Hardwood or mixed forest Management: 3	P*	P	P	P*	P*	P	P	N
	Pine Management: 3	P							
Agriculture	Pasture	P							
	Crop	P							
Other	Landscaping (lawn, grass, mowed lawn with trees/shrubs, mowed or bush-hogged field, etc.) Management: 4	P							

Potential changes to landcover within the Riparian Buffer should be permitted as follows.

P: Permitted
P*: Permitted in compliance with the standards in 4.23.7 (B) (2). Removal of existing buffer vegetation is not permitted for activities such as landscaping or clearing for views. For a list of permitted uses, refer to Section 4.23.7(B).
P**: Permitted by Riparian Buffer Administrator, based on Chesapeake Bay Local Assistance Manual and other relevant resources
N: Not permitted

Permitted management of existing vegetation is listed for each vegetation type as follows:

1	Maintenance of native riparian buffer that includes canopy, understory, shrub, and herbaceous layers; invasive-species removal/control.
2	Maintenance of native vegetation; invasive species removal/control
3	Uses permitted in compliance with Sec. 4.23.7 (B)(2); invasive species removal/control
4	Within the riparian buffer, mowing may occur only August 1 through April 15. This limitation does not apply to invasive species removal/control, or to mowing of surface areas directly above existing septic fields or tanks. [b]



Total area of WPO Buffers

- approx. 68,500 acres
- 14.6% of the County

DA: 1,668 acres (7.0% of DA)
RA: 66,811 acres (15.2 % of RA)

Virginia Piedmont Region

Rocky falls and rapids on the Potomac, Rappahannock and James rivers mark a transition from the softer sediments of the Coastal Plain to the resistant bedrock underlying the Piedmont. Moving west, the rolling hills of Virginia's Piedmont Plateau steadily climb from the fall line to the foothills of the Blue Ridge Mountains, which form the western boundary of the Piedmont. The hills of the Piedmont become steeper to the west, where monadnocks — remnants of ancient mountains — rise above the farms and forests. The Piedmont is known for moderately fertile but highly eroded clay soils that formed from deeply weathered bedrock. Most of this land was converted to farmland during European settlement. Today, however, mixed pine-oak-hickory forests arising from abandoned farmlands are found throughout the region.

Recommended Uses
W = Wildlife
H = Horticulture & landscaping
C = Conservation & restoration
D = Domestic livestock forage

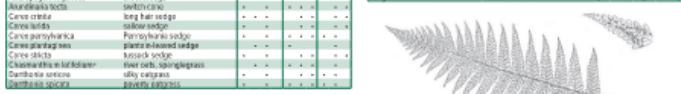
Minimum Light Requirements
S = Shade
P = Partial sun
F = Full sun

Moisture Requirements
L = Low moisture
M = Moderate moisture
H = High moisture

Some species are marked with the following footnote symbols:

+ May be aggressive in a garden setting
* Due to the rarity and sensitivity of habitat in Virginia, these species are recommended for horticultural use only. Planting these species in natural areas could be detrimental to the survival of native populations.
** May be subject to emerald ash borer infestation.

