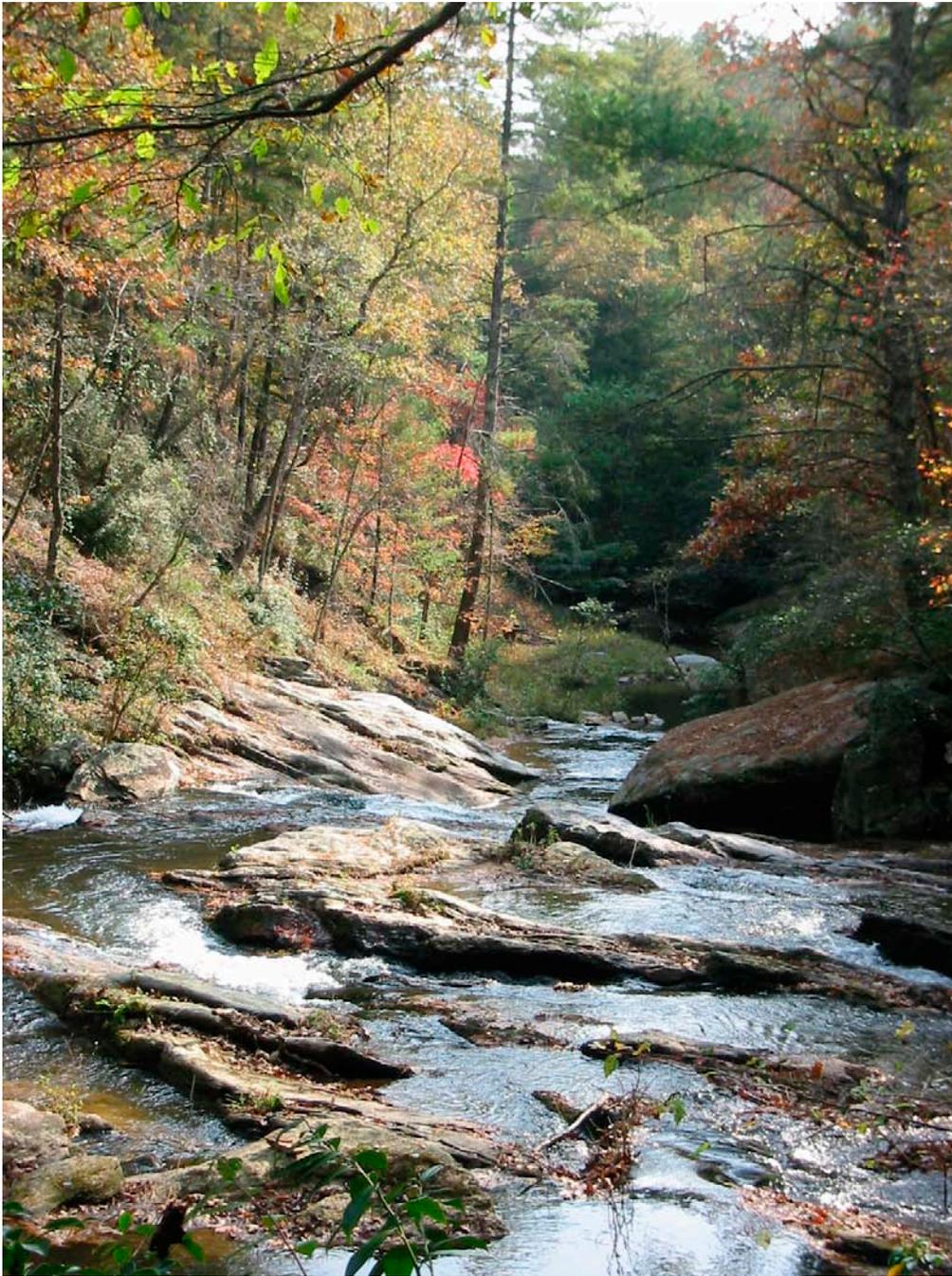


# Cobb County Stream Buffer Revegetation Guidelines

*February 2006*



**PREPARED BY:**

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## Purpose

This document has been developed to provide local issuing authorities and citizens a framework for developing an appropriate landscape plan in situations where a stream/state waters buffer is to be restored and/or enhanced. While this document provides general guidelines, specific site requirements must be properly evaluated to ensure the successful re-establishment of disturbed buffer areas.

