



BARD COLLEGE

LANDSCAPE & TREE CARE

GUIDELINES, STANDARDS & CONSIDERATIONS MANUAL

(REVISED: NOVEMBER 2025)

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INTRODUCTION

This manual of *Landscape & Tree Care Guidelines, Standards & Considerations* establishes the minimum standards for all related work done on Bard College campus. Bard staff and subcontractors must consult and conform to these guidelines while engaged in related work on the Bard College campus grounds.

RESPONSIBLE DEPARTMENT

The Grounds and Horticulture Departments at Bard College Tree & Landscape Advisory Committee are responsible for **enforcing the standards** in this manual. Any questions related to this manual may be directed to:

Bard College
Building and Grounds, Physical Plant
PO Box 5000
30 Campus Road
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PURPOSE & RESPONSIBLE AUTHORITY

The purpose of this manual is to inform all Bard staff, subcontractors and community members of the minimum tree and landscape-related standards that are expected while they are engaged in work on the Bard College campus and arboretum. This manual provides clear guidelines for planting, maintaining and removing trees and landscape material. It also acts as an educational resource about the importance of the campus forest and the protection and maintenance of trees and plantings as part of the growth and land development process. The **Tree & Landscape Care Advisory Committee** is responsible for enforcing all aspects of this manual. It is made up of representatives from each category including: faculty, staff, student and community members. They meet quarterly to review, enforce and create/refine policies and related concerns.

PRIMARY GOALS & OBJECTIVES

The *primary goal* of this manual is to assist decision-makers, planners, staff, facility, subcontractors and grounds managers in the stewardship of campus landscape resources while accommodating future change. It also acts to ensure a safe, attractive, and sustainable campus forest.

Recommendations are based on standard industry best practices and compiled input from various Buildings and Grounds staff members and resources. The *Landscape & Tree Care Guidelines, Standards & Considerations Manual* should be viewed as a complement to contracted work details and documents, as well as personal communication.

Ideally, this manual will guide future planning efforts on campus and will be used as an informational tool by members of Bard staff as they consider how best to care for, maintain, and preserve the landscape and grounds resources that exist on campus. Many resources were consulted in the writing

of this document. The overall idea and basic structure of this document came from Cornell University's *Comprehensive Master Plan and Landscape Guidelines* (2006). See the *References* section of this document for a complete listing of other resources.

The *primary objective* of this manual is to provide basic landscape industry standards and guidelines. Whether the work is landscape specific or simply related to or in contact with various landscape features this document should be utilized as a reference.

- 1. Standards and guidelines.** Provide standards and guidelines for building and site design considerations, landscape specifications, landscape maintenance, general tree care, fertilization, plant health care and integrated pest management, temporary installations, conservation landscaping, and roads and path specifications and historic tree preservation. Ensure proper species selection, high-quality nursery stock acquisition, and industry-consensus planting procedures
- 2. Perpetuate best practices.** This document should be updated as the industry evolves to better understand all the various aspects of landscaping and hardscaping work. Promote tree health and safety by utilizing ISA's best management practices when maintaining campus trees.
- 3. Address sensitivity to the landscape.** The campus' natural and landscaped resources should be considered during planning, development and implementation. Promote species diversity and proper age structure in the tree population. Ensure that trees are reasonably replaced when there is mortality due to weather, pest infestations, injury, or construction displacement
- 4. Evaluation.** This manual provides a standard that allows new projects or major renovations to be properly evaluated and assessed.

TREE & LANDSCAPE ADVISORY COMMITTEE

The Tree and Landscape Advisory Committee was formed in 2005 as a decision-making group to assist with the protection, maintenance, removal, and planting of trees and gardens on the Bard College campus; to advise and consult on issues pertaining to the campus landscape; to determine the College's needs in connection with trees; and to pursue the establishment of a comprehensive Landscape Master Plan. Each member of the committee is asked to serve a minimum of one year term, with an unlimited number of maximum served terms. This committee will be responsible for enforcing all aspects of this document.

NOTE: All underlined terms in the manual's text body are defined in the "Definitions of

DISCLAIMER: The original *Landscape and Tree Care Guidelines, Standards, and Considerations* manual was originally printed in 2006, with reprinting in subsequent years. Updates and revisions are to be expected on a regular basis. Check with Bard College staff for the most recent updates, if any. This manual was revised as partial fulfillment of Arbor Day Foundation’s standards for Tree Campus USA designation and does not reflect official College policy on all matters. However, many of these policies, procedures, and practices are currently in place and administered. The Tree and Landscape Committee is seeking to have the plan officially adopted by the College.

Bard College Land Acknowledgement

Developed in cooperation with the Stockbridge-Munsee Community

In the spirit of truth and equity, it is with gratitude and humility that we acknowledge that we are gathered on the sacred homelands of the Munsee and Muhheaconneok people, who are the original stewards of this land. Today, due to forced removal, the community resides in Northeast Wisconsin and is known as the Stockbridge-Munsee Community. We honor and pay respect to their ancestors' past and present, as well as to future generations and we recognize their continuing presence in their homelands. We understand that our acknowledgment requires those of us who are settlers to recognize our own place in and responsibilities towards addressing inequity and that this ongoing and challenging work requires that we commit to real engagement with the Munsee and Mohican communities to build an inclusive and equitable space for all.

GOALS & OBJECTIVES

PRIMARY GOAL

The primary goal of this manual is to assist decision-makers, planners, staff, and facility and grounds managers and the community in the stewardship of campus landscape resources while accommodating for future change.

OVERALL GOALS

There are additional overall goals that one must consider while engaged in work on the Bard College Campus, these include:

1. **Respect cultural, environmental and historic resources.** Bard's landscape should create a "sense of place" considering that it lies within the context of the Hudson Valley River regional landscape and a national register historic district. Encourage campus community members to respect and value the campus urban forest. Proper consideration of the natural and historic resources should be considered in accordance with Bard's Master Plans and the Preservation Master Plan (2008). Protect high-value campus trees during construction and renovation projects
2. **Promote intellectual and social interaction.** The landscape exists for the purposes of both aesthetics and function. It is a resource that guides the development of the Bard community, both intellectually and socially.
3. **Create a sense of outdoor comfort and security.** Micro and macro environments on the campus should lend themselves to the comfort and well being of the community.
4. **Value sustainable design.** Bard's physical environment should contain a rich diversity of plants, exemplifying New York's native flora. Practice stewardship of the lands and its flora and fauna. Ensure proper species selection, high-quality nursery stock acquisition, and industry-consensus planting procedures
5. **Follow the mission of Bard Arboretum:**
To preserve and enhance the natural and landscaped resources of the Bard campus and to promote knowledge and appreciation of horticulture and conservation. Provide a campus environment rich in horticultural diversity and beauty that can be readily enjoyed by the College and surrounding community.

CAMPUS LANDSCAPE AND TREE CARE GOALS & TARGETS

For the purposes of the Arbor Day Foundation and Tree Campus USA Higher Education, the ongoing **GOAL** of the Landscape and Arboretum Program's Campus Tree Plan is to continue the **campus-wide tree and plant inventory**. Each year the Arboretum Director and a student intern work to complete this enormous task by completing an inventory and mapping of the campus plantings and entering this data into the Arboretum's BG BASE software. The **TARGET** this year will be measured by **how many more trees and plants are entered into the software** and **how many tree and plant labels are inspected, installed and repaired**.

We plan to continue our **GOAL** to develop a link between this plan and the new Campus Nature Rx initiative with the Bard Arboretum. The **TARGET** this year will be measured by how many new campus departments will join this initiative and to procure funding for the improvement of at least one green space on campus. All improvements will follow the outline protocols in this document. A **new GOAL** of this plan is to develop a link between this plan and the Bard College academic institutional courses, programs and other educational offerings. The **TARGET** this year will be measured by what steps we can take to introduce and institutionalize the Arboretum into the curriculum.