Scientific Name	Common Name	Uses W	H	C	D	Light S	P	F	Moisture L	M	H
Herbs											
Achillea millefolium	common yarrow		•				•	•	•		
Actaea racemosa	black cohosh		•			•	•			•	
Ageratina altissima	white snakeroot	•				•	•			•	•
Amsonia tabernaemontana	blue star		•				•	•		•	•
Anemone quinquefolia	wood anemone		•			•	•			•	
Antennaria neglecta	field pussytoes		•	•			•	•	•		
Aquilegia canadensis	wild columbine	•	•				•	•	•	•	
Arisaema triphyllum	Jack-in-the-pulpit		•			•	•			•	
Asarum virginicum	ginger					•	•			•	
Asclepias incarnata	swamp milkweed							•			•
Asclepias tuberosa	butterfly weed		•				•	•	•		
Baptisia australis*	blue wild indigo		•				•	•	•		
Baptisia tinctoria	yellow wild indigo	•	•				•	•	•		
Bidens cernua+	nodding beggar-ticks		•	•				•		•	•
Chamaecrista fasciculata+	partridge pea		•				•	•	•		
Chelone glabra	white turtlehead							•		•	
Chrysogonum virginianum	green and gold		•			•	•			•	
Conoclinium coelestinum	blue mistflower							•		•	•
Coreopsis tripteris	tall coreopsis		•				•	•	•		
Delphinium tricorne	dwarf larkspur		•			•	•			•	
Dicentra cucullaria	Dutchman's breeches		•			•	•			•	
Doellingeria umbellata	flat-top white aster		•				•	•		•	•
Equisetum hyemale	horsetail			•			•	•	•	•	•
Eupatoriadelphus fistulosus	Joe-pye weed		•	•			•	•		•	•
Eupatorium perfoliatum	common boneset			•			•	•		•	•
Helenium autumnale	sneezeweed		•	•			•	•		•	•
Helianthus decapetalus	ten-petaled sunflower		•	•			•	•		•	•
Helianthus divaricatus	woodland sunflower		•	•			•	•			•
Hibiscus moscheutos	Eastern rosemallow		•	•				•	•	•	
Iris virginica	Virginia blue flag		•	•				•		•	•
Kosteletskya virginica	seashore mallow		•	•				•		•	•
Lilium superbum	Turk's cap lily			•			•	•		•	•
Lobelia cardinalis	cardinal flower		•	•			•	•		•	•
Lobelia siphilitica	great blue lobelia		•	•			•	•		•	•
Maianthemum racemosum	false Solomon's seal		•	•		•	•			•	•
Mertensia virginica	Virginia bluebells		•	•			•	•		•	•
Mimulus ringens	monkeyflower			•			•	•	•	•	
Monarda didyma	bee balm		•	•			•	•		•	•
Nymphaea odorata	American water lily			•			•	•		•	•
Oenothera fruticosa	sundrops		•	•			•	•		•	•
Packera aurea+	golden ragwort		•	•		•	•			•	•
Peltandra virginica	arrow arum		•	•			•	•	•	•	
Phlox divaricata	woodland phlox		•	•		•	•			•	•
Phlox paniculata	summer phlox		•	•			•	•		•	•
Podophyllum peltatum+	mayapple		•	•		•	•			•	•
Polemonium reptans	Jacob's ladder		•	•			•	•		•	•
Pontederia cordata	pickerel weed		•	•				•	•	•	
Rhexia virginica	Virginia meadow-beauty		•	•			•	•		•	•
Rudbeckia laciniata	cut-leaved coneflower		•	•			•	•		•	•
Sagittaria latifolia	broadleaf arrowhead		•	•				•	•	•	
Saururus cernuus	lizard's tail		•	•				•	•	•	
Solidago rugosa+	rough-stemmed goldenrod		•	•			•	•		•	•
Symphyotrichum novae-angliae	New England aster		•	•			•	•		•	•
Symphyotrichum novi-belgii	New York aster		•	•			•	•		•	•
Verbena hastata	blue vervain		•	•			•	•	•	•	
Vernonia noveboracensis	New York ironweed		•	•			•	•		•	•
Viola cucullata	marsh blue violet		•	•			•	•	•	•	
Viola pubescens	yellow violet		•	•		•	•			•	
Zephyranthes atamasca	Atamasco lily		•				•	•		•	•
Ferns & Fern Allies											
Athyrium asplenioides	Southern ladyfern		•	•		•	•			•	•
Botrychium virginianum	rattlesnake fern		•	•		•	•			•	•
Onoclea sensibilis+	sensitive fern		•	•			•	•	•	•	
Osmundastrum cinnamomeum var. cinnamomeum	cinnamon fern		•	•			•	•	•	•	
Osmunda regalis	royal fern		•	•			•	•	•	•	
Polystichum acrostichoides	Christmas fern		•	•		•	•			•	
Thelypteris palustris	marsh fern		•	•			•	•	•	•	
Woodwardia virginica+	Virginia chain fern		•	•			•	•	•	•	
Grasses, Sedges & Rushes											
Agrostis perennans	autumn bentgrass		•	•		•	•	•		•	•
Andropogon gerardii	big bluestem		•	•			•	•		•	•
Andropogon glomeratus	bushy bluestem		•	•			•	•	•	•	
Arundinaria gigantea	wild cane		•	•			•	•		•	•
Arundinaria tecta	switch cane		•	•			•	•		•	•
Carex crinita	long hair sedge		•	•			•	•	•	•	
Carex lurida	sallow sedge		•	•			•	•	•	•	•
Carex stricta	tussock sedge		•	•			•	•	•	•	•
Chasmanthium latifolium+	river oats, spanglegrass		•	•			•	•		•	•
Dichanthelium clandestinum	deer-tongue		•	•			•	•		•	•
Dichanthelium commutatum	variable panicgrass		•	•			•	•			•
Dulichium arundinaceum	dwarf bamboo		•	•			•	•	•	•	
Elymus hystrix	bottlebrush grass		•	•			•	•		•	•
Elymus virginicus	Virginia wild rye		•	•			•	•		•	•
Juncus canadensis	Canada rush		•	•			•	•	•	•	
Juncus effusus	soft rush		•	•			•	•	•	•	
Leersia oryzoides	rice cutgrass		•	•			•	•	•	•	
Panicum virgatum	switch grass		•	•			•	•	•	•	
Scirpus cyperinus	woolgrass bulrush		•	•			•	•	•	•	
Sparganium americanum	American bur-reed		•	•			•	•		•	
Tripsacum dactyloides	gama grass		•	•			•	•	•	•	
Typha latifolia	broad-leaved cattail		•	•			•	•		•	•
Zizania aquatica	wild rice		•	•			•	•		•	•
Vines											
Bignonia capreolata	crossvine		•	•			•	•		•	•
Celastrus scandens	climbing bittersweet		•	•			•	•	•	•	
Clematis virginiana	virgin's bower		•	•			•	•		•	•
Parthenocissus quinquefolia	Virginia creeper		•	•			•	•	•	•	•
Shrubs & Small Trees											
Alnus serrulata	hazel alder		•	•			•	•	•	•	
Aronia arbutifolia	red chokeberry		•	•			•	•		•	•
Aronia melanocarpa	black chokeberry		•	•			•	•	•	•	
Baccharis halimifolia	high tide bush		•	•			•	•	•	•	
Callicarpa americana	American beautyberry		•	•			•	•		•	•
Cephalanthus occidentalis	buttonbush		•	•			•	•	•	•	
Clethra alnifolia	sweet pepper-bush		•	•			•	•		•	•
Cornus amomum	silky dogwood		•	•			•	•	•	•	
Eubotrys racemosus	fetterbush		•	•			•	•		•	•
Hydrangea arborescens	wild hydrangea		•	•			•	•		•	•
Ilex decidua	deciduous holly		•	•			•	•	•	•	
Ilex verticillata	winterberry		•	•			•	•	•	•	
Itea virginica	Virginia willow		•	•			•	•	•	•	
Leucothoe axillaris	coastal dog-hobble		•	•			•	•		•	•
Lindera benzoin	spicebush		•	•			•	•		•	•
Morella cerifera	Southern wax myrtle		•	•			•	•		•	•
Rhododendron viscosum	swamp azalea		•	•			•	•	•	•	
Rubus allegheniensis	Allegheny blackberry		•	•			•	•		•	•
Salix sericea	silky willow		•	•			•	•	•	•	
Sambucus canadensis	common elderberry		•	•			•	•	•	•	
Spiraea alba	narrow-leaved meadowsweet		•	•			•	•	•	•	
Spiraea latifolia	broad-leaved meadowsweet		•	•			•	•	•	•	
Vaccinium corymbosum	highbush blueberry		•	•			•	•	•	•	
Viburnum dentatum	Southern arrow-wood viburnum		•	•			•	•	•	•	
Viburnum prunifolium	black-haw viburnum		•	•			•	•		•	•
Medium Trees											
Amelanchier arborea	downy serviceberry		•	•			•	•		•	•
Amelanchier canadensis	Canada serviceberry		•	•			•	•		•	•
Amelanchier laevis	smooth serviceberry		•	•			•	•		•	•
Asimina triloba	paw paw		•	•		•	•	•		•	•
Cornus alternifolia	alternate-leaf dogwood		•	•			•	•		•	•
Crataegus viridis	green hawthorn		•	•			•	•	•	•	
Morus rubra	red mulberry		•	•			•	•	•	•	
Ostrya virginiana	Eastern hop-hornbeam		•	•			•	•		•	•
Persea borbonia	redbay		•	•			•	•		•	
Rhus glabra	smooth sumac		•	•			•	•	•	•	
Salix nigra	black willow		•	•			•	•	•	•	
Large Trees											
Acer rubrum	red maple		•	•			•	•	•	•	•
Betula lenta	sweet birch		•	•			•	•		•	•
Betula nigra	river birch		•	•			•	•	•	•	
Diospyros virginiana	persimmon		•	•			•	•		•	•
Fraxinus americana**	white ash		•	•			•	•		•	•
Fraxinus pensylvanica**	green ash		•	•			•	•	•	•	•
Juglans nigra	black walnut		•	•			•	•		•	•
Liquidambar styraciflua	sweetgum		•	•			•	•	•	•	•
Liriodendron tulipifera	tulip poplar		•	•			•	•		•	•
Nyssa aquatica	water tupelo		•	•			•	•	•	•	
Nyssa sylvatica	black gum		•	•			•	•	•	•	•
Oxydendrum arboreum	sourwood		•	•			•	•		•	•
Pinus taeda	loblolly pine		•	•			•	•	•	•	
Platanus occidentalis	sycamore		•	•			•	•		•	•
Quercus bicolor	swamp white oak		•	•			•	•	•	•	
Quercus laurifolia	swamp laurel oak		•	•			•	•	•	•	
Quercus michauxii	swamp chestnut oak		•	•			•	•		•	•
Quercus nigra	water oak		•	•			•	•	•	•	
Quercus palustris	pin oak		•	•			•	•		•	•
Quercus phellos	willow oak		•	•			•	•	•	•	
Taxodium distichum	bald cypress		•	•				•	•	•	•