## State Waters that Require Stream Buffers

The term “state waters” is defined in Section 12-7-3(16) of the Georgia Erosion and Sedimentation Act as follows: “Any and all rivers, stream, creeks, branches, lakes reservoirs, ponds, drainage systems, springs, wells and other bodies of surface, or subsurface water, natural or artificial, lying within or forming a part of the boundaries of the State which are not entirely confined and retained completely upon the property of a single individual, partnership or corporation.”

## Buffer Revegetation Guidelines

Areas within all buffers must have 100-percent coverage with native plants. Refer to attached Appendix A for a list of suitable plants. These plants shall be installed in the following proportions:

- 40% Large Trees – only 20% of the total quantity of large trees may be pine
- 25% Small Trees
- 20% Shrubs
- 15% Forbs -Grasses/Ground Cover/Perennials
- Plus – Installation of Native Grasses of Areas Disturbed

Plants in each category have the following square-foot value:

Large Trees:	200 sq.ft. each, minimum 10' height and 1 ½" caliber.
Small Trees:	100 sq.ft. each, minimum 6-8' height
Shrubs:	25 sq.ft. each, minimum 3 gallon size
Forbs:	25 sq.ft. each, minimum 1 gallon size
Native Grass Seeding	Should Consist of Stabilization of Impacted Area

Generally, no more than 25% of the trees and shrubs required may be one species. For example, if coverage requires 100 large trees, at least four species must be used, with 25 trees of each species.

**EXAMPLE:** A 50' buffer of 200' in length must be totally revegetated.

Buffer 200' long x 50' wide	= 10,000 sq.ft. to be covered with vegetation
25% x 10,000 sq.ft.	= 2500 sq.ft. of plants from each category
Large Trees	= 4000 sq.ft. / 200 sq.ft. each = 20 trees required (spaced out over area)
Small Trees	= 2500 sq.ft. / 100 sq.ft. each = 25 trees required (spaced out over area)
Shrubs*	= 2000 sq.ft. / 25 sq.ft. each = 80 shrubs required
Forbs*	= 1500 sq.ft. / 25 sq.ft. each = 60 plants required.
Native Grass Seeding	= (area disturbed)

*\*These species should be planted in groupings (4-6 mixture) rather than spaced out over the entire area.*

Plants used for renegotiation should be chosen from the Appendix A Plant List. These plants were selected for their suitability for planting along streambanks, lake edges, wetlands and other aquatic sites.

## **Site Condition Considerations**

Special consideration should be given to selecting plant material to match site conditions. Selection of plant material should be based on the proximity of state waters and the associated flood zone. The following information should be utilized in plant selection:

Bank Zone (#1): This zone represents that portion of the buffer that is directly adjacent to state waters and that is subject to regular inundation from “normal” hydrologic events.

*Note:* In situations where streambanks have been disturbed, additional consideration should be given to the proper design and execution of work to prevent streambank erosion. Work to be completed in this section of the buffer may require special work utilizing geotextile, soil-bioengineering, structural elements and other techniques. Additional information about this type of restoration work can be found at the Georgia Soil and Water Commission website (<http://gaswcc.georgia.gov>). It may be necessary to secure the services of a qualified expert in the design of these critical areas.

Overbank Zone (#2): This zone represents that portion of the buffer that may receive periodic flooding due to large storm events.

Upland Zone (#3): This zone is that portion of the buffer which will generally not be affected by flood events.

See attached diagram illustrating Distinct Zones.