The recently completed *Bard College Comprehensive Landscape Plan (CLP2024)* serves as a guideline for maintenance and operations of the entire property, including the newly acquired Massena property (280 acres), located just south of Bard's campus proper. A Task Force Committee was created this year (2025) to enforce the CLP2024 and make sure that its objectives are carried out.

Arboretum projects that encourage either student and/or community engagement at Bard include:

- 1) Annual Arbor Day tree planting on Arbor Day
- 2) Monthly Arboretum educational Walks with the Director
- 3) Collection of tree hazard evaluation data
- 4) Tree and garden memorial archival documentation
- 5) Tree/plant interpretive label installation and archival documentation
- 6) Summer Arboretum internship, work study student jobs or student labor positions
- 7) Bloom data collection for Project Bud Burst
- 8) Curatorial documentation of campus plant and tree inventory
- 9) Landscape mapping of plants and trees
- 10) GIS mapping of specimen trees
- 11) Burpee Trial Garden at Montgomery Place Campus

COMMUNICATION STRATEGY

The **communication strategy** that will help disseminate the information in this manual to the college community and contractors to heighten awareness about policies and procedures as well as the goals of the institution will be as follows:

1. Adopted by the Buildings and Grounds Department at Bard College and distributed to all current and new staff and contractors employed by Bard College.
2. Added to the Bard Arboretum website: <https://www.bard.edu/arboretum/>
3. Verbally communicated to staff, faculty, students, contractors, project managers, etc. as needed. The Arboretum will distribute hard copies upon request.
4. Updated annually with industry information and updates.
5. Consulted and shared with the Stockbridge-Munsee Community.

GUIDING PRINCIPLES FOR LAND STEWARDSHIP

Bard College recognizes that the Bard College Landscape & Tree Care Guidelines, Standards, and Considerations Manual is a living document that requires an ongoing effort to recognize and incorporate the expertise and knowledge that the Stockbridge-Munsee community (SMC) possesses about natural resources and wildlife management. Bard looks to the SMC as sovereign partners in how we value, co-manage and steward our campus landscape and its natural resources. Significant natural and cultural resources on Bard College's campus are to be handled and treated with the utmost respect for their integrity and connection to their indigenous stewards, by following the guiding principles listed in the [Guiding Principles for Stewardship of Bard College's Prehistoric Resources and the Bard College Archeological Resources Management Plan](#), with the primary goal of providing protection and management of the natural, cultural, and historic resources in areas of tribal importance.

Through a process of diplomacy, trust building, and innovative opportunities with the SMC, Bard College will equip its leadership and staff to increase and advance the understanding of indigenous knowledge, awareness and cultural competency around our natural and cultural landscapes. Bard staff will seek consultation from SMC on landscape projects that include important indigenous areas, significant native plants, interpretation of plant, land, and people histories for publications, etc.

Native-centered

- Native-centered means that Native American communities and people are the driving force of the research and significant prehistoric resources.
- Native knowledge will be sought out, incorporated and understood as an important voice. "Nothing about us without us."
- Treatment of prehistoric resources is centered on issues that are central to the Native American community and utilized to unite Native American people in achieving their visions and goals.

Respect

- All individuals and communities participating in projects around prehistoric resources will be treated with respect. It is an honor to work with Native American peoples in research.
- Purposefully seek understanding of the indigenous community. This understanding will guide the Bard staff, faculty or student in showing regard for the community.
- Respect and honor tribal sovereignty, cultural traditions, and diversity among and within Native American communities.
- Become aware and respectful of existing indigenous community protocols. Many communities have specific protocols of who to go to and how to go about garnering approvals for all research activities.

Self-Reflection and Cultural Humility

- Be mindful of one's own cultural and class biases and how these biases can affect Bard interactions in Native American communities and the project they undertake.
- Strive to develop self-awareness and have a respectful and humble attitude toward diverse points of view, which are shaped by the individual histories of each community, as well as the distinct traditions that inform these perspectives.
- Engage in projects with the understanding that Native American community members have wisdom, knowledge, expertise, and experience that is relevant to their community and to our efforts as investigators.
- An individual cannot master cultural competence for all Native American cultures or tribes. Believing that one has attained "cultural competence" when working with Native American communities can lead to reliance on faulty assumptions and stereotypes, and undermine the research.

Authentic Relationships

- Build relationships that are sincere, enduring, and based upon mutual trust and respect. Genuine relationships are the cornerstone of mutually beneficial collaborations and equal partnerships.
- Enter into partnerships with the community and community members with the intention of building and sustaining a long-term commitment to the community.

Continual Dialogue

- Ensure that communication to the members of the community involved is understood, relevant, and accessible.
- Communication flows both ways. A continual and open dialogue facilitates co-learning, prevent misunderstandings, and address concerns before they become problems.
- Be proactive in finding out the appropriate people and programs needed for ongoing communication within each community and research project.
- Provide findings back to community stakeholders on an on-going basis.

Transparency and Accountability

- Be open and clear about all activities and information throughout the project process in order to build trust which may have been compromised by past negative research endeavors in the community.
- Take responsibility for all actions and consequences of those actions when engaging in projects with communities.

NOTE: Please refer to the Checklist for Project Manual (in addendum), when starting any new campus project.

Source:

<https://www.umat.edu/research/compliance/irb/indigenous.php>

LANDSCAPE DESIGN PRINCIPLES

Contractors and consultants should be aware that the College has adopted some basic design principles that apply toward the maintenance of a cohesive campus landscape, preserving and reinforcing the best of its existing structure and setting a framework for future development. While campus plans will change from year to year these principles should remain firm and serve as the foundation for the plans. One encompassing principle applies--*sustain a supporting and inspiring environment for people to learn and live*.

The design principles and landscape elements are very important in enhancing the campus environment and maintaining its distinctive character. These principles are the basis for creating a campus environment, which is cohesive and preserves its sense of continuity.

Campus Character – Maintain Bard’s small-scale ambiance, mixed-use environment, and informal landscape setting. Historical landscape treatment and precedence dictates several landscape techniques that should also be respected and maintained (ie. Picturesque landscape of the Hudson River Valley and the formal Italian Garden at Blithewood). Preserve Bard’s important physiographic features that contribute to the character of the campus in its regional context.

Campus Image – As a historic campus with an exquisite collection of varied architectural components, the landscape must act as the unifying component that brings the pieces together as a whole. The campus grounds should exist as a narrative, telling the story of its history through the elements in the landscape.

Open Space – The distinctive quality of expansive lawns, meadows, fields, allees, overlooks, vistas, etc. should be maintained. Dedicated open space should be protected, preserved and enhanced as appropriate.

Campus Environs - The campus emerged out of a village and estate context, hence the human interaction component is a key component of the landscape and should be facilitated and considered at all times. Bard will preserve important stands of native vegetation. Any new plantings are to be placed with reference to a campus-wide comprehensive landscape plan and the Bard College Preservation Master Plan (2008) that sets forth broad objectives for regions of the campus.

Accessibility - Accessibility on college campuses includes both physical and digital accommodations, mandated by laws like the ADA, to ensure students with disabilities can fully participate in academic and campus life. Key components include physical access like ramps and elevators and digital access through accessible websites and materials, which is becoming increasingly important with the rise of online learning. Campus exterior design should allow for optimum accessibility for all. ADA (American Disabilities Act) should be incorporated into all exterior design plans for new and renovated buildings and construction.

Biodiversity - Any time we shape the land, we impact biodiversity. While protecting nature is essential in addressing the biodiversity crisis, considering opportunities to conserve, enhance, and restore biodiversity at all scales is vital—from site design, neighborhood plans, community and urban planning to regional master plans." — Betsy Peterson Sanford, ASLA. Refer to [Biodiversity Primer for Landscape Architects \(2025\)](#) for guidelines.