Virginia Riparian Buffer Zones

Riparian forest buffers are areas of trees, shrubs and other vegetation found next to stream channels and other waterways. The removal of these buffers has contributed to ecological problems in our waterways and the Chesapeake Bay. Problems include sedimentation, nutrient and toxic chemical pollution, and reduction of fish habitat.

Riparian forest buffers are natural communities such as bottomland hardwood forest, coastal scrub and upland oak-hickory-pine forests. They support a variety of plants and animals, particularly plants that are adapted to periodic flooding or saturated soils. Because of the presence of moving water, more materials are deposited in, and pass through, riparian forests than any other wetland ecosystem.

Riparian forest buffers provide important ecosystem services.

- Vegetation, leaf litter and porous soil slow the flow of water. This helps control the rate and volume of water in streams and rivers, greatly influencing flood levels.
- Leaf litter filters sediment from upland runoff, as well as phosphorus, nitrogen and other nutrients that may be bonded to sediment particles. Leaf litter intercepts and stores these polluting nutrients before they can cloud waterways.
- Leaf litter captures and converts pesticides to nontoxic compounds by various chemical and microbial activities within the forest buffer. This protects fish and amphibians, which are threatened by pesticide pollution.

- Soils store water, and plants in the forest buffer take up that water and release it into the atmosphere.
- The canopy created by riparian forests provides shade and controls water temperature, which is essential for instream organisms and the invertebrate food sources on which they depend. Instream, leaf litter and woody debris create food and habitat vital to the aquatic food web.
- Riparian forests provide food and habitat for a variety of terrestrial wildlife species and serve as safe corridors for movement between habitats. Habitat conversion and fragmentation have reduced wildlife habitat and limited the ability of animals to move between existing habitats.
- Riparian forest buffers offer recreation to fishermen, hunters, birders, hikers, canoeists and picnickers. People enjoy these areas in many different ways because of the diversity of life and scenic beauty they provide.

Drier upland forests adjacent to waterways provide many of the same ecosystem values. These ecological functions combine to make riparian forest buffers critical to ecological and human health. Recognizing this, staff at the Chesapeake Bay Program has set a goal to replant riparian buffers along 70 percent of stream miles in the bay watershed.

RIPARIAN VEGETATION ZONES

Riparian forest buffers consist of four vegetation zones. Zone 1, the emergent vegetation zone, is permanently to semipermanently flooded and often dominated by grasses, sedges, rushes and other herbaceous plants. Zone 2, the riverside thicket, may be seasonally to temporarily flooded and is often characterized by emergent aquatic species, shrubs and a few tree species. Zone 3, the saturated forest, has soils that are saturated to poorly drained. Zone 4, the well-drained forest, is also known as upland forest and has dry soil. Zones 3 and 4 are dominated by trees but also contain shrub and herb layers in the understory.

