

ZONING

390 Attachment 11

Township of West Vincent

Appendix K

Recommended Best Practices for Timber Harvest Operations [Added 10-17-2022 by Ord. No. 202]

Purpose

The purpose of this document is to support the requirements of Section 390-166 of the West Vincent Township Zoning Ordinance (ZO) pertaining to the harvesting of timber. The following best practices are recommended help to protect site integrity, prevent environmental impacts, enhance stand regeneration, reduce equipment wear-and-tear, and improve cost and labor-efficient harvest operations.

Site Assessment and Planning

The landowner/operator should determine the boundaries of the following sensitive features within the timber harvest area. The landowner/operator is encouraged to protect these features in timber harvesting operations. Features marked with an asterisk (*) may be subject to state and/or federal protections:

- **Hydrologic:**
 - Perennial/ ephemeral streams*
 - Wetlands, seeps, vernal pools*
 - Floodplains, riparian buffers
 - Poorly drained soils as identified by a NRCS Soil Survey
- **Habitats:**
 - Cliffs, ledges, talus, rock outcrops, caves, large snags (standing dead trees);
- Natural Heritage Areas as documented by the Chester County Natural Heritage Inventory Update 2015;
- Threatened, endangered, rare, or vulnerable species as documented by a Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review*
- **Historic/cultural:**
 - Stone walls, charcoal hearths, etc.

The following are recommended practices to protect sensitive features:

1) Delineate buffer areas around sensitive features as follows:

- Maintain a 300' buffer around habitats of threatened and endangered species. Avoid habitats of rare and vulnerable species.
- Maintain a 150' buffer from High Quality or Exceptional Value watercourses, wetlands, vernal pools, and seeps.

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- Strive for preserve areas that are not “islands” of isolated habitat. If there are multiple preserve areas on site, try to connect them to create corridors for movement.
- 2) Delineate special vegetation outside preserve areas to be protected:**
- Stands of seedlings, saplings, and pole-size trees to aid forest regeneration.
 - Trees with exfoliating bark and standing snags that provide habitat for bats and other cavity-nesting species.

Site Management during Timber Harvest

The following align with the Timber Harvesting Guidelines of the Pennsylvania Forestry Association and with PADEP’s *Timber Harvesting Operations Field Guide*.

- 1) Considerations for design, construction, and maintenance of the access system (landing areas, skid roads and trails, and haul roads):**
- Design the access system to avoid sensitive features and preserve areas identified during Site Assessment.
 - Locate landings in relation to the main haul road, then lay out skid roads and trails on a gentle slope to the landings. Place landings on the highest ground possible to prevent muddy conditions. Consider using fabric mats or pads under fill and landing areas.
 - Minimize the area of disturbance as much as possible. Consider using existing roads on site as haul or skid roads. Concentrate haul roads, skid roads, and skid trails to a few primary corridors and limit the number and size of landings. Restrict road widths to 12 feet wide for one lane and 20 feet wide for two lanes.
 - Minimize rutting, erosion, and flooding on roads through proper construction. Design roads with slopes between 2 percent and 10 percent and crown roads as necessary. Avoid designing roads that travel straight up hills.
 - Gate road entrances to limit vehicle access.
 - Maintain haul roads with occasional grading to reshape water control measures and remove ruts.
 - Design stream crossings at a 90-degree angle and with as gentle a slope as possible.
 - Locate skid trails so that low quality “bumper” trees provide protection for more valuable trees along the skid trails.
- 2) Design, construction, and maintenance of control measures and structures required by 25 PA Code Chapters 102 and 105:** Operators are encouraged to consult with PADEP and the Chester County Conservation District for guidance on best management practices that comply with state regulations.