BUILDING AND SITE DESIGN

SITE SURVEY AND EXISTING CONDITIONS

1. Review and evaluate all existing conditions prior to any work that would affect the existing natural or maintained landscape. Refer to this document's Addendum: Bard's Historic Tree List.
2. Review property boundaries, easements, and rights-of-ways, environmental impact statements, deed restrictions and legal descriptions.
3. Review available utility services and lines, both public and private, above and below grade, including: manholes, pedestals, hydrants, light poles, transformers, power poles, etc.
4. Review existing features such as walls, fences, pavement, gravel, signs, outcroppings, etc.
5. Review existing vegetation including: plant type, size, canopy, and other significant vegetation.
6. Extent of landscape work should be shown on drawings and schedules.

SITE CLEARING, DEMOLITION AND EROSION CONTROL

1. Notify Bard's Horticulture Department of any site clearing, digging, demolition or erosion control work to be done.
2. Indicate all plant materials that are designated to remain, be protected, relocated or removed. Plant material to remain will be protected by construction fence, which encompasses its dripline. No construction equipment, materials or debris shall be located within tree protection boundaries.
3. A site-grading plan should be developed which satisfies the projects functional requirements such as drainage and accessibility. It must also provide an aesthetic setting, which complements the buildings architecture and respects the existing campus landscape features.
4. Grading and excavations will not occur within the drip line of existing plant materials that have been identified to remain. It will additionally avoid as much of the root system as possible. Air spade around root systems whenever it is needed to avoid root removal. To minimize stormwater impacts on the existing watershed, post development discharges should not exceed present condition discharges.

PROTECTION OF EXISTING PLANT MATERIALS

1. Consult with the Horticulture Department regarding all proposed site improvements or proposed construction sites before final planning is underway. All construction documents must include protection for trees identified by College personnel. When necessary, due to changes in grade, placement of improvements or for other causes, provide drawings and specifications that give instructions for the preservation of individual trees/shrubs. The College/contractor must employ qualified, trained individuals to perform or oversee pruning and other operations necessary for the survival of existing trees.
2. The most effective way to save trees during construction is to carefully site buildings, roads and driveways, utility lines, and other features so that they avoid the specimen or desirable trees.
3. Whenever possible, start protecting a tree located within a construction site up to a year in advance of the construction start date. Extra irrigation, fertilization, and aeration of the tree during this time will create a healthier, stronger tree and will increase survival following the stress of damaging work.

PRESERVATION DURING DESIGN PHASE

Best practices include identifying all trees on a site survey map, whose root systems are likely to be impacted by construction equipment, cut and fill activities, utility corridors, proposed walks and roads, and potential construction staging areas; and whose branches may be damaged by construction equipment. NOTE: If trees are grouped in a forest or woodlot, then only the location of the woodlot and any trees greater than 6 inches diameter at 4.5 feet above the ground (DBH) need to be identified

1. Not salvageable

- a. All trees that are within the footprint or in close proximity to the footprint of a proposed building. (Note: alternative footprints to save large, valuable trees should be considered, provided that the alternatives maintain the desired features and costs of the proposed building)
- b. Trees of undesirable species or in very poor health. Examples include, but are not limited to species that have low landscape and educational value, and heavily diseased or damaged trees that have little chance of recovering desirable form and function, even if protected from construction damage.

2. Low priority for protecting

- a. Small trees (less than 10 inches DBH) that fall outside of the building footprint, but are likely to be impacted by construction activities.
- b. Larger trees outside of the building footprint with relatively low landscape value. Examples include but are not limited to, trees with poor form, species of relatively low landscape and educational value, or trees with inadequate space to accommodate current or future growth even if the site is ameliorated.

3. High priority for protecting

- a. Medium (> 10 inches DBH) to large (> 24 inches dbh) trees of desirable species with good form, good health, and room to continue to grow.

4. Avoid locating the general construction site around low and high priority trees where possible by: planning all construction activities including new utility corridors, staging areas, new sidewalks and new roads for a minimum clearance of 15 feet away from the base of trees, and not within the edge of the canopy drip line. Greater distances are desirable. High priority trees should receive more consideration than low priority trees in planning corridors, staging areas, walks, and roads.

5. When possible, all trees deemed “heritage, historic or landmark” trees on the College campus should be preserved and protected as trees with special status.

a. Defining Heritage, Historic or Landmark trees

- i. Size- Usually measured as the diameter at breast height (DBH) or 4.5' from the ground. The relationship between the size of the trunk and the canopy usually indicates age, depending on species. Also, if the tree is on the National Register of Big Trees for American Forests or is determined to be a local Champion tree it is a protected tree.

- ii. Species – Special status may be conferred only to certain species of trees that are important local native species, or species rare in an area (weedy trees are exempt from this qualification).

- iii. Age – Especially old trees are a link to the past. If the DBH for a particular species is calculated to estimate age, and its age is over 100 years old it is

a protected tree. Since DBH is an estimate and varies with species, site quality, management history, and other factors should also be considered.

- iv. Historic significance – A tree may be associated with a notable local or regional historical structure or landscape. Determining whether the historical significance of a tree is notable as a subjective matter. Historic tree status is typically deemed by a governing (ie. Town Council) or advisory body (ie. Tree Commission). Some ordinances confer historic status on trees designated as historical landmarks by certain other organizations (ie historical societies). In addition, ordinances may assign special status to trees dedicated as public memorials. Refer to *Defining Trees: Heritage, Historic, and Landmark Trees, Provision 31*. (International Society of Arboriculture).
- v. Ecological value – All trees serve a variety of ecological functions. Certain trees or groups of trees have especially high ecological value because of their location, size, species, and/or condition. For example, a given tree may be an important roost, nesting site, or food source for certain wildlife or it may be situated in a where it plays a critical role in stabilizing soil or providing shelter for other plant or animal species or it may be an important genetic resource for a local tree population species as a whole.

SPECIAL NOTE: All dead trees and live Shagbark Hickory (*Carya ovata*) trees are identified as roost sites for the endangered Indiana bat (*MYOTIS SODALIS*). Tree removal should occur between October 1 and March 31 to prevent disturbing bats during the maternity season. Minimize access to areas known to contain roost sites to prevent bats from abandoning the roost trees. Avoid access to hibernacula from September 1 through April 30. Minimize road and trail construction, logging and construction near hibernacula within a 100 foot buffer zone.

When mitigating Indiana bat habitat disturbance, it is best to install an appropriate number of well-placed metal or plastic bat houses to provide a temporary (20 year) roost alternative. Meanwhile, a number of Shagbark hickory tree saplings should be planted in areas appropriate for long term (200+ year) bat management. Similar to a bat house, at least some Shagbarks should be planted where direct southern exposure will be guaranteed when the tree matures enough to start becoming attractive to bats (20-30 years old). Ideally, shagbarks of various ages (seedlings to 10' tall or more as available) should be planted so the stand is sustainable.

- vi. Aesthetics – Subjective quality that may be due to its form (ie. especially perfect and symmetrical or notably craggy and idiosyncratic), function (ie. a landmark tree framing an entrance) or other noteworthy characteristics.
- vii. Location – Trees in particular locations may be given special status in recognition of aesthetic or ecological functions that they serve. Proximity to a

street (ie county/ state right-of-way tree) or trees located along or within set distance from water bodies can be given special status due to their importance in stabilizing stream banks or providing shade.

viii. Tree Retention – A healthy campus is one with young, middle age and old trees. In order for Bard to retain trees and allow them to grow old, we need a certain population of each age group to remain on campus. Designated trees should be preserved to ensure tree retention.

6. Tree Protection - Contractors must provide protection to existing trees and planting areas on the site. The greater the distance of tree protection provided, the greater the instance of tree success in construction areas.

