

## ZONING

### 390 Attachment 13

#### Township of West Vincent

#### Appendix M

#### Practices for Prevention and Control of Invasive Plants [Added 10-17-2022 by Ord. No. 202]

A. Avoid planting invasive and noxious weed species.

Do not plant known or potentially invasive plant species, which are sometimes still sold as ornamental landscape plants (example: Burning Bush, *Euonymus alatus*). Native alternatives exist for all landscape situations and have superior ecological/habitat value. When planting nursery-grown stock, check for “hitch hiking” weeds.

B. Minimize disturbance, particularly to established native plant communities.

Disturbance to soil and vegetative cover creates opportunities for invasive species establishment. Protecting established native plant communities from disturbance, including deer browse and other threats, strengthens the ability of these communities to resist invasion.

C. Reclaim/restore disturbed areas.

When disturbance occurs, monitor for emergence of problem species. If existing native growth cannot adequately colonize the disturbed area, reseed or replant promptly with appropriate native species from certified sources so that weeds do not become established.

D. Avoid importing soils and ensure fill materials are weed free.

Soil and fill materials can serve as vectors for spread of invasive species through seeds or sprouting vegetative parts. Do not move fill in which invasive species are established.

E. Avoid fertilizing and liming the soil.

Lower nutrient, acidic soils favor native plant communities adapted to these conditions and disfavor most invasive species, many of which evolved in richer soils. Applications of lime and fertilizer make soil nutrients more available for weedy growth at the expense of native plant communities.

F. Ensure tools, equipment, and mulching materials are weed free.

Equipment, tools, mulch, and clothing can serve as vectors for spreading seeds and reproductive parts of invasive species. Locate and use weed-free project staging areas. Clean tools and equipment prior to working in established native plant communities and after working in an infested area during seed

## WEST VINCENT CODE

dispersal periods. Restrict vehicles or other traffic that may transport weed seeds or plant material from entering a job site unless first washed and inspected. When practical, collect and incinerate plant parts removed from equipment. Sources of mulch should be free of invasive plant parts and seed; use of weed-free straw or wood fiber mulch is preferred.

G. Consider invasive species when making trail and roadway decisions.

Hikers, cyclists, horses, and vehicles can serve as invasion vectors. Avoid establishing trails and roadways within infestations. Monitor for emergence of invasive species along pathways through established native plant communities.

H. Adhere to best stormwater management practices to prevent spread of invasive plants.

Water can disperse seeds and vegetative parts of invasive species. Preventing erosion and sedimentation is critical to water quality and prevention of invasive plant establishment.

I. Inspect annually for emergence of invasive species.

Monitor for the emergence of invasive species on an annual basis (or more often if possible) to enable planning and control efforts before invasive species become difficult to eradicate.

J. Best Practices for Invasive Plant Control

Prevention and early detection are the most cost effective controls. Weed control efforts must take into account the ecological and cultural context, exploiting life cycle and form differences between invasive plants and desirable native growth. The amount of control required will depend on when the problem is addressed; the nature of the invading species; and the degree to which it displaces desired growth.

Targeted application of herbicides often has fewer adverse impacts on soils, surrounding vegetation, and the plant community's long-term trajectory than mechanical controls, and is less labor and time intensive. Herbicides are also sometimes the only effective means of controlling particularly pernicious species without substantial site disturbance, which presents its own maintenance and ecological costs. Herbicides should be applied only as directed by the manufacturer and in compliance with regulations.

Effective invasive plant control incorporates the following best principles and practices.

1. Determine whether to act. In determining whether to attempt control or eradicate an invasive species, consider:
  - a) *Is it realistic to act?* Constraints can include budget, the scale of the problem, and available labor.
  - b) *If no action is taken, will the invasive species remain stable, increase, or decrease?* Assess invasive species for level of vigor, adaptability to surrounding environment, and colonization strategy (by seed and/or vegetative expansion).

## ZONING

- c) *Are there desirable existing species to be protected?* Consider existing species and how they can be protected and encouraged to proliferate.
  - d) *Will removal of the invasive species cause loss of wildlife habitat?* Consider how temporary removal of vegetative cover may affect wildlife. Where necessary, phase eradication efforts to minimize impacts.
2. Consider the site's vegetative trajectory. Successful weed control requires an integrated approach that considers a site's current vegetative composition and the trajectory of that composition:
- a) Where is the site's vegetative trajectory headed if nothing is done?
  - b) What species in that trajectory are desirable and undesirable?
  - c) What actions can be taken to favor desirable existing species?
  - d) Can species be introduced to further project goals?
3. Prioritize areas for control, emphasizing least-invaded areas first. Research shows that satellite colonies can expand faster than large core areas. Therefore, prevent deterioration by tending to least-infested areas before targeting large, established weed populations.

