

Newton Conservation Commission's Tree Replacement and Mitigation/Restoration Planting Consolidated Guidelines

Feb 1, 2023

Introduction – Developing a Planting Plan

These Guidelines have been developed to assist applicants as they develop planting plans as part of a conservation/wetlands filing. The Guidelines summarized here reflect the interests of the Wetlands Protection Act and Regulations, the Newton Conservation Commission's interest in promoting healthy native ecosystems, and best practices for plant installation and maintenance. Every site is unique. Applicants should consider site characteristics, protection of water resources, and wildlife protection as they develop a planting plan. *Note: Modifications to approved plans must be approved by Conservation staff.*

Tree Replacement Guidelines -- A Summary

- Appropriate mitigation will vary project-by-project and site-by-site.
- For each 1 inch of tree over 8" DBH removed, ½ caliper inch (measured 6 inches off the ground) must be planted. Replacement trees must be at least 1-2 caliper inches.
- For each shrub over 4' tall or 4' wide removed, two 1-gallon shrubs shall be planted.
- Replacement trees and shrubs shall be native species.
- Replacement trees and shrubs shall replace lost tree (and shrub) functions and optimize density.
- Location of replacement trees and shrubs shall optimize wildlife habitat value.
- Special Circumstances:
 - If the trees or shrubs being replaced are invasive, mitigation requirements may be reduced.
 - If the trees or shrubs being replaced are hazards, mitigation requirements may be reduced:

DBH of hazard tree cut	Number of 1" caliper, 8' tall saplings to be planted	Number of shrubs to be planted
8-16"	1	2
16"-24"	2	3
>24"	3	5

- If the trees or shrubs being replaced are on small lots, mitigation requirements may be reduced.
- If the trees or shrubs being replaced are large trees (i.e., over 24" DBH), mitigation caliper inch requirements may be reduced, but species selection may be limited to large canopy tree(s).
- If the trees or shrubs being replaced are in the inner 50-foot Buffer Zone, mitigation requirements may be increased.
- In enforcement situations, mitigation requirements may be increased.
- If the tree being removed is a "legacy tree" (any live native tree greater than or equal to 21" DBH and greater than 150 years old), mitigation requirements may be modified.

Mitigation Planting Area Guidelines -- Location

- To provide maximal ecological benefit, planting areas should:
 - Be sited away from buildings and/or roads when possible, and
 - Be sited adjacent to other natural areas when possible.

Mitigation Planting Area Guidelines – Layout/Design

- A clear planting plan/map that clearly illustrates the locations and the species of the plants to be installed (reflecting the sizes of the plants as they near maturity) is important.
- A good planting plan can help create desired habitat areas and avoid potential conflicts.
- Planting areas should be as large and consolidated as possible (small, isolated, or narrow planting areas have limited ecological value)

- Planting areas should have no walls or fences within or around them
- Planting areas should have an appropriately “natural” “clumping” of plant types and species.

Mitigation Planting Area Guidelines -- Plant Density and Sizes

In addition to the species of plants to be included in a mitigation/restoration area, it is important to consider the sizes and density of plants to be installed. Very small plants may struggle to take hold or may be susceptible to browse. Very large plants may suffer stress and struggle to survive. Plans should show sizes at the time of installation.

Plant Spacing Best Practices (courtesy of King Co. WA)			
Type of Plant	Planting distance	Planting density	Size at time of installation
Groundcover	2' on center	25.0 per 100 sf	4"-1 gallon, 10" plugs, or seed mix
Groundcover w/ shrubs	4' on center	6.3 per 100 sf	4" container, plugs,
Shrubs	5' on center	4.0 per 100 sf	1'-3' tall = 1 gal.; 2'-4' tall = 2 gal.
Shrubs w/ trees	6' on center	3.0 per 100 sf	1'-3' tall = 1 gal.; 2'-4' tall = 2 gal.
Saplings/small trees	10' on center	1.0 per 100 sf	1 caliper inch / 6-8 feet tall
Canopy trees	15' on center	0.4 per 100 sf	2 caliper inches / 8-10 feet tall

Mitigation Planting Area Guidelines -- Plant Varieties

- Plants native to central or northeastern North America are preferable.
- Plants with high wildlife habitat value are preferable.