- a. Tree roots are typically found growing a distance of 1-3 times the height of the tree and sometimes miles from the trunk. A large majority of a tree root system is found in the upper 12- 18" of the soil.
 - b. Protective fencing should be chain link on secure footings that will not fall over into the trees. Only on special permission, will safety fence or snow fence, supported with heavy duty 6' metal T-posts be allowed. Install these barriers allowing for the greatest distance from the trunk of the tree.
 - c. A general rule is to allow for one foot of space from the trunk for each inch of trunk diameter. However, minimally 10' beyond the drip line of deciduous trees and minimally 20' beyond the drip line of evergreens, or along the perimeter of existing planting areas to prevent damage or disturbance during construction activities. These barriers should be installed prior to any construction activity and maintained during the course of the project.
7. Whenever possible, construction access to the work site should be limited to only one access route on and off the property, this is to ensure nearby trees and plantings are not damaged due to compaction elsewhere on or off the work site.
 8. Protect overhanging tree canopies from construction damage.
 9. There should be no grade change within a minimum of 10 feet within the trunk of existing trees and preferably none within the entire root zone. Native oaks are particularly sensitive to grade changes.
 10. Construction parking on existing grass or in planted areas is prohibited. No disturbance to any trees, planting areas or soil, and no construction materials or equipment are allowed within the limits of these protective barriers. Construction debris will not be allowed to accumulate in these areas. No foot traffic will be allowed to move through these protected areas. 90% of the fine roots that absorb water and minerals are in the upper 12 inches of soil.
 11. Existing trees should be monitored weekly and irrigated as needed during the course of construction.
 12. Clear-cutting – If clear-cutting is required by a construction project then it must be undertaken in a sustainable and ecologically responsible manner with appropriate levels of oversight by Bard College. It should be done in a manner that 1) promotes long-term

sustainability of the forest and the temporary establishment of early successional forest habitat, 2) maintains the presence of shade intolerant species, and 3) enhances biological diversity. The following are clear-cutting considerations:

- 1) Minimization of negative visual impacts to the surrounding.
- 2) Appropriate actions should be taken to prevent any foreseeable negative impacts on stream bank stability, channel stability, water quality, or soil erosion levels. Special management of zones and protection of buffers along permanent and intermittent streams and wetlands and travel corridors (including, but not limited to designated recreation trails, public forest access roads and municipal highways) within and bisecting the clear-cut area.
- 3) The land on which the clearing takes place should have a slope of less than 30 degrees from the horizontal.
- 4) Overall soil disturbance for or resulting from the removal of vegetation should be minimized.
- 5) Trees must be felled in such a way that damage to remaining vegetation is minimized.
- 6) Trees must not be felled into streams or wetlands.
- 7) Debris resulting from the clearing must be chipped and removed from site. It should be made available to Bard for college purposes.
- 8) Usable firewood should be stockpiled outside of the dump gate and offered up to Bard College employees. Bard College Firewood Policy and the 50-mile radius limit for firewood transport must be followed to prevent moving of invasive insects.

13. Vista Clearing – The Historic Hudson Valley is notable for its historic picturesque views of the Hudson River from its uplands. All tree clearing projects within 1000 ft. of the Hudson River MUST obtain permission from the Town of Red Hook before proceeding with the work. If permission is granted, then select trees should be targeted that would provide the most visual impact. All trees should be felled following the same guidelines as the clear-cutting guidelines. Additionally, minimal damage to surrounding lawn areas is required, with a single road in/out of the work area whenever possible. All stumps should be left in place to protect against erosion and brush should be ground up into chips and either spread out on site or taken off site. Future plans on how to maintain the site should be discussed/made provisions for, to prevent unwanted invasives from taking over site.

14. Timber Harvesting – Whenever trees must be removed due to construction, their economic value should be considered. This amount per tree varies annually depending on the market and the condition and type of the tree. A local arborist should be able to guide your decision making.

15. Reforestation requirements

- a. Revegetation should occur within 12 months of canopy removal or allowed to naturally regenerate.
- b. 100-200 seedlings per acre of clearcut land should be planted (even if not on direct project site). Quantity depends on type of seedling planted.
- c. Ensure saplings are “free-to-grow” meaning competing vegetation is controlled.
- d. If planting area is contiguous and similar in soil type with clearcut site, plant similar tree species, with the exception of if other species are better adapted to the site or less susceptible to forest health problems. Avoid exotic or non-native species. Use

local, native species whenever possible.

- e. Also, employ seeding wherever possible. That is, plant seeds collected from mature trees in or nearby the project site.
- f. Use bareroot seedlings wherever possible. Container or “plug” seedlings are also acceptable if acquired with the largest root system available.
- g. If large areas cannot be reforested, then replanting the same area or areas nearby with similar species that were removed is always advised.
- h. Refer to [Reforestation and Afforestation Guidance for New York](#) (2025, Nature Conservancy and NYS DEC)

16. No construction waste materials shall be stored, dumped, poured or buried, in the proximity of any trees or any other plant materials on site. These waste materials may include but are not limited to: fuels, solvents, paints, detergents, caustics, etc.. The contractor shall report the occurrence of any soil contamination incident. In the event that soil contamination does occur, the contractor shall be responsible for the removal and replacement of the affected topsoil and the replacement of existing plant materials.

3

17. Trenching- All trenching should conform to the following guidelines:

- a. If possible, water tree(s)/plantings a few days before work will be done. And water tree(s)/plantings again thoroughly once work is done.
- b. Work only on dry soil. If soil is wet, any weight will compact the soil which will cause more stress on the tree.
- c. Roots larger than 2” in diameter should not be severed without calling the proper College personnel for cutting or review. Severing one major root can cause the loss of 5-20% of the root system.
- d. Digging under roots, rather than cutting is preferred.
- e. Digging within a tree's root zone should be avoided. If it is necessary, hand digging should be used for any trenching within the tree's root zone.
- f. All roots that must be cut should be cleanly cut, not torn.
- g. Make sure cut roots are covered with soil and wood chips as soon as possible. If roots are going to be exposed for more than an hour, cover roots with a damp cloth. Be sure to keep cloth moist until soil and mulch can be used for permanent cover.
- h. Trenches should only be dug on one side of the tree. To find the minimum distance from the tree trunk that the trench can be dug, determine the diameter of the tree at breast height (DBH) and multiply by 0.5 feet to get the minimum distance from tree to start trenching. (DBH x 0.5 feet = minimum distance from tree to start trenching (in feet)).
- i. Auguring -When auguring for fence posts, deck footings, etc. multiply DBH x 1 foot to get the minimum distance from tree to auger (in feet)
- j. No more than 25% of the root system should be removed.
- k. Soil should not be removed within 3 feet of the trunk.
- l. Take no more than 2 inches of soil off the top of tree roots, located 3 feet away from the base of the tree. If more soil needs to be removed – build a retaining wall.

18. Aerate within the protected root zone before and after grade changes. Starting 3 feet from the base of the tree, drill 2-inch diameter holes into the soil about 1-1 ½ feet deep. Drill the holes in a circle 3 feet away from the trunk, spacing them 2 feet apart, then go out 5 feet

and drill again in a circle. Continue every 2 feet within the protected root zone.

19. In the event that damage does occur to a protected or nearby tree or planting area, due to the following: physical injury to the trunk or crown, cutting of roots, soil compaction, smoothing roots by adding soil, uprooting of a tree due to nearby trenching, etc. then proper replacement arrangements must be made and installed appropriately under the supervision of the College.

QUALITY ASSURANCE

1. Subcontract landscape work to a single firm specializing in landscape work that has an accredited work history and qualifications.
2. Ship landscape materials with certificates of inspection required by governing authorities. Comply with regulations applicable to landscape materials.
3. Do not make substitutions: If specified, landscape material is not obtainable, submit proof of non-availability, together with proposal for use of equivalent material.
4. Inspection: The College may inspect trees and shrubs either at place of growth or at site before planting, for compliance with requirements for genus, species, variety, size, and quality. The College retains the right to further inspect trees and shrubs for size and condition of balls and root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from the project site.
5. Any damage to lawn areas, garden beds, paths, etc. by equipment or trucks that includes rutting, running over plants, breaking of tree limbs or destruction of property in any manner, will require the contractor to restore and repair the damage to original condition.