Recommended Uses
W = Wildlife
H = Horticulture & landscaping
C = Conservation & restoration
D = Domestic livestock forage

Region
M = Mountain
P = Piedmont
C = Coastal Plain

Minimum Light Requirements
S = Shade
P = Partial sun
F = Full sun

Moisture Requirements
L = Low moisture
M = Moderate moisture
H = High moisture

Riparian Buffer Zones
1 = Emergent
2 = Riverside thicket
3 = Saturated forest
4 = Well-drained forest

Some species are marked with the following footnote symbols:

+ May be aggressive in a garden setting
* Due to the rarity and sensitivity of habitat in Virginia, these species are recommended for horticultural use only. Planting these species in natural areas could be detrimental to the survival of native populations
** May be subject to emerald ash borer infestation.

Scientific Name	Common Name	Uses W	H	C	D	Region M	P	C	Light S	P	F	Moisture L	M	H	Riparian Zone 1	2	3	4
Herbs																		
Amsonia tabernaemontana	blue star						•	•		•	•		•	•			•	•
Arisaema triphyllum	Jack-in-the-pulpit						•	•		•	•		•	•			•	•
Asarum canadense+	wild ginger						•	•		•	•		•	•			•	•
Asclepias incarnata	swamp milkweed							•			•		•	•				•
Bidens cernua+	nodding beggar-ticks						•	•			•		•	•				•
Boltonia asteroides*	aster-like boltonia						•				•		•	•				•
Coltha palustris	marsh marigold						•	•		•	•		•					•
Chamaecrista fasciculata+	partridge pea						•	•			•		•	•				•
Chelone glabra	white turtlehead						•	•			•		•	•				•
Chrysogonum virginianum	green and gold						•	•		•	•		•					•
Conoclinium coelestinum	blue mistflower							•			•		•	•				•
Coreopsis tripteris	tall coreopsis						•	•			•		•	•				•
Delphinium tricorne	dwarf larkspur						•	•		•	•		•					•
Dicentra cucullaria	Dutchman's breeches						•	•		•	•		•					•
Doellingeria umbellata	flat-top white aster						•	•			•		•	•				•
Equisetum hyemale	horsetail						•	•			•	•	•	•				•
Eupatoriadelphus fistulosus	Joe-pye weed						•	•			•		•	•				•
Eupatorium perfoliatum	common boneset						•	•			•		•	•				•
Helenium autumnale	sneezeweed						•	•			•		•	•				•
Helianthus decapetalus	ten-petaled sunflower						•	•			•		•	•				•
Helianthus divaricatus	woodland sunflower						•	•			•		•					•
Hibiscus moscheutos	Eastern rosemallow						•	•			•		•	•				•
Iris virginica	Virginia blue flag						•	•			•		•	•				•
Kosteletskya virginica	seashore mallow						•	•			•		•	•				•
Lilium superbum	Turk's cap lily						•	•			•		•	•				•
Lobelia cardinalis	cardinal flower						•	•			•		•	•				•
Lobelia siphilitica	great blue lobelia						•	•			•		•	•				•
Maianthemum racemosum	false Solomon's seal						•	•		•	•		•	•				•
Mertensia virginica	Virginia bluebells						•	•			•		•	•				•
Mimulus ringens	monkeyflower						•	•			•		•	•				•
Monarda didyma	bee balm						•	•			•		•	•				•
Nymphaea odorata	American water lily						•	•			•		•	•				•
Oenothera fruticosa	sundrops						•	•			•		•	•				•
Packera aurea+	golden ragwort						•	•		•	•		•	•				•
Peltandra virginica	arrow arum						•	•			•		•	•				•
Phlox divaricata	woodland phlox						•	•		•	•		•	•				•
Phlox paniculata	summer phlox						•	•			•		•	•				•
Podophyllum peltatum+	mayapple						•	•		•	•		•	•				•
Polemonium reptans	Jacob's ladder						•	•			•		•	•				•
Pontederia cordata	pickerel weed							•			•	•	•	•				•
Rhexia virginica	Virginia meadow-beauty						•	•			•		•	•				•
Rudbeckia laciniata	cut-leaved coneflower						•	•			•		•	•				•
Sagittaria latifolia	broadleaf arrowhead						•	•			•	•	•	•				•
Saururus cernuus	lizard's tail						•	•			•	•	•	•				•
Solidago rugosa+	rough-stemmed goldenrod						•	•			•		•	•				•
Symphyotrichum novae-angliae	New England aster						•	•			•		•	•				•
Symphyotrichum novi-belgii	New York aster						•	•			•		•	•				•
Verbena hastata	blue vervain						•	•			•	•	•	•				•
Vernonia noveboracensis	New York ironweed						•	•			•		•	•				•
Viola cucullata	marsh blue violet						•	•			•	•	•	•				•
Viola pubescens	yellow violet						•	•		•	•		•	•				•
Zephyranthes atamasca	Atamasco lily						•	•			•		•	•				•
Ferns & Fern Allies																		
Athyrium asplenioides	Southern ladyfern						•	•		•	•		•	•				•
Botrychium virginianum	rattlesnake fern						•	•		•	•		•	•				•
Onoclea sensibilis+	sensitive fern						•	•			•	•	•	•				•
Osmundastrum cinnamomeum var. cinnamomeum	cinnamon fern						•	•			•	•	•	•				•
Osmunda regalis	royal fern						•	•			•	•	•	•				•
Polystichum acrostichoides	Christmas fern						•	•		•	•		•					•
Thelypteris palustris	marsh fern						•	•			•	•	•	•				•
Woodwardia virginica+	Virginia chain fern						•	•			•	•	•	•				•
Grasses, Sedges & Rushes																		
Agrostis perennans	autumn bentgrass						•	•		•	•	•	•	•				•
Andropogon gerardii	big bluestem						•	•			•	•	•	•				•