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3) Recommended timber-harvesting methods and techniques include:

- Use equipment and techniques that minimize soil disturbance, such as cable skidding, low ground-pressure equipment and/or tracked vehicles. Avoid grapple skidders unless the material is gathered by a swinging head feller-buncher. Winch logs out of buffer areas to prevent disturbance by equipment. Limb logs before skidding.
- Shelterwood cutting is not recommended when existing canopy cover is below 70%, where there is a combination of high deer density and low regeneration, or where extensive invasive species can out-compete forest regrowth. If performing a shelterwood cut under these conditions, eradicate invasive plants with herbicide prior to making the first shelterwood cut, and protect regenerating growth from deer.
- Thinning treatments can be used to increase the vigor of trees to remain while also initiating seed production.
- Use directional felling techniques to avoid damage to preserve/buffer areas, sensitive features, and vegetation to remain. Mark trees for cutting on both sides so the operator can determine optimal felling direction and hitch selection. Remove tops from streams, wetlands, ponds, floodplains and seeps where possible.
- Equipment used in weed-infested areas should be cleaned of debris to avoid spreading seeds to non-infested areas.

4) Important considerations for timing harvest operations include:

- Start operations at the back of the lot and work toward the landing so as to minimize work in cutover areas. Finish harvesting one section before moving to the next.
- Limit harvesting to upland areas during wet conditions.
- Avoid construction of stream crossings during trout spawning season.
- When harvesting in wet areas, schedule the harvest for when the soil is dry or frozen. Vehicle activity should cease if excessive rutting occurs.
- Cutting following a mast year (when trees produce large crops of seeds, fruit, acorns, and/or nuts) can increase opportunities for regeneration.
- Protect snags and trees with exfoliating bark from mid-May to late-June, when bats and other cavity dwelling species are raising young.
- Time shelterwood harvest of oak stands to occur in the late fall/winter after a mast year to increase regeneration by oak seedlings. This may require thinning stands that cast dense shade. Once oak regeneration is approximately knee high or more, the residual canopy can be harvested.
- The following seed production intervals and longevity for trees should serve as a guide in assessing when to time harvesting activities in relation to seed produced.

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Species	Seed Production Intervals (in years)	Seed Longevity (in years)
American Beech	1 year in 6 intervals	none
Black Cherry	2-3 year intervals	
Eastern Hemlock	1-2 year intervals	1-2 years
Hickory	1-3 year intervals	Lack of viability beyond the first winter is common
Oaks	3-5 year intervals	Lack of viability beyond the first winter is common
Red Maple	2-3 year intervals	1-2 years

Source: Latham et al, 98-99.

Post-Harvest: Site Retirement and Regeneration

- 1) **Retire the access system per the erosion and sedimentation (E&S) control plan. Regrade roads and landings for proper drainage. Remove culverts where feasible and replace with waterbars, broad-based dips, or ditches. Remove all temporary stream crossings and restore per state requirements.**
- 2) **Stabilize disturbed soil with seeding and/or mulching. Important considerations include:**
 - Seeding with native vegetation is strongly encouraged. Seed mixes recommended in the DEP's *Timber Harvest Operations Field Guide* and by industry groups are not recommended as they include exotic species that could impact regeneration. Seed mixes should include species that germinate quickly and that occur at all stages of succession. The following suppliers can recommend optimal mixes:
 - Ernst Conservation Seeds, Meadville, PA
 - ArcheWild, Quakertown, PA
 - Prairie Nursery, Westfield, WI
 - Prairie Moon Nursery, Winona, MN
 - Do not lime or fertilize as this can encourage weeds.
 - A 2-3" deep layer of hardwood chip mulch can encourage germination of hard mast species like oak.
- 3) **Invasive plants can out-compete native vegetation after logging. The landowner/operator should have a plan to manage invasive plant species identified on the logging plan. Consult the following for invasive species identification and management resources:**
 - Penn State Invasive Plant Species Management Quick Sheets (<https://plantscience.psu.edu/research/projects/wildland-weed-management/publications>)