SUBMITTALS

1. Certification: Submit certificates of inspection as required by governmental authorities. Submit manufacturers or vendors certified analysis for soil amendments and fertilizer materials. Submit other data substantiating that materials comply with specified requirements.
2. Submit seed vendor's certified statement for each grass seed mixture required, stating botanical and common name, percentage by weight, and percentages of purity, germination, and weed seed for each grass seed species.
3. Planting Schedule: Submit proposed planting schedule, indicating dates for each type of landscape work during normal seasons for such work in the area of site. Correlate with specified maintenance periods to provide maintenance from the date of substantial completion. Once accepted, revise dates only as approved in writing, after documentation of reason for delays.
4. Maintenance Instructions: Submit typewritten instructions recommending procedures to be established by the College for maintenance of landscape work for one full year. Submit prior to expiration of required maintenance period(s), as per contract or other acceptable means of retaining moisture.
5. Do not remove container-grown stock from containers until planting time.

DELIVERY, STORAGE AND HANDLING

1. Packaged Materials: Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while storage at site.
2. Sod: Time delivery so that sod will be placed within twenty-four hours after stripping. Protect sod against drying and breaking of rolled strips.
3. Trees and Shrubs: Provide freshly dug trees and shrubs. Do not prune prior to delivery unless otherwise approved by the College. Do not bend or bind-tie trees or shrubs as to damage bark, break branches or destroy natural shape. Provide protective covering during delivery. Do not drop balled and burlapped stock during delivery.

4. Deliver trees and shrubs after preparations for planting have been completed, plant immediately. If planting is delayed more than six hours after delivery, set trees and shrubs in shade, protect from weather and mechanical damage, and keep roots moist by covering with mulch, burlap or other acceptable means of retaining moisture.
5. Do not remove container-grown stock from containers until planting time.

JOB CONDITIONS

1. Proceed with and complete landscape work as rapidly as portions of site become available, working within seasonal limitations for each kind of landscape work required.
2. Utilities: Determine location of underground utilities and perform work in a manner, which will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.
3. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify College before planting. Avoid using heavy equipment on wet soils to avoid compaction.
4. Planting Time: Plant or install materials during normal planting seasons for each type of landscape work required. Correlate planting with specified maintenance periods to provide maintenance from date of substantial completion.
5. Coordination with Lawns: Plant trees and shrubs after final grades are established and prior to planting of lawns, unless otherwise acceptable to the College. If planting of trees and shrubs occurs after lawn work, protect lawn areas and promptly repair damage to lawns resulting from planting operations.

PROJECT WARRANTY

1. Warranty lawns through specified lawn maintenance period, which requires that the lawn is established and acceptable to Bard personnel after the first mowing, and until final acceptance.
2. Warranty trees and shrubs, for a period of one year after date of substantial completion, against defects including death and unsatisfactory growth, except for defects resulting from neglect by the College, abuse or damage by others, or unusual phenomena or incidents which are beyond landscape installer's control.
3. Remove and replace trees, shrubs, or other plants found to be dead or in unhealthy condition during warranty period. Make replacements during the growth season following the end of warranty period. Replace trees and shrubs, which are in doubtful condition at the end of warranty period; unless, in the opinion of the College, it is advisable to extend warranty period for a full growing season.
4. Conduct inspection at end of extended warranty period, if any, to determine acceptance or rejection. Only one replacement (per tree, shrub or plant) will be required at end of warranty period, except for losses or replacements due to failure to comply with specified requirements.

TOPSOIL

Topsoil (the top 4-6 inches of surface material) existing on site may be reused for lawns and plant

beds, provided it meets the following topsoil requirements: friable loam with minimal amounts of clay and free of subsoil, roots, grass, weeds, stones, debris, and foreign matter, therefore screening of topsoil might be required as needed according to the College. A pH range of 5.5 to 7.0 and containing a minimum of 6% and a maximum of 25% organic matter. If this is not met, then soil must be purchased and brought on site. See Horticulture Supervisor for acceptable vendors.

1. Existing topsoil may be stockpiled on site at a convenient spot for re-spreading. In areas previously compacted by vegetative clearing and demolition activities, the soil must be scarified to loosen the embedded topsoil before it is removed.
2. As soil types vary widely in different parts of the campus, and as general construction activities may have a serious impact on soil structure, modifications to the growing medium should be specified.
3. Soil modifications should be carried out as necessitated by the site conditions, soil testing and the requirement of the specified plant types. Wherever possible, it is recommended that plant selection be made in accordance with on site soil conditions.
4. Topsoil mix for planting beds: $\frac{3}{4}$ topsoil and $\frac{1}{4}$ composted organic material. 6. Topsoil tests will be made by an independent agency before topsoil delivery and placement. Tests will also determine requirements for topsoil additives. For lawn areas where topsoil pH is below 5.0, limestone shall be added at a rate of 2-1/2 (two and one half) pounds per cu yd of topsoil to raise the pH value one full point.
5. Where topsoil pH is above 7.0, aluminum sulfate shall be added at a rate of 2-1/2 pounds per cubic yard of topsoil to lower the pH value one full point.
6. Where topsoil pH is above 7.0, aluminum sulfate shall be added at a rate of 2-1/2 pounds per cubic yard of topsoil to lower the pH value one full point.
7. Limestone: Shall be raw, ground agricultural limestone containing not less than 85 percent calcium carbonate and shall be ground to such a fineness that 50 percent shall pass through a 100 mesh sieve, and 90 percent through a 20-mesh sieve.
8. Aluminum sulfate: In dry powder form.

SOIL AMENDMENTS

Lime: Natural dolomitic limestone containing not less than 85% of total carbonates with a minimum of 30% magnesium carbonates, ground so that not less than 90% passes a 10 mesh sieve, and not less than 50% passes a 100 mesh sieve.

Aluminum Sulfate: Commercial grade

Peat Humus: Limited use only. FS Q-P-166 decomposed peat with no identifiable fibers and with pH range suitable for intended use.

Bone meal: Commercial, raw, finely ground; 4% nitrogen and 20% phosphoric acid.

Super phosphate: Soluble mixture of treated minerals; 20% available phosphoric acid.

Sand: Clean, washed sand, free of toxic materials.

Perlite: Conforming to National Bureau of Standards PS 23

Vermiculite: Horticultural grade, free of toxic substances

Manure: Well rotted, unbleached stable or cattle manure containing not more than 25% by volume of

straw, sawdust or other bedding materials and containing no chemicals or ingredients harmful to plants.

Mulch: Organic mulch free from deleterious materials and suitable for top dressing of trees, shrubs or plants and consisting of one of the following: shredded hardwood, ground or shredded bark, wood chips. No dyed mulch allowed.

Commercial Fertilizer: Complete fertilizer of neutral character, with some elements derived from organic sources.

For trees and shrubs, provide fertilizer with not less than 5% total nitrogen, 10% available phosphoric acid and 5% soluble potash.

For lawns, provide fertilizer with a percentage of nitrogen required to provide not less than 1 lb of actual nitrogen per 1,000 sq ft of lawn area and not less than 4% phosphoric acid and 2% potassium. Provide nitrogen in a form that will be available to the lawn during the initial period of growth; at least 50% of nitrogen to be in organic form.

MINIMUM PLANT SIZES

Plant materials installed on the Bard campus will have the following minimum sizes (unless special case is presented):

- Deciduous shade type trees 2" caliper

- Deciduous ornamental trees 2" caliper

- Deciduous shrubs, dwarf & semi-dwarf 15-18"

- Deciduous shrubs, medium 18-24"

- Deciduous shrubs, large 24-30"

- Evergreen Trees 7-8'

- Evergreen shrubs, dwarf & semi-dwarf 15-18"

- Evergreen shrubs, large 18-24"

- Evergreen shrubs, medium 24-30"

- Perennials, 2 year plants plug

- Roses, No. 1 grade 2 gal.