Andropogon glomeratus	bushy bluestem						•	•			•	•	•	•				•
Arundinaria gigantea	wild cane						•	•			•	•	•	•				•
Arundinaria tecta	switch cane						•	•			•	•	•	•				•
Carex crinita	long hair sedge						•	•			•	•	•	•				•
Carex lurida	sallow sedge						•	•			•	•	•	•				•
Carex stricta	tussock sedge						•	•			•	•	•	•				•
Chasmanthium latifolium+	river oats, spanglegrass						•	•			•		•	•				•
Dichanthelium clandestinum	deer-tongue						•	•			•		•	•				•
Dichanthelium commutatum	variable panicgrass						•	•			•		•					•
Dulichium arundinaceum	dwarf bamboo						•	•			•	•	•	•				•
Elymus hystrix	bottlebrush grass						•	•			•		•	•				•
Elymus virginicus	Virginia wild rye						•	•			•		•	•				•
Juncus canadensis	Canada rush						•	•			•	•	•					•
Juncus effusus	soft rush						•	•			•	•	•					•
Leersia oryzoides	rice cutgrass						•	•			•	•	•	•				•
Panicum virgatum	switch grass						•	•			•	•	•	•				•
Scirpus cyperinus	woolgrass bulrush						•	•			•	•	•	•				•
Sparganium americanum	American bur-reed						•	•			•		•	•				•
Tripsacum dactyloides	gama grass						•	•			•	•	•	•				•
Typha latifolia	broad-leaved cattail						•	•			•		•	•				•
Zizania aquatica	wild rice						•	•			•		•	•				•
Vines																		
Bignonia capreolata	crossvine						•	•			•		•	•				•
Celastrus scandens	climbing bittersweet						•	•			•	•	•					•
Clematis virginiana	virgin's bower						•	•			•		•	•				•
Parthenocissus quinquefolia	Virginia creeper						•	•			•	•	•	•				•
Shrubs & Small Trees																		
Alnus serrulata	hazel alder						•	•			•	•	•					•
Aronia arbutifolia	red chokeberry						•	•			•		•	•				•
Aronia melanocarpa	black chokeberry						•	•			•	•	•					•
Baccharis halimifolia	high tide bush						•				•		•	•				•
Callicarpa americana	American beautyberry						•	•			•		•	•				•
Cephalanthus occidentalis	buttonbush						•	•			•	•	•	•				•
Clethra alnifolia	sweet pepper-bush						•	•			•		•	•				•
Cornus amomum	silky dogwood						•	•			•	•	•					•
Eubotrys racemosus	fetterbush						•	•			•		•	•				•
Hydrangea arborescens	wild hydrangea						•	•			•		•	•				•
Ilex decidua	deciduous holly						•	•			•	•	•					•
Ilex verticillata	winterberry						•	•			•	•	•	•				•
Itea virginica	Virginia willow						•	•			•	•	•	•				•
Leucothoe axillaris	coastal dog-hobble						•	•			•		•	•				•
Lindera benzoin	spicebush						•	•			•		•	•				•
Morella cerifera	Southern wax myrtle						•	•			•		•	•				•
Rhododendron viscosum	swamp azalea						•	•			•	•	•	•				•
Rubus allegheniensis	Allegheny blackberry						•	•			•		•	•				•
Salix sericea	silky willow						•	•			•	•	•	•				•
Sambucus canadensis	common elderberry						•	•			•	•	•	•				•
Spiraea alba	narrow-leaved meadowsweet						•	•			•		•	•				•
Spiraea latifolia	broad-leaved meadowsweet						•	•			•		•	•				•
Vaccinium corymbosum	highbush blueberry						•	•			•	•	•	•				•
Viburnum dentatum	Southern arrow-wood viburnum						•	•			•		•	•				•
Viburnum prunifolium	black-haw viburnum						•	•			•		•	•				•
Medium Trees																		
Amelanchier arborea	downy serviceberry						•	•			•		•	•				•
Amelanchier canadensis	Canada serviceberry						•	•			•		•	•				•
Amelanchier laevis	smooth serviceberry						•	•			•		•	•				•
Asimina triloba	paw paw						•	•		•	•	•	•					•
Cornus alternifolia	alternate-leaf dogwood						•	•			•		•	•				•
Crataegus viridis	green hawthorn						•	•			•		•	•				•
Morus rubra	red mulberry						•	•			•		•	•				•
Ostrya virginiana	Eastern hop-hornbeam						•	•			•		•	•				•
Persea borbonia	redbay						•	•			•		•					•
Rhus glabra	smooth sumac						•	•			•	•	•	•				•
Salix nigra	black willow						•	•			•	•	•	•				•
Large Trees																		
Acer rubrum	red maple						•	•			•	•	•	•				•
Betula lenta	sweet birch						•	•			•		•	•				•
Betula nigra	river birch						•	•			•	•	•	•				•
Diospyros virginiana	persimmon						•	•			•		•	•				•
Fraxinus americana**	white ash						•	•			•		•	•				•
Fraxinus pensylvanica**	green ash						•	•			•	•	•	•				•
Juglans nigra	black walnut						•	•			•		•	•				•
Liquidambar styraciflua	sweetgum						•	•			•	•	•	•				•
Liriodendron tulipifera	tulip poplar						•	•			•		•	•				•
Nyssa aquatica	water tupelo						•	•			•	•	•					•
Nyssa sylvatica	black gum						•	•			•	•	•	•				•
Oxydendrum arboreum	sourwood						•	•			•		•	•				•
Pinus taeda	loblolly pine						•	•			•	•	•					•
Platanus occidentalis	sycamore						•	•			•		•	•				•
Quercus bicolor	swamp white oak						•	•			•	•	•	•				•
Quercus laurifolia	swamp laurel oak						•	•			•	•	•					•
Quercus michauxii	swamp chestnut oak						•	•			•		•	•				•
Quercus nigra	water oak						•	•			•	•	•					•
Quercus palustris	pin oak						•	•			•		•	•				•
Quercus phellos	willow oak						•	•			•	•	•					•
Taxodium distichum	bald cypress						•	•			•		•	•				•