Mitigation Planting Area Guidelines – A Mix of Trees, Shrubs, and Ground Covers

The chart below is designed to be used as an aid for planning mitigation/restoration areas. Four scenarios are show for mitigation planting areas of different sizes, with possible numbers of plants shown.

- Some sites/projects will accommodate/require mostly shrubs and groundcover
- Some sites/projects will accommodate/require some small understory trees
- Some sites/projects will accommodate/require some canopy trees

KEY: GC = ground cover, Shr = shrub, UTr = understory tree, CTr = canopy tree

Planting Area	Square Layout	Narrow Layout	Numbers of Plants of Different Varieties		
			Shrub	Understory	Canopy
			GC / Shr	GC / Shr/ UT	GC / Shr / UT / CT
100 sf	10 x 10	n.a.	25 / 0	6 / 4 / 0	6 / 2 / 1 / 0
200 sf	14 x 14	10 x 20	50 / 0	12 / 8 / 0	12 / 6 / 2 / 0
300 sf	17 x 17	10 x 30	19 / 12	100 / 3 / 3	100 / 4 / 1 / 1
400 sf	20 x 20	10 x 40	25 / 16	25 / 12 / 4	25 / 10 / 2 / 1
500 sf	22 x 22	15 x 33	n.a.	31 / 15 / 5	31 / 12 / 3 / 1
600 sf	25 x 25	15 x 40	n.a.	38 / 18 / 6	38 / 15 / 4 / 1
700 sf	26 x 26	15 x 47	n.a.	44 / 21 / 7	44 / 18 / 4 / 1
800 sf	28 x 28	15 x 53	n.a.	n.a.	50 / 24 / 5 / 1
900 sf	30 x 30	20 x 45	n.a.	n.a.	57 / 27 / 5 / 2
1000 sf	32 x 32	20 x 50	n.a.	n.a.	63 / 30 / 6 / 3

Mitigation Planting Area Guidelines – Site Preparation and Planting Practices

1. Mix compost or other organic amendments into the soil to increase water-holding capacity.
2. Dig planting hole
 - For trees, dig only as deep as needed to keep the trunk flare at ground level.
 - Always dig the hole at least three times the diameter of the root ball.
3. Remove all (or at least the top third) of burlap and wire baskets from the root ball and install plant.
4. Stake large trees for stability for one growing season.
5. Water all plants thoroughly at the time of planting (15-20 gal. per plant).
6. Mulch root zones with 2 inches of mulch.
7. No fertilization is necessary at planting time.

Mitigation Planting Area Guidelines – Maintenance (from Planting through Establishment)

- Water: All newly planted areas should receive approximately 1" of water per week during the growing season from April through October. Temporary irrigation may include drip tubing on a timer to be removed after establishment or TreeGators™.
- Mulch: Root zones of newly planted trees and shrubs should be mulched to a depth of 2" to 2 ½" to the drip-line, except for the area directly adjacent to the trunk. Mulching materials may include shredded leaves, aged wood chips, bark mulch, or other conservation commission approved material; or may be a hydro-seeded mixture of grasses and forbs. If hydro-seeding, a minimum of 4" of topsoil should be put down prior to seeding. On steep slopes, biodegradable erosion fabric may be used. Efforts will be made to prevent erosion and sedimentation in the planted areas.
- Weeding: Hand removal of weeds is to be conducted where appropriate.
- Fertilizer: No fertilizer should be applied at planting. In subsequent years, slow release fertilizers may be appropriate based on plant growth.
- Removal of invasive species: Consideration shall be given to the removal of those species of plants listed by the Mass. Dept. of Agricultural Resources Division of Regulatory Services.