- Groundcovers, 2 year plants plug

- Bulb Top size

- Annual flowers 4 pack

PLANT SELECTION CRITERIA

Three general categories of plants: Preferred, Acceptable, and Prohibited

Preferred/Recommended plants are essentially the most suited to the actual site conditions. However, there are innumerable combinations of factors affecting the selection of appropriate plants. Water conservation, low maintenance, and regionally native plants are preferable. Plants that are salt tolerant, deer resistant, and ice damage-resistant are also preferred where deemed necessary. US Arboretum Gold Medal trees, Perennial Plant Association's Perennial Plants of the Year and Philadelphia Horticultural Society's Gold Medal Winners that are suited for Bard's hardiness zone are also highly recommended. Good deer resistance and multiple season's of interest is also preferred. Preferred plants are also dictated by the predetermined Bard Arboretum collection's policy and campus mapped layout for collections. See Addendum.

Acceptable plants are those that satisfy minimum performance standards for the site area and are easily maintained.

Prohibited plants are those, which do not satisfy the minimum performance standards for the site area. In addition there are a number of invasive species that are not allowed in any landscaped or natural area, as per New York State's DEC guidelines (last updated 2013). Where existing these plants shall be eradicated.

Plant material must be selected from nurseries that are located in hardiness zones similar to Bard College.

Provide trees, shrubs and plants of quantity, size, genus, species and variety shown and scheduled for landscape work complying with recommendations and requirements of ANSI Z60.1, "American Standard for Nursery Stock." Provide healthy, vigorous stock, grown in recognized nursery in accordance with good horticultural practice and free of disease, insects, eggs, larvae and defects such as knots, sunscald, injuries, abrasions, or disfigurement.

Plants shall be selected based upon the site characteristics including soil type, drainage, and adjacent improvements. Plants selected should grow to maturity without impacts to sidewalks, curbs and other public improvements.

Avoid the use of plant materials that are prone to infestation or that require more than minimal pest-control measures. Utilize varieties within the species that are recognized to be highly disease resistant.

Selected varieties of plant materials must be suitable for the site conditions and have appropriate heat, drought, and cold tolerance. Utilize varieties of species that are tolerant to the range of anticipated conditions and that are appropriate for the available moisture, light and exposure conditions at the site. Consider material availability and replacement availability.

Plant materials that are prone to litter should be used sparingly, and only in locations where the litter will not pose a problem to vehicles or pedestrians. This may be a significant consideration for various projects types such as parking lots, building entrances, sidewalks, screen plantings and other situations where fallen fruit, seeds, large leaves, stems, flower parts, or peeling bark may be objectionable or even hazardous in certain vehicular or pedestrian areas.

Avoid the use of plant materials with hazardous characteristics such as thorns or sharp-edged leaves in locations where pedestrians are likely to come in contact with them. Avoid trees that tend to have weak wood or that develop narrow crotches, which are more susceptible to wind and ice damage. Trees with low branch characteristics or shrubs with broad-spreading growth habits should not be placed near walkways or parking lots in order to prevent overgrowth near walk surfaces or damage to cars.

Avoid placement of trees that develop shallow root systems near paved areas in order to prevent cracking or heaving of the pavement. Shallow rooted trees may also uproot or blow over in heavy winds and should be placed only in suitable areas.

It is recommended that landscape projects are a minimum of 10% of the construction cost. Also, a minimum of 3-5% of the plant material budget be held out for replacement of materials that do not survive the first year. High risk materials or materials installed in locations likely to receive low maintenance should have a higher percentage reserve than materials that can readily establish or that are located in higher frequency maintenance zones. Other considerations for determining the percentage of plant material replacement budget are the site accessibility and potential for damage or

disturbance to materials in place, size, replacement material availability, and potential replacement cost of materials.

All plant materials that are removed due to loss by damage, vandalism, etc. shall be replaced with material of the same species, variety and size originally installed for that project, unless otherwise deemed unacceptable. Replacement materials shall also be placed in the same unless authorization is received to modify approved plans.

In order to maintain and stabilize existing projects, infill and replacement of missing materials from previous and/or current projects shall be given priority before proceeding with new projects.

Trees should not be located any closer to a structure than a distance equal to the tree's mature spread.

THE INVASIVE PLANT COUNCIL OF NEW YORK STATE)

1. The following characteristics define plants as “invasive”:

- ☐ Habitat generalists; able to invade a range of sites
- ☐ Primarily from temperate latitudes of Eurasia
- ☐ Early germination; leaf out before native plants
- ☐ Out-compete native plants through shading and nutrient competition ☐
Few natural predators here
- ☐ Adaptations such as toxins or thorns that render them unpalatable
- ☐ Reproduce both sexually and vegetatively
- ☐ Long flowering and fruiting periods
- ☐ Pollination by wind or by generalist pollinators
- ☐ High reproductive outputs
 - ☐ Long-distance dispersal (e.g., birds, water, construction equipment)
 - ☐ Ability to store large amounts of food in roots and rhizomes
- ☐ A tendency to form large monotypic stand

2. No plant with multiple “invasive” characteristics will be allowed to be planted on the Bard College campus.

PROHIBITED and REGULATED PLANT SPECIES (also commonly known to be “invasive”) See [New York State Department of Environmental Conservation](#)

INVASIVE PLANT SPECIES - VOLUNTARY CODES OF CONDUCT FOR BOTANIC GARDENS & ARBORETA

Endorsed by American Public Gardens Association, February 2002

- ☐ Conduct an institution-wide review examining all departments and activities that provide opportunities to stem the proliferation of invasive species and inform visitors. For example, review or write a collections policy that addresses this issue; examine such activities as seed sales, plant sales, book store offerings, wreath-making workshops, etc.
- ☐ Avoid introducing invasive plants by establishing an invasive plant assessment procedure. Predictive risk assessments are desirable, and should also include responsible monitoring on the garden site or through partnerships with other institutions. Institutions should be aware of both direct and indirect effects of plant introduction, such as biological interference in gene flow, disruption of pollinator relationships, etc.
- ☐ Consider removing invasive species from plant collections. If a decision is made to retain an invasive plant, ensure its control and provide strong interpretation to the public explaining the risk and its function in the garden.
- ☐ Seek to control harmful invasive species in natural areas managed by the garden and assist others in controlling them on their property, when possible.
- ☐ Promote non-invasive alternative plants or, when possible, help develop non-invasive alternatives through plant selection or breeding.
- ☐ If your institution participates in seed or plant distribution, including through Index Seminum, do not distribute known invasive plants except for bona-fide research purposes, and consider the consequences of distribution outside your biogeographic region. Consider a statement of caution attached to species that appear to be potentially invasive but have not been fully evaluated.
- ☐ Increase public awareness about invasive plants. Inform why they are a problem, including the origin, mechanisms of harm, and need for prevention and control. Work with the local nursery and seed industries to assist the public in environmentally safe gardening and sales. Horticulture education programs, such as those at universities, should also be included in education and outreach efforts. Encourage the public to evaluate what they do in their own practices and gardens.
- ☐ Participate in developing, implementing, or supporting national, regional, or local early warning systems for immediate reporting and control. Participate also in the creation of regional lists of concern.
- ☐ Botanical gardens should try to become informed about invasiveness of their species in other biogeographic regions, and this information should be compiled and shared in a manner accessible to all.
- ☐ Become partners with other organizations in the management of harmful invasive species.

Follow all laws on importation, exportation, quarantine, and distribution of plant materials across political boundaries, including foreign countries. Be sensitive to conventions and treaties that deal with this issue, and encourage affiliated organizations (plant societies, garden clubs, etc.) to do the same.