Virginia Piedmont Region

Rocky falls and rapids on the Potomac, Rappahannock and James rivers mark a transition from the softer sediments of the Coastal Plain to the resistant bedrock underlying the Piedmont. Moving west, the rolling hills of Virginia's Piedmont Plateau steadily climb from the fall line to the foothills of the Blue Ridge Mountains, which form the western boundary of the Piedmont. The hills of the Piedmont become steeper to the west, where monadnocks — remnants of ancient mountains — rise above the farms and forests. The Piedmont is known for moderately fertile but highly eroded clay soils that formed from deeply weathered bedrock. Most of this land was converted to farmland during European settlement. Today, however, mixed pine-oak-hickory forests arising from abandoned farmlands are found throughout the region.

Recommended Uses
W = Wildlife
H = Horticulture & landscaping
C = Conservation & restoration
D = Domestic livestock forage

Minimum Light Requirements
S = Shade
P = Partial sun
F = Full sun

Moisture Requirements
L = Low moisture
M = Moderate moisture
H = High moisture

Some species are marked with the following footnote symbols:

+ May be aggressive in a garden setting
* Due to the rarity and sensitivity of habitat in Virginia, these species are recommended for horticultural use only. Planting these species in natural areas could be detrimental to the survival of native populations.
** May be subject to emerald ash borer infestation.

Virginia Riparian Buffer Zones

- Soils store water, and plants in the forest buffer take up that water

Recommended Uses
W = Wildlife

Scientific Name	Common Name	Uses W	Uses H	Uses C	Uses D	Region M	Region P	Region C	Light S	Light P	Light F	Moisture L	Moisture M	Moisture H	Riparian Zone 1	Riparian Zone 2	Riparian Zone 3	Riparian Zone 4
Juncus canadensis	Canada rush	•		•			•	•		•	•		•	•				
Juncus effusus	soft rush	•		•		•	•	•		•	•		•	•	•	•	•	
Leersia oryzoides	rice cutgrass	•		•		•	•	•		•	•		•	•	•	•	•	
Panicum virgatum	switch grass	•	•	•		•	•	•		•	•	•	•	•	•	•	•	
Saccharum giganteum	giant plumegrass	•	•	•			•	•		•	•		•	•	•	•	•	
Scirpus cyperinus	woolgrass bulrush	•	•	•		•	•	•		•	•		•	•	•	•	•	
Sparganium americanum	American bur-reed	•		•		•	•	•		•	•			•	•			
Tripsacum dactyloides	gama grass	•	•	•	•	•	•	•		•	•		•	•	•	•	•	
Typha latifolia	broad-leaved cattail	•		•		•	•	•			•		•	•	•			
Zizania aquatica	wild rice	•	•	•				•			•			•	•			
Vines																		
Bignonia capreolata	crossvine	•	•			•	•	•		•	•		•	•		•	•	•
Celastrus scandens	climbing bittersweet	•	•			•	•	•		•	•		•					•
Clematis virginiana	virgin's bower		•			•	•	•		•	•		•			•	•	•
Parthenocissus quinquefolia	Virginia creeper	•	•	•		•	•	•		•	•		•			•	•	•
Shrubs & Small Trees																		
Alnus serrulata	hazel alder	•	•	•		•	•	•		•	•			•	•	•	•	
Aronia arbutifolia	red chokeberry		•	•		•	•	•		•	•		•	•		•	•	•
Aronia melanocarpa	black chokeberry		•	•		•	•	•			•	•	•	•		•	•	•
Baccharis halimifolia	high tide bush		•	•			•				•	•	•	•		•	•	
Callicarpa americana	American beautyberry	•	•				•	•		•	•		•				•	•
Cephalanthus occidentalis	buttonbush		•	•		•	•	•			•			•	•	•		
Clethra alnifolia	sweet pepper-bush	•	•	•			•	•		•	•		•	•			•	
Cornus amomum	silky dogwood	•		•		•	•	•		•	•		•	•		•	•	
Eubotrys racemosa	fetterbush		•	•		•	•	•			•		•		•	•		
Hydrangea arborescens	wild hydrangea		•			•	•	•		•	•		•					•
Ilex decidua	deciduous holly	•	•	•			•	•		•	•		•			•	•	•
Ilex verticillata	winterberry	•	•	•		•	•	•			•		•	•		•	•	•
Itea virginica	Virginia willow	•	•	•				•		•	•			•		•	•	
Leucothoe axillaris	coastal dog-hobble		•					•		•			•			•	•	
Lindera benzoin	spicebush	•	•	•		•	•	•		•			•				•	•
Myrica cerifera	Southern wax myrtle	•	•	•				•		•	•	•	•		•	•	•	•
Rhododendron viscosum	swamp azalea		•	•		•	•	•			•		•	•	•	•		
Rubus allegheniensis	Alleghany blackberry	•	•	•		•	•				•	•				•	•	•
Salix sericea	silky willow		•	•		•	•	•			•		•			•	•	
Sambucus canadensis	common elderberry	•	•	•		•	•	•			•		•	•		•	•	•
Spiraea alba	narrow-leaved meadowsweet	•	•	•		•					•		•			•	•	
Spiraea latifolia	broad-leaved meadowsweet	•	•	•		•					•		•			•	•	•
Vaccinium corymbosum	highbush blueberry	•	•	•			•	•		•	•	•	•	•		•	•	
Viburnum dentatum	Southern arrow-wood viburnum	•	•	•			•	•			•	•	•			•		
Viburnum prunifolium	black-haw viburnum	•	•	•			•	•			•		•				•	•
Medium Trees																		

Restoration/Establishment Table A

A. ¼ acre or less of buffer

(Up to 10,890 square feet or less of buffer area.)