## **Planting Notes**

1. The normal planting season for installation of plant materials for restoration work is October 15-April 15. If plant installation is to occur during the growing season, special consideration should be given for supplemental irrigation to ensure survival of installed plant materials.
2. The attached plant list is provided as a guideline for the selection of plants material to be utilized in restoring buffer areas. Please consult an expert for the specifics regarding your site conditions. The list provided is not inclusive, but generally represents the majority of native plant material that is grown by nurseries. Cultural requirements were drawn from: Dirr (1983) *Manual of Woody Landscape Plants*; Foote & Jones (1989) *Native Shrubs and Woody Vines of the Southeast*; Jones & Foote (1990) *Gardening with Native Wildflowers*; and Brown & Kirkman (1990) *Trees of Georgia and Adjacent States*.

For more information about these guidelines or other issues regarding buffer revegetation, please consult the following contacts within your jurisdiction:

<b>Issuing Authority</b>	<b>Name</b>	<b>Phone</b>	<b>Email</b>
City of Acworth	Amanda Blowers	770-975-0346	ablowers@acworth.org
City of Austell	Randy Bowen	770-944-4325	inspector@austell.org
City of Kennesaw	Steve Turner	770-429-4552	sturner@kennesaw.ga.us
Cobb County	David Griffin	770-528-2130	david.griffin@cobbcounty.org
City of Marietta	Richard King	770-794-8110	rking@mariettaga.gov
City of Powder Springs	Roger Swain	770-943-8010	reswain@cityofpowdersprings.org
City of Smyrna	Ken Hildebrandt	770-319-5380	khildebrandt@ci.smyrna.ga.us

*Some information contained herein was adapted from the Fulton County River Tributary and State Waters Buffer Revegetation Standards April 10, 1996 (Revised 1/27/2000).*

## Appendix A: Plant List

### A. LARGE TREES (40%)

		Zone	Hardiness
Red Maple	<i>Acer rubrum</i>	1,2,3	Good
River birch	<i>Betula nigra</i>	1,2,3	Good
Shagbark Hickory	<i>Carya ovata</i>	2,3	Good
Sugarberry	<i>Celtis laevigata</i>	1,2,3	Good
Persimmon	<i>Diospyros virginiana</i>	2,3	Good
American Beech	<i>Fagus grandifolia</i>	2,3	Good
White Ash	<i>Fraxinus americana</i>	2,3	Good
Green Ash	<i>Fraxinus pennsylvanica</i>	1,2,3	Good
Sweetgum	<i>Liquidambar styraciflua</i>	1,2,3	Good
Tulip Poplar	<i>Liriodendron tulipifera</i>	2,3	Good
Southern Magnolia	<i>Magnolia grandiflora</i>	2,3	Good
Black Gum	<i>Nyssa sylvatica</i>	2,3	Good
Loblolly Pine	<i>Pinus taeda</i>	2,3	Good
Virginia Pine	<i>Pinus virginiana</i>	3	Good
Sycamore	<i>Platanus occidentalis</i>	1,2,3	Good
White Oak	<i>Quercus alba</i>	2,3	Good
Southern Red Oak	<i>Q. falcata</i>	2,3	Good
Overcup Oak	<i>Q. lyrata</i>	1,2,3	Good
Swamp Chestnut Oak	<i>Q. michauxii</i>	1,2,3	Good
Red Oak	<i>Q. rubra</i>	2,3	Good
Shumard Oak	<i>Q. shumardii</i>	1,2,3	Good
Water Oak	<i>Q. nigra</i>	1,2,3	Good
Willow Oak	<i>Q. phellos</i>	1,2,3	Good
Black Willow	<i>Salix nigra</i>	1,2	Good
Bald Cypress	<i>Taxodium distichum</i>	2	Good