Where infestation is limited, check at different times of year for weed presence. Conduct spot weeding as necessary; removing a single large weed next to a native plant enables the remaining plant to grow faster due to reduced competition. While less-invaded areas are being stabilized, suppress growth of invasive plants, where possible, in invasive dominated areas so that the vigor and reproductive ability of species in these areas is reduced. Focus subsequently on the next best areas. Expand treatment areas as resources allow and once natives achieve dominance of at least 70% cover.

4. Determine the level of acceptable control. Determine whether the target invasive species will be eradicated or controlled at an identified threshold. This may vary by species and context. In some cases, eradication may not be possible.
5. Allow for optimal timing of control actions. A control plan for invasive species should take into account optimal timing of control actions. For instance, controls should be initiated prior to seed formation to minimize further spread. Evergreen species can be targeted when native non-evergreen growth is dormant. Cool season weeds in a warm season community can sometimes be controlled prior to the emergence of warm season growth.
6. Exploit life cycle and size differences between invasive species and desirable growth. Use selective herbicides to avoid damaging non-target growth. When a height differential exists between desirable native growth and invasive exotics, selective height cutting or herbicide treatment can target growth above or below the height of the desirable species. Evergreen

## WEST VINCENT CODE

invasive species can be treated with herbicides when desirable non-evergreen native species are dormant.

7. Use herbicide selectively in targeted applications. To avoid adverse environmental impacts, herbicide selection and application should be targeted and made by an experienced applicator. Targeted spot applications are generally preferable to broadcast applications.
8. Minimize disturbance to soils and desirable growth during control actions. Select control methods that minimize disturbance to soils and desirable growth to reduce opportunities for emergence of new weeds.
9. Limit seeding of invasive plants before and during control actions. For species that spread by seed, initiate control prior to seed set. If treatment is on hold while targeting higher priority areas, suppress plants' abilities to set seed, usually through sequential cutting during the growing season. If a target species has already flowered but seeds have not yet dispersed, cut off the seed heads, bag and remove from the site to the extent possible. As some herbaceous species will set seed even after being cut, the cut top-growth should be removed.
10. Accommodate for a second wave of invasive species emerging after initial controls. In some instances, control of one invasive species may result in a second invasion due to the disturbance associated with the control actions and the removal of competitive cover. Assess species present to determine whether a second wave is likely and plan accordingly.
11. Recruit existing desirable species where possible. Where present, recruit existing desirable species to colonize areas where invasive plants are removed. For example, removing weeds next to existing colonies of native species that reproduce vegetatively can be an effective recruitment strategy.
12. Use resources efficiently. Do not put efforts into controlling weeds that desirable species will outcompete over time. When possible, coordinate control efforts with conservation groups and adjacent property owners, maximizing treatment efforts and cost effectiveness.
13. Determine whether and when new plantings will be installed. Where existing desirable growth is either absent or not capable of colonizing, seeding and planting container-grown material can replace removed invasive species and prevent subsequent invasions. Conducting weed eradication and planting simultaneously offers several benefits: competition from desirable plants can aid eradication efforts, with planted vegetation taking over where invasive species are removed, thereby avoiding any non-competitive periods. When it is not possible to eradicate weeds without affecting planted species, planting should occur after weed control. New plantings should match habitat conditions, be of an appropriate competitive level given

## ZONING

expected invasive species pressures, and tolerate expected management procedures. Where desired vegetation is establishing, traffic may need to be temporarily restricted.

14. Avoid weed mats and landscape fabrics. Landscape fabrics are generally not recommended as such materials can break down over time and wash off into waterways. They can also leave unsightly tears or hummocks where weeds that have germinated are pulled out and the fabric comes out with the roots.
15. Consider location when composting or disposing of mechanically removed invasive plants. Due to the vigorous reproductive capacity of invasive plants, removed invasives should not be disposed of indiscriminately. Composting cut/pulled invasive species or leaving them in situ should occur only when seeds and reproductive parts cannot reestablish.
16. Doing nothing may be appropriate in some instances. Some weeds do not present a serious problem and do not require active control as they will be outcompeted over time. Determine this by analyzing the competitive abilities of weed species present in relation to planted/managed vegetation.
17. Monitor following control treatments to ensure treatment efficacy. Monitor following control actions to assess treatment efficacy and to ensure new undesired species do not fill the void of eradicated species.