For every 400 square-foot unit (20'x20') or fraction thereof, plant:

one (1) canopy tree @ 1½" - 2" caliper or large evergreen @ 6'
two (2) understory trees @ ¾" – 1 ½" caliper or evergreen @ 4'
or *one* (1) understory tree and *two* (2) large shrubs @ 3'-4'
three (3) small shrubs or woody groundcover @ 15" – 18"

Example:
A 100-foot wide lot x 100-foot wide buffer is 10,000 square feet.
Divide by 400 square feet (20'x20' unit) to get:
25 units

Units	x	plant/unit	Number of plants
25 units	x	1 canopy tree	25 canopy trees
		2 understory trees	50 understory trees
		3 small shrubs	75 small shrubs
			150 plants

Restoration/Establishment Table B

Greater than ¼ acre of buffer

More than 10,890 square feet

A. Plant at the same rate as for ¼ acre or less.

B. The waterside 50% of the buffer (from the waterline inland for the first 50 feet):
For every 400 square-foot unit (20'x20') or fraction thereof plant:

one (1) canopy tree @ 1½" - 2" caliper or large evergreen @ 6'
two (2) understory trees @ ¾" – 1 ½" caliper or evergreen @ 4'
or *one* (1) understory tree and *two* (2) large shrubs @ 3'-4'
three (3) small shrubs or woody groundcover @ 15" – 18"
AND

The landward 50% of buffer (from 50 feet inland to 100 feet inland):
either plant
Bare root seedlings or whips at 1,210 stems per acre[1], approximately 6'x6' on center (Minimum survival required after two growing seasons: 600 plants)
or
Container grown seedling tubes at 700 per acre approximately 8'x 8' on center (Minimum survival required after two growing seasons: 490 plants)

C. If the applicant is willing to enter into a five year maintenance and performance guarantee: 100% of buffer planted with:
Bare root seedlings or whips at 1,210 per acre, approximately 6'x 6' on center (Minimum survival required after two growing seasons: 600 plants)
or
Container grown seedling tubes at 700 per acre approximately 8'x 8' on center (Minimum survival required after two growing seasons: 490 plants)

1 acre or more of buffer

With an evaluation from an arborist or forester or other professional, natural regeneration may be an acceptable method of buffer establishment, however, a forestry management plan must be in place prior to any vegetation being removed. A minimum of 35 feet next to the water must be left in forest and protected prior to any vegetation being removed. If over 20 percent of the vegetation must be removed for the health of the woodlot, within the 35 feet closest to the shore-line, vegetation must be reestablished by seedling plantings at the rates above.

[1] Palone, Roxanne S., and Al Todd, *Chesapeake Bay riparian handbook: A guide for establishing and maintaining riparian forest buffers*. May 1977. p. 7-20.

Vision and Goals for Stream Health in our Community

VISION: *Albemarle County will have clean, healthy stream systems that allow for safe utilization and support a diverse and resilient natural environment and a thriving rural economy. The quality of the water and riparian areas will provide important benefits such as drinking water protection, climate resilience, protection of biodiversity, erosion and sediment control, flood mitigation, and scenic beauty; and will maintain healthy aquatic and terrestrial habitat, support agriculture and other rural industries, and safely allow for recreational uses such as swimming, boating, and fishing.*

GOAL 1: Maintain and improve local conditions to ensure that our streams and rivers are meeting or exceeding the state water quality standards.

GOAL 2: Increase our understanding of the status and needs of our waterways through monitoring and assessment within our watersheds.

GOAL 3: Strengthen programs, policies, and enforcement mechanisms to have clear, effective, and enforceable measures.

GOAL 4: Increase and promote incentives and voluntary measures that protect stream health.

GOAL 5: Protect and restore riparian systems to maintain and enhance the benefits they provide to people and the natural environment.

GOAL 6: Foster a well-informed and educated public that understands the importance of stream health, local policies, best management practices, and individual actions that can affect stream health.

Acceptable and unacceptable buffer activities are listed in the boxes below.

— What can I do in my buffer area? —

- can establish foot access to water
- can remove dead/dying/diseased trees, noxious weeds, and invasive exotic plants
- can establish reasonable sightlines and vistas

"It is easier and cheaper to leave existing buffers than to plant new ones ."

— What can't I do in my buffer area? —

- building activities are not permitted in the buffer area
- clear cutting of vegetation to achieve sight lines or vistas
- converting groundcover plants to turf grass
- filling and grading land
- applying pesticides, herbicides, and fertilizer is discouraged

Source: CBLAD

Unacceptable removal of vegetation for vista.

In June of 1991, Albemarle County became the first (and remains the only) non-Tidewater locality in Virginia to voluntarily adopt a local Chesapeake Bay protection ordinance that requires buffers and limits activities along waterways. Buffers play a critical role in improving the water quality of tributaries that flow into the Chesapeake Bay. With your assistance we can help make the restoration of the Chesapeake Bay ecosystem a reality.

— Consequences —

- A buffer area shall be maintained if present and allowed to establish where it does not exist.
- If the buffer area is disturbed, the County will require the property owner to plant new vegetation to correct the problem and may impose monetary fines.