PREFERRED/ RECOMMENDED PLANT SPECIES (PARTIAL LIST)

1. US ARBORETUM GOLD METAL TREES AND SHRUBS
2. PERENNIAL PLANT ASSOCIATION'S PERENNIAL PLANTS OF THE YEAR
3. PHILADELPHIA HORTICULTURAL SOCIETY'S GOLD MEDAL WINNERS

GRASS SEED

1. Grass Seed: Provide fresh, clean, new-crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America. Provide seed mixture composed of grass species, proportions and minimum percentages of purity, germination, and maximum percentage of weed seed, as specified.
2. Establishing a new general lawn area - Use a 50-50 mix of Perennial Ryegrass and Creeping Red Fescue. Lawn must become established and tolerate at least one mowing to be adequate.
3. The Bard College soccer field sod consists of a mix of Excursion Kentucky Blue Grass (27.20%), Moon Shadow Kentucky Blue Grass (25.98%), Quantum Kentucky Blue Grass (24.77%), and Langara Kentucky Blue Grass (20.67%).
4. Some types of fertilizers Bard has used in the past include: Starter fertilizer for newly planted areas and then one application after lawn is established.
5. General Maintenance uses organic fertilizer, such as Nature Safe 10-2-8. If there are specific soil problems, soil samples should be taken to determine corrective measures. Allow for settling. Refill as needed, if additional settling occurs.

PREPARATION FOR PLANTING LAWNS

1. Loosen sub grade of lawn areas to a minimum depth of 4" (four inches). Allow for settling. Refill as needed, if additional settling occurs. All edges and pavements should be carefully hand raked to achieve a consistent and neat junction with adjacent pavements and planting beds.
2. Remove stones over 1 1/2" in any dimension and sticks, roots, rubbish and other extraneous matter.
3. Limit preparation to areas, which will be planted promptly after preparation.
4. Spread topsoil to minimum depth required to meet lines, grades and elevations shown, after light rolling and natural settlement.
5. Place approximately 1/2 of total amount of topsoil required. Work into top of loosened sub grade to create a transition layer and then place remainder of planting soil.
6. Add specified soil amendments and mix thoroughly into upper 4" (four inches) of topsoil.

SEEDING NEW LAWNS

1. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.
2. Sow seed using a

spreader or seeding machine at seeding rate indicated herein. Please note that there must be at least 75% grass germination coverage before any final payment for grass seeding can be made and before final approval of the project. An appropriate fertilizer must be added to the slurry. And no seed will be allowed to come in contact with mulched beds. Use of a drop seeder around these areas might be necessary. 3. Do not seed when wind velocity exceeds 5 miles per hour.

4. Distribute seed evenly over entire area by sowing equal quantity in two directions at right angles to each other.

5. Sow grass seed at a rate of 4.0 lbs per 1,000 sq ft.

6. Protect seeded slopes against erosion with erosion control or other methods acceptable to the College.

7. Protect seeded areas against erosion by spreading straw mulch within 24 hours after seeding. Place straw mulch uniformly in a continuous blanket at the rate of 2-50 lb bales per 1,000 sq ft of area. A mechanical blower may be used for straw mulch application when acceptable to the College.

8. Contractor responsible for getting the new seed established. Responsible for watering or reseeding as needed until the first complete mowing.

SEEDING SLOPES

1. Use Ernst Conservation Seed to determine appropriate seed mixture. Confirm selection with B&G personnel, if not already specified.

2. Use anti-erosion mulch, discussed earlier.

TIME OF SEEDING

1. Seed immediately after preparation of seedbed. Seeding shall be done between April 1 and June 1, or between August 15 and October 15. When delays in operations carry the work beyond the seasons specified, or when conditions of high winds (winds that exceed 5 mph velocity), drought, excessive moisture or ice are such that satisfactory results are not likely to be obtained at any stage of the work, the work will stop and it shall be resumed only when the desired results are likely to be obtained, or when approved corrective measures and procedures are adopted.

2. Seed indicated areas within contract limits and areas adjoining contract limits disturbed as a result of construction operations.

3. Work notification: Notify College at least seven (7) working days prior to start of seeding operations.

4. Protect existing utilities, paving, and other facilities from damage caused by seeding operations.

5. Perform seeding work only after planting and other work affecting ground surface has been completed.

6. Restrict traffic from lawn areas until grass is established. Erect signs and barriers as required.

7. Provide hose and lawn watering equipment as required.

METHOD OF SEEDING

1. Mechanical drills or seeders shall place the seed to a depth not exceeding 1/4" (one quarter inch). Two passes of seeder shall be made over each area, the second pass being made at right angles to the direction of the first, one-half of the required amount of seed being sown in each pass.

2. Broadcast seed shall be covered to a depth not exceeding 1/4" (one-quarter inch) by raking, brush or chain harrowing, or other approved method. Broadcast seeding shall not be done during windy weather. After sowing, the seeded areas shall be lightly rolled and watered with fine spray.

3. Rollers for firming the seedbed before and after seeding shall weigh not more than 65 pounds per foot of width. Cultipaker, or similar equipment, may be used in one operation to cover the seed and firm the seedbed after seeding.

MISCELLANEOUS LANDSCAPE PRODUCTS

1. Anti-Erosion Mulch: Provide clean, seed-free salt hay or threshed straw of wheat, rye, oats or barley OR use Penn Mulch as specified.
2. Anti-Desiccant: Emulsion type, film-forming agent designed to permit transpiration but retard excessive loss of moisture from plants. Deliver in manufacturer's fully identified containers and mix in accordance with manufacturer's instructions.
3. Filtration/Separation Fabric: Water permeable filtration fabric of fiberglass or polypropylene fabric is only to be used in specified areas – not in general planting beds.
4. Tree Wrapping: not permitted.
5. Stakes and Guys: Provide stakes of sound new hardwood, treated softwood, or redwood, free of knotholes and other defects. Provide wire ties and guys of 2-strand, twisted, pliable galvanized iron wire not lighter than 12 gauge with zinc-coated turnbuckles. Provide not less than 1/2" diameter rubber or plastic hose, cut to required lengths and of uniform color, material and size to protect tree trunks from damage by wires.

LANDSCAPE SITE PREPARATION

Layout individual tree and shrub locations and areas for multiple plantings. Stake locations and outline areas and secure College's acceptance before start of planting work. Make minor adjustments as needed.

PREPARATION OF PLANTING SOIL

1. Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful or toxic to plant growth.
2. Fertilizer shall be complete, partially organic, containing by weight: 10% nitrogen, 10% phosphorus, 10% potash.
3. For planting beds and lawns, mix planting soil either prior to planting or apply on surface of topsoil and mix thoroughly before planting.
4. Mix lime with dry soil prior to mixing of fertilizer.
5. Prevent lime from contacting roots of acid-loving plants.
6. Apply phosphoric acid fertilizer (other than that constituting a portion of complete fertilizers) directly to sub grade before applying planting soil and tilling.

PREPARATION FOR PLANTING LAWNS

1. Loosen sub grade of lawn areas to a minimum depth of 4" (four inches). Allow for settling. Refill as needed, if additional settling occurs. All edges and pavements should be carefully hand raked to achieve a consistent and neat junction with adjacent pavements and planting beds.
2. Remove stones over 1 1/2" in any dimension and sticks, roots, rubbish and other extraneous matter.
3. Limit preparation to areas, which will be planted promptly after preparation.
4. Spread topsoil to minimum depth required to meet lines, grades and elevations shown, after light rolling and natural settlement.
5. Place approximately 1/2 of total amount of topsoil required. Work into top of loosened sub grade to create a transition layer and then place remainder of planting soil.
6. Add specified soil amendments and mix thoroughly into upper 4" (four inches) of topsoil.