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- PA DCNR Invasive Plant Fact Sheets
(<https://www.dcnr.pa.gov/Conservation/WildPlants/InvasivePlants/InvasivePlantFactSheets/Pages/default.aspx>)
 - Brandywine Conservancy Invasive Plant Information Sheets
(<https://www.brandywine.org/conservancy/resources/invasive-plants>)
- 4) Provisions for treatment of slash include:**
- Slash should be placed around seedlings, saplings, and stump sprouts to protect from deer damage. Slash piles can also enclose small harvest areas to limit deer access.
 - Unmarketable logs should be left in place as nurse logs for seedlings.
- 5) Provisions for preventing deer damage to regenerating growth include:**
- Exclusion fencing
 - Slash piles as outlined above
 - Hunting, including participation in the Pennsylvania Game Commission’s Deer Management Assistance Program (DMAP).
- 6) If natural regeneration fails, supplemental planting may be necessary. Contact PA DCNR for recommended suppliers. Important considerations include:**
- Bare root plants are cost- and labor-efficient for large areas. Bare root material should be planted when dormant, usually late winter/early spring.
 - Container-grown plants can be planted any time of the year but are more expensive and laborious to plant than bare-root material.
 - The following are recommended species for supplemental planting:

SHRUBS FOR WET SOILS

Aronia arbutifolia	Red Chokeberry
Aronia melanocarpa	Black Chokeberry
Cephalanthus occidentalis	Button Bush
Cornus amomum	Silky Dogwood
Ilex verticillata	Winterberry Holly
Salix discolor	Willow species
Viburnum lentago	Nannyberry
Viburnum trilobum	American Cranberry Bush

TREES FOR WET SOILS

Acer rubrum	Red Maple
Acer saccharinum	Silver Maple
Betula nigra	River Birch
Carpinus caroliniana	American Hornbeam

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<i>Carya ovata</i>	Shagbark Hickory
<i>Ilex opaca</i>	American Holly
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Magnolia virginiana</i>	Sweetbay Magnolia
<i>Myrica cerifera</i>	Southern Bayberry
<i>Nyssa sylvatica</i>	Blackgum
<i>Platanus occidentalis</i>	American Sycamore, Buttonwood
<i>Quercus bicolor</i>	Swamp White Oak
<i>Quercus palustris</i>	Pin Oak
<i>Salix nigra</i>	Willow species

SHRUBS FOR DRY SOILS

<i>Cornus racemosa</i>	Gray Dogwood
<i>Hamamelis virginiana</i>	Common Witchhazel
<i>Myrica pensylvanica</i>	Northern Bayberry
<i>Rosa carolina</i>	Pasture Rose
<i>Rhus aromatica</i>	Fragrant Sumac
<i>Rhus copallina</i>	Shining Sumac
<i>Rhus glabra</i>	Smooth Sumac
<i>Rhus typhina</i>	Staghorn Sumac
<i>Viburnum lentago</i>	Nannyberry

TREES FOR DRY SOILS

<i>Acer rubrum</i>	Red Maple
<i>Betula lenta</i>	Black Birch, Sweet Birch
<i>Carya spp.</i>	Hickory species
<i>Celtis occidentalis</i>	Hackberry
<i>Fagus sylvatica</i>	American Beech
<i>Juniperus virginiana</i>	Eastern Redcedar
<i>Liriodendron tulipifera</i>	Tuliptree, Tulip Poplar
<i>Prunus serotina</i>	Black Cherry
<i>Quercus alba</i>	White Oak
<i>Quercus macrocarpa</i>	Bur Oak
<i>Quercus prinus</i>	Chestnut Oak
<i>Quercus rubra (borealis)</i>	Red Oak
<i>Quercus velutina</i>	Black Oak
<i>Sassafras albidum</i>	Sassafras

- 7) Monitoring visits are critical to ensuring the long-term success of forest regeneration. Monitoring should minimally occur once during the cool season (spring/fall) and once during warm season (summer) months to 1) evaluate regrowth; 2) assess impacts from invasive species, deer, and erosion; 3) determine necessity of an intervention strategy to achieve the desired outcome.**