### B. SMALL TREES (25%)

Florida Maple	<i>Acer barbatum</i>	2,3	Good
Red Buckeye	<i>Aesculus pavia</i>	2,3	Good
Serviceberry	<i>Amelanchier canadensis</i>	2,3	Fair
Ironwood	<i>Carpinus caroliniana</i>	1,2,3	Good
Redbud	<i>Cercis canadensis</i>	2,3	Good
Dogwood	<i>Cornus florida</i>	2,3	Good
Hawthorn	<i>Crataegus phaenopyrum, Crataegus spp.</i>	2,3	Good
Carolina Silverbell	<i>Halesia carolina</i>	2,3	Fair
American Holly	<i>Ilex opaca</i>	2,3	Good
Sweetbay	<i>Magnolia virginiana</i>	1,2,3	Good
Southern Crabapple	<i>Malus angustifolia</i>	3	Good
Hophornbeam	<i>Ostrya virginiana</i>	2,3	Good
Sourwood	<i>Oxydendrum arboreum</i>	3	Good

### C. SHRUBS (20%)

Buckeye	<i>Aesculus sylvatica</i>	2,3	Good
Tag Alder	<i>Alnus serrulata</i>	1,2	Good
Red Chokeberry	<i>Aronia arbutifolia</i>	1,2,3	Fair
Pawpaw	<i>Asimina triloba</i>	2,3	Fair
Sweetshrub	<i>Calycanthus floridus</i>	2,3	Good

## Appendix A: Plant List

American Beautyberry	<i>Callicarpa americana</i>	2,3	Good
Buttonbush	<i>Cephalanthus occidentalis</i>	1,2	Good
Sweet Pepperbush	<i>Clethra alnifolia</i>	1,2,3	Good
Silky Dogwood	<i>Cornus amonum</i>	1,2	Good
American Strawberry Bush	<i>Euonymus americanus</i>	2,3	Good
Witchhazel	<i>Hamamelis virginiana</i>	2,3	Good
Inkberry	<i>Ilex glabra</i>	2	Fair
Oak-leaf Hydrangea	<i>Hydrangea quercifolia</i>	2,3	Good
Florida Anise	<i>Illicium floridanum</i>	2,3	Good
Small Anise	<i>I. parviflorum</i>	2,3	Good
Possumhaw	<i>Ilex decidua</i>	1,2	Good
Winterberry	<i>I. verticillata</i>	1,2	Good
Itea, Virginia Sweetspire	<i>Itea virginica</i>	1,2	Good
Mountain Laurel	<i>Kalmia latifolia</i>	2	Poor
Spice Bush	<i>Lindera benzoin</i>	2	Good
Dog Hobble	<i>Leucothoe spp.</i>	1,2	Poor
Wax Myrtle	<i>Myrica cerifera</i>	2,3	Good
American Devilwood	<i>Osmanthus americanus</i>	2,3	Fair
Chickasaw and Hog Plum	<i>Prunus angustifolia, P. umbellata</i>	2,3	Good
Wild Plum	<i>P. americana</i>	2,3	Good
Piedmont Azalea, other natives	<i>Rhododendron canescens,</i>	2,3	Fair
( <b>Note:</b> <i>Jap. Evergreen azaleas</i>	<i>R. periclymenoides, R. flammum,</i>		
are not acceptable)	<i>R. calendulaceum, R. viscosum, etc</i>		
Dwarf Rhododendron	<i>Rhododendron minus</i>	2	Fair
Smooth or Winged Sumac	<i>Rhus glabra, R. copallinum</i>	3	Good
Elderberry	<i>Sambucus canadensis</i>	1,2	Good
Maple-leaf Viburnum	<i>Viburnum acerifolium</i>	2,3	Fair
Swamphaw Viburnum	<i>Viburnum nudum, V. cassinoides</i>	1,2	Good

### D. FORBS/GROUNDCOVERS/PERENNIALS (15%)

#### **Ferns**

Sensitive fern	<i>Onoclea sensibilis</i>	2	Fair
Cinnamon fern	<i>Osmunda cinnamomea</i>	2	Fair
Royal fern	<i>Osmunda regalis</i>	2	Fair
Christmas fern	<i>Polystichum acrostichoides</i>	2	Fair
Virginia Chain fern	<i>Woodwardia virginica</i>	2	Fair