### K. Invasive Plant Control Methods

A successful control plan matches methods and timing to the target species, sometimes requiring multiple integrated methods. Herbicide selection and application rates are best determined in consultation with a skilled applicator in accordance with species present and site conditions.

| Control Method  | Targets  | Notes   |
|---|--|---|
| <b>Biological control</b> (via approved introduced insects and pathogens) | Select species                                   | <ul style="list-style-type: none"> <li>• Approved bio-controls available for select species.</li> <li>• Permit may be required.</li> </ul>  |
| <b>Controlled burning</b>   | Select herbaceous and woody species              | <ul style="list-style-type: none"> <li>• Permit required.</li> <li>• Must be conducted by a trained professional.</li> <li>• Favors native species that evolved with fire.</li> <li>• May favor some invasive species.</li> </ul> |
| <b>Flame weeder</b>   | Annuals  | <ul style="list-style-type: none"> <li>• Kills aboveground but not belowground growth.</li> <li>• Permit may be required.</li> </ul>  |
| <b>Forestry mower</b> (grinds stumps to limit regrowth)                   | Woody growth with stems less than 6" in diameter | <ul style="list-style-type: none"> <li>• Mulch from cut woody growth helps provide erosion control and returns nutrients to the soil.</li> <li>• Tracked equipment avoids rutting.</li> </ul>                                     |

## WEST VINCENT CODE

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| <b>Girdling</b> (cutting through the bark around a trunk's circumference) | Large trees | <ul style="list-style-type: none"> <li>• Some trees respond with increased seed production.</li> <li>• Killed tree can provide wildlife habitat.</li> <li>• Tree-of-Heaven (<i>Ailanthus altissima</i>) should not be girdled as it responds with rampant root and stem sprouting.</li> </ul> |
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| Control Method   | Targets  | Notes   |
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| <b>Herbicide applications</b>  |  |   |
| – Basal bark method (painting the lowermost part of the trunk)   | Woody plants with trunks less than 6-8" in diameter or woody species with very thin bark | <ul style="list-style-type: none"> <li>• Requires oil soluble herbicides.</li> <li>• Labor intensive where stem counts are high.</li> <li>• Total control may require several months.</li> </ul>  |
| – Broadcast sprays (treatment of all growth in an area)  | Heavy infestations   | <ul style="list-style-type: none"> <li>• Can affect adjacent non-target vegetation.</li> <li>• For woody vegetation, cut to the ground and allow 3-4 weeks for some regrowth to occur before treating regrowth.</li> </ul>  |
| – Cut and paint (painting cut stump)   | Woody species  | <ul style="list-style-type: none"> <li>• Allows for targeted application minimizing damage to non-target species.</li> </ul>  |
| – Hack-and-squirt or stem injection ("cup" cuts in bark hold herbicide)  | Large trees  | <ul style="list-style-type: none"> <li>• Do not use in the spring when upward sap flow will flush out herbicide.</li> </ul>   |
| – Spot foliar application  | Small populations<br>Undesired growth intermingled with desirable growth                 | <ul style="list-style-type: none"> <li>• Reduces collateral damage to adjacent non-target vegetation.</li> </ul>  |
| – Wick application (to foliage with wick applicators)  | Small-to-midsized populations  | <ul style="list-style-type: none"> <li>• More extensive application than spot foliar treatments.</li> <li>• Drift may affect non-target species.</li> </ul>   |
| <b>Removal by the roots</b> (pulling out, grubbing out, tilling, multiple surface grinding, weed wrenches, etc.) | All species (particularly effective on annuals and biennials)                            | <ul style="list-style-type: none"> <li>• Disturbs the soil, which can result in germination of weed seeds, thereby requiring further weed control. Tamping the soil firmly where plants are removed helps limit opportunities for weed seed germination.</li> <li>• Can disturb root systems of adjacent non-target vegetation.</li> <li>• May require subsequent control of species that can re-sprout from root fragments remaining in the soil.</li> <li>• When possible, pulled/destroyed plants should be removed from the site if still able to produce seed or re-sprout.</li> </ul> |

## ZONING

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| <p><b>Removal of top growth</b><br/>(cutting/mowing to a plant's base or to a height just above the growth of desired species)</p> | <p>Annuals<br/>Herbaceous and woody plants intermingled with desirable species capable of suppressing regrowth of cut weed</p> | <ul style="list-style-type: none"> <li>• Reduces the vigor of target species by starving the roots.</li> <li>• May require repeat cuttings for full control.</li> <li>• Annual mowing favors herbaceous growth.</li> <li>• Cutting weedy growth around desirable rhizomatous/stoloniferous plants provides an expansion zone into which the desirable species can expand.</li> <li>• When a height differential does not exist, it can be created by cutting around desirable species and then treating lower regrowth with herbicide.</li> <li>• When possible, cut plants should be removed from the site if still able to produce seed.</li> </ul> |
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| Control Method  | Targets  | Notes   |
|---|--|---|
| <p><b>Root cutting</b> (cutting the root below the soil line)</p> | <p>Species intermingled with desired plants able to limit regrowth of cut specimens.</p> | <ul style="list-style-type: none"> <li>• Results in less soil disturbance and harm to adjacent non-target plants than removing target species by the roots.</li> <li>• Remaining root fragments can re-sprout.</li> <li>• When possible, cut plants should be removed from the site if still able to produce seed or sprout from vegetative parts.</li> </ul> |