If you have questions regarding your buffer area, please contact:

Natural Resources Manager
Department of Community Development
Albemarle County, VA
401 McIntire Rd., Charlottesville 22902
(434) 296-5832 x3264

Additional Resources:

Chesapeake Bay Local Assistance Department; *Riparian Buffer Modification & Mitigation Guidance Manual*
(http://www.cblad.virginia.gov/ripbuffstat.cfm)

Buffers and Water Quality

A property owner's guide to manage riparian buffers and protect water resources

Reflects revisions of 2-6-08

You play a critical role in the health of our streams, rivers, and reservoirs. As a property owner in Albemarle County, you are responsible for the long-term maintenance of riparian buffers along waterways on your land. This pamphlet was designed to provide guidance to help you understand and meet these obligations.

What are riparian buffers?

A riparian buffer is an area of vegetation adjacent to a stream, reservoir, wetland, or pond that is managed and protected. A healthy buffer consists of trees, shrubs, and ground cover that:

- slows down and filters stormwater runoff to protect water quality
- prevents erosion
- provides shade and habitat for fish and other aquatic life

Why are riparian buffers important?

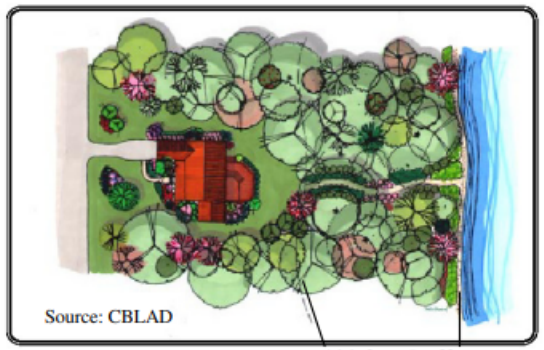
Buffers retard runoff, prevent erosion, and filter nonpoint source pollution. Buffers have a profound impact on the health of streams, rivers, and reservoirs. Buffers protect water quality, stabilize stream channels and shorelines, provide important habitat and food for fish and wildlife, reduce sedimentation and erosion, filter pollutants like nitrogen and phosphorus, and moderate water temperature by providing shade.

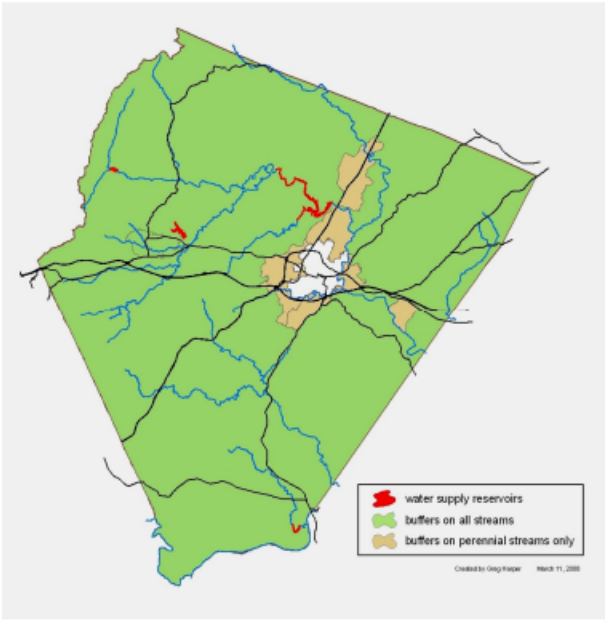
Where are buffers required?

Albemarle County's Water Protection Ordinance requires that buffers be preserved or established along certain water features. Specific requirements depend on where you reside. General guidelines are listed below (refer to map at right):

- In the majority of the County (rural lands and areas that drain to public water supply reservoirs and intakes), 100-foot buffers are required on both sides of **all** streams, regardless of whether they flow year-round or just part of the year.
- In the remainder of Albemarle County (areas in tan), 100-foot buffers are required on both sides of streams that flow year-round.
- On lands adjacent to public water supply reservoirs (areas in red), buffers must extend 200 feet from the 100-year floodplain.
- Around ponds associated with streams requiring buffers, 100-foot buffers are required.
- Other requirements may apply along wetlands floodplains.

Diagram of buffer area





"Buffers can benefit you through increased property values, reduction in noise, and saving land from erosion."

How do I maintain my buffer?

- keep existing areas wooded
- allow for native plants to establish
- minimize lawn area; grass root systems are not strong enough to resist erosion along stream banks

The diagram at left shows how you can provide an access path to the water, a view of the water from the house (sight line), and maintain the 100-foot buffer.

Stream Health Initiative Phase II Proposals

		EXISTING STAFF TIME	ADDITIONAL STAFF TIME (FTEs)	TIMEFRAME (YEARS)	COST	ALIGNMENT
1	Stream Buffer Overlay District	2	1	1		
2	Strengthen Restoration & Mitigation Requirements	1		1½	$	
3	Environmental Restoration ZTA	1		¼		
4	Sustainable Onsite Sewage Treatment Systems	3	4	5	$$$$	
5	Development Phase Carryover Items	1	2	1		
6	Land Conservation for Water Quality	2	1	1		
7	Riparian Conservation Assistance Program	2		1	$$$	
8	Stability for Agricultural Cost-Share Programs	1			$$	
9	Leverage Agricultural BMP Incentives	2	1	½	$$$	
10	Expand Albemarle Conservation Assistance Program (ACAP)	1			$$	
11	Low-Impact Development Study	2		1 1		
12	Stream Quality Assessment Program	2		1	$	
13	New Landowner Education Project	2		1½	$	
14	Expand Watershed Education in Schools	2		1	$	

CDD Led Project
FES Led Project

0-80 Hours
81-320 Hours
>320 Hours

Recurring Cost

$ <$50,000
$$ $51,000-100,000
$$$ $100,000-500,000
$$$$ >$500,000

COMPREHENSIVE PLAN
CLIMATE ACTION PLAN
BIODIVERSITY ACTION PLAN