#### **Flowers**

Butterflyweed	<i>Asclepias tuberosa</i>	2,3	Fair
New England Aster	<i>Aster novae-angliae</i>	2,3	Fair
Turtlehead	<i>Chelone lyonii</i>	2,3	Fair
Lanceleaved Coreopsis	<i>Coreopsis lanceolata</i>	2,3	Fair
Bleeding heart	<i>Dicentra eximia</i>	2,3	Fair
Hardy ageratum	<i>Eupatorium coelestinum</i>	2,3	Fair
Joe-Pye Weed	<i>Eupatorium fistulosum</i>	2,3	Fair
Wild Geranium	<i>Geranium maculatum</i>	2,3	Fair
Narrow-leaved sunflower	<i>Helianthus angustifolius</i>	2	Fair
Hibiscus ( <b>Note:</b> <i>not</i> shrub <i>althea</i> )	<i>Hibiscus coccineus, H. moscheutos</i>	2	Fair
Gayfeather	<i>Liatris spicata, L. aspera</i>	2,3	Fair
Cardinal Flower	<i>Lobelia cardinalis</i>	2	Fair
Great Lobelia	<i>Lobelia siphilitica</i>	2	Fair
Partridgeberry	<i>Mitchella repens</i>	2	Poor

## Appendix A: Plant List

Evening Primrose	<i>Oenothera speciosa, O. fruticosa</i>	2	Fair
False Dragonhead, Obedient Plant	<i>Physostegia virginiana</i>	2,3	Fair
Solomon's Seal	<i>Polygonatum biflorum</i>	2	Fair
Goldsturm Black-Eyed Susan	<i>Rudbeckia fulgida "Goldsturm"</i>	2,3	Good
Black-Eyed Susan	<i>Rudbeckia hirta</i>	2,3	Good
False Solomon's Seal	<i>Smilacina racemosa</i>	2,3	Fair
Goldenrod	<i>Solidago spp.</i>	2,3	Fair
Stoke's Aster	<i>Stokesia laevis</i>	2,3	Fair
Foamflower	<i>Tiarella cordifolia</i>	2	Poor
Spiderwort	<i>Tradescantia virginiana</i>	2,3	Fair
Ironweed	<i>Vernonia noveboracensis</i>	2,3	Good
Yellow-root	<i>Xanthorhiza simplicissima</i>	1,2	Good

### E. EMERGENTS FOR WETLAND/BOG AREAS (Not Applicable for Buffer Revegetation)

Blue-flag Iris	<i>Iris virginica, I. versicolor</i>
Soft Rush or other native rushes	<i>Juncus effusus</i>
Arrow Arum	<i>Peltandra virginica</i>
Pickerelweed	<i>Pontederia cordata</i>
Arrowhead-Duck Potato	<i>Sagittaria latifolia</i>
Lizardtail	<i>Saururus cernuus</i>
Bulrush	<i>Scirpus validus</i>
Fire Flag	<i>Thalia dealbata</i>

### F. SUGGESTED GRASSING SPECIES

\* Seeding Rates Based on Pure Live Seed

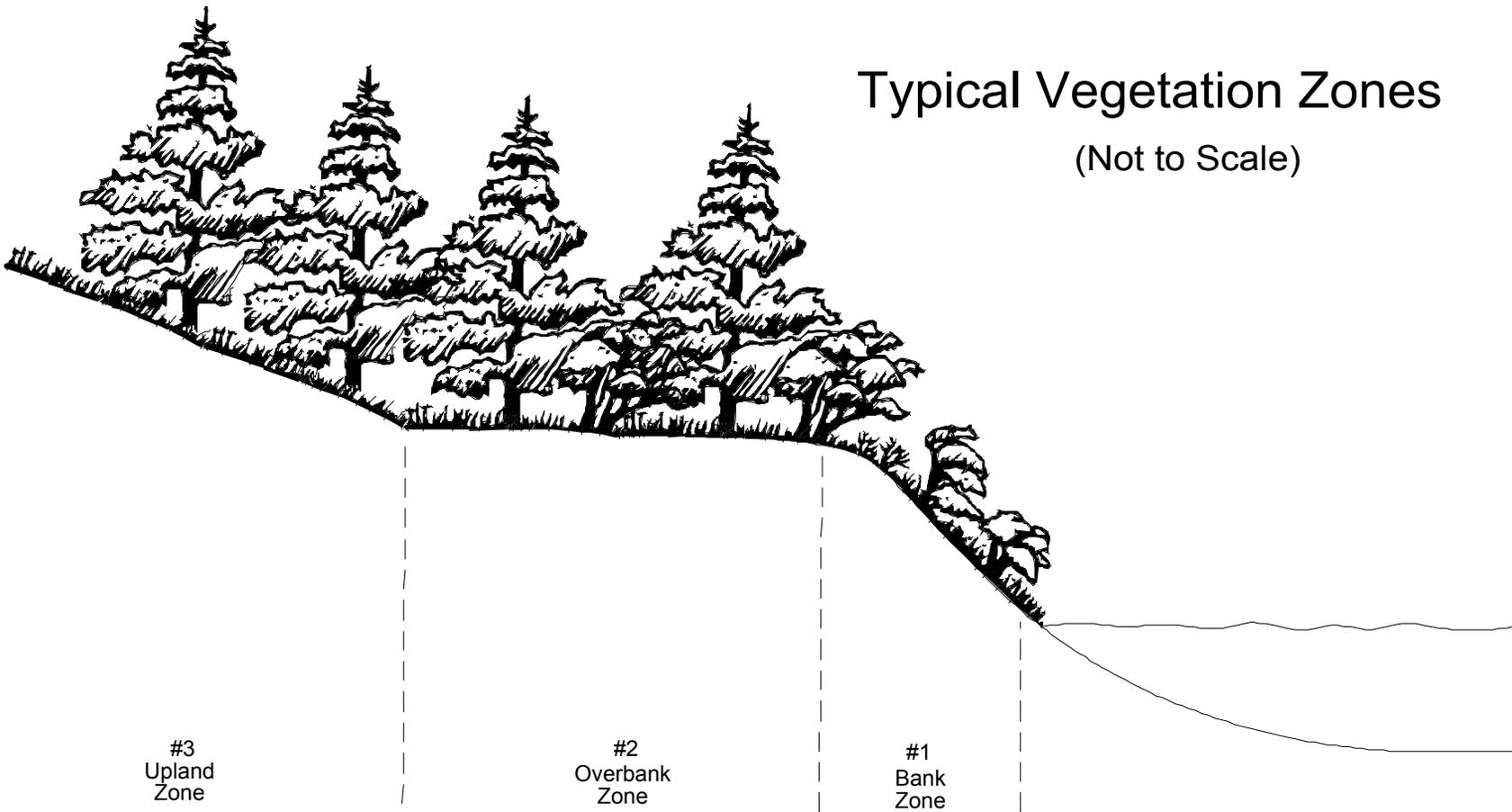
		Type	Seeding Rate Lbs /Acre
Big Bluestem	<i>Andropogon gerardii</i>	Warm	25
Side-Oats Grama	<i>Bouteloua curtipendula</i>	Warm	20
Wild Rye	<i>Elymus virginicus, E. canadensis</i>	Cool	20
Switchgrass	<i>Panicum virgatum</i>	Warm	10
Little Bluestem	<i>Schizachyrium scoparium</i>	Warm	14.5
Indian Grass	<i>Sorghastrum nutans</i>	Warm	22
Eastern Gamagrass	<i>Tripsacum dactyloides</i>	Warm	22

#### Notes

1. Seeding rates based on pure live seed.
2. Plant species selected are based on commercial availability.
3. Other commercial mixtures can be used.
4. Use annual rye as cover crop when seeding during the dormant season.
5. The hardiness rating as noted is based on the individual species' ability to survive adverse conditions during the initial establishment period.

# Typical Vegetation Zones

(Not to Scale)



#3  
Upland  
Zone

#2  
Overbank  
Zone

#1  
Bank  
Zone

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## APPENDIX B

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