PREPARATION OF UNCHANGED GRADES

1. Where lawns are to be planted in areas that have not been altered or disturbed by excavating, grading, or stripping operations, prepare soil for lawn planting as follows:
 - a. Till to a depth of not less than 4" (four inches); apply soil amendments and initial
 - b. Allow for sod thickness in areas to be sodded.
 - c. Apply specified commercial fertilizer at rates specified and thoroughly mix into upper 2" (two inches) of topsoil.
 - d. Delay application of fertilizer if lawn planting will not follow within a few days.
 - e. Fine grade lawn areas to smooth, even surface with loose, uniformly fine texture. Rake and drag lawn areas, remove ridges and fill depressions, as required to meet finish grades.
 - f. Limit fine grading to areas, which can be planted immediately after grading. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface moisture to dry before planting lawns.
 - g. Do not create a muddy soil condition.
 - h. Restore lawn areas to specified condition if eroded or otherwise disturbed after fine grading and prior to planting.
 - i. Avoid disturbing vegetation and soil on slopes near surface water.

PREPARATION OF PLANTING BEDS

1. Loosen subgrade of planting bed area to a minimum depth of 6" (six inches) for perennials and annuals, but minimum 18" for trees and shrubs. Allow for settling. Refill as needed, if additional settling occurs.
2. Remove stones over 1 1/2" in any dimension, and sticks, stones, rubbish and other extraneous matter.
3. Spread planting soil mixture to minimum depth required to meet lines, grades and elevations shown, after light rolling and natural settlement.
4. Place approximately 1/2 of the total amount of planting soil required. Work into top of loosened sub grade to create a transition layer, then place the remainder of the planting soil.
5. Dig beds not less than 6" (six inches) deep and mix with specified soil amendments and fertilizers.

EXCAVATION FOR TREES AND SHRUBS

1. Excavate pits, beds and trenches, with vertical sides and with bottom of excavation slightly raised at center to provide proper drainage. Loosen hard subsoil in bottom of excavation.
2. For balled and burlapped (B&B trees and shrubs), make excavations at least half again as wide as the ball diameter and equal to the ball depth, plus following allowance for setting of ball on a layer of compacted backfill: Allow for 3" setting layer of planting soil mixture.
3. For container grown stock, excavate as specified for balled and burlapped stock, adjusted to size of container width and depth.
4. Dispose of subsoil removed from planting excavations. Do not mix with planting soil or use as backfill.
5. Fill excavations for trees and shrubs with water and allow to percolate out before planting.

PLANTING TREES AND SHRUBS

1. Set balled and burlapped (B&B) stock on layer of compacted planting soil mixture, plumb and in center of pit or trench with top of ball at same elevation or slightly higher as adjacent finished landscape grades. Remove burlap and wire cage from sides of balls; retain on bottoms, if needed. Remove all tags, labels, strings, roping of any kind. Dispose of properly. When set, place additional backfill around base and sides of ball, and work each layer to settle backfill and eliminate voids and air pockets. When excavation is approximately 2/3-full, water thoroughly before placing the remainder of backfill. Repeat watering until no more is absorbed. Water again after placing the final layer of backfill.
2. Create "bowl" with backfill to allow for mulching and watering.
3. Mulch tree pits, trenches and planted areas. Provide not less than following thickness of mulch and work into top of backfill and finish level with adjacent finish grades.
4. Provide 2" (two inch) thickness of mulch.
5. Prune, thin out and shape trees and shrubs in accordance with standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise directed by the College, do not cut tree leaders, and remove only injured or dead branches from flowering trees, if any. Prune shrubs to retain natural character.
6. Remove and replace excessively pruned or malformed stock resulting from improper pruning.

7. Guy and stake trees immediately after planting, if needed. Remove guys and stakes after one season.

Consider these factors at planting time to avoid future problems:

1. Select the “right tree for the right place”. If your native soil is clay, choose a tree that can survive under these conditions. If your area is constantly moist or dry choose a species adapted to these conditions. Don’t fight an uphill battle, choose the proper tree for your site. Remember, all sites have limitations and all trees have limitations. Making a good match from the beginning will ensure a greater chance for success.
2. Dig the planting hole 2-3 times the width of the rootball or the container the tree is currently occupying. This loosens the soil that new roots will grow into to establish the tree. Be sure not to plant too deep. The proper planting depth is where the trunk of the tree flares out to become the root system. This is called the root flare. When planting balled and burlapped trees you need to unwrap the burlap and scrape away the soil from the top of the ball until you find this flare.
3. Containerized trees need to be checked as well, as each time a plant is shifted up in the nursery it is generally planted a little deeper. Research has shown that it is better to err on the side of planting a tree too shallow rather than too deep.
4. Once the planting hole is established and the tree is set at the proper depth, unfold the burlap and lay it back in the planting hole.
5. If a wire basket is involved, be sure to cut away as much of it as possible. If roots grow through this wire and expand in diameter, they can girdle the tree many years down the road.
6. If the tree is taken out of a container and the roots are circling, break them up and orient them away from the trunk. Roots that grow toward the trunk will expand in diameter over time and girdle the tree. Norway, sugar, and silver maples are commonly girdled by their own roots as well as some pines, poplars and little leaf lindens.
7. Once the top of the burlap is folded back or removed and the wire cage is cut away, begin to backfill the hole with the soil that was removed. Use the native soil without amending to prevent the formation of a tea-cup effect in the planting hole. This tea-cup effect discourages the roots from establishing beyond the planting hole and is a detriment to the survival of the tree.
8. Once the soil is backfilled into the planting hole, be sure to water it well. Good deep watering will eliminate large holes in the soil around the roots that will prevent them from growing beyond their current spread.
9. To protect the tree and give it an advantage, we recommend placing 2-4 inches of mulch around the base of the trunk to keep mowers, trimmers and other plants from competing with the new roots as they get established. Remember to keep the mulch from direct contact with the trunk to avoid rotting of the bark. Spread the mulch at least to the drip line.
10. The most important factor in assuring the success of your tree will be an adequate supply of water for the remainder of the season. It is recommended that 1” of water be supplied per week, either naturally or through irrigating regularly. Soaker hoses or treegators are very helpful in supplying water to the targeted area in a timely fashion. Helpful irrigation tools can be purchased from local garden centers. Proper planting will increase your chances for successful establishment of your trees

PLANTING UNDER A TREE CANOPY

1. Do not add more than 4" total of soil and/or mulch.
2. Keep mulch away from base of tree, any wood chips or soil that come in contact with the trunk of the tree will promote rot of the tree trunk.
3. Never till soil under canopy, do no overwork the soil under the tree.
4. Work with hands or hand tools only, no large equipment.
5. Do not plant within 3 feet of the tree trunk.
6. Do not plant anything within drip line that will compete with the tree for moisture and nutrients such as another tree or large shrubs.
7. Avoid cutting roots from 1-inch diameter or greater.

SEEDING NEW LAWNS

1. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.
2. Sow seed using a spreader or seeding machine at seeding rate indicated herein. Please note that there must be at least 75% grass germination coverage before any final payment for grass seeding can be made and before final approval of the project. An appropriate fertilizer must be added to the slurry. And no seed will be allowed to come in contact with mulched beds. Use of a drop seeder around these areas might be necessary.
3. Do not seed when wind velocity exceeds 5 miles per hour.
4. Distribute seed evenly over entire area by sowing equal quantity in two directions at right angles to each other.
5. Sow grass seed at a rate of 4.0 lbs per 1,000 sq ft.
6. Protect seeded slopes against erosion with erosion control or other methods acceptable to the College.
7. Protect seeded areas against erosion by spreading straw mulch within 24 hours after seeding. Place straw mulch uniformly in a continuous blanket at the rate of 2-50 lb bales per 1,000 sq ft of area. A mechanical blower may be used for straw mulch application when acceptable to the College.
8. Contractor responsible for getting the new seed established. Responsible for watering or reseeding as needed until the first complete mowing.

SEEDING SLOPES

1. Use Ernst Conservation Seed to determine appropriate seed mixture. Confirm selection with B&G personnel, if not already specified.
2. Use anti-erosion mulch, discussed earlier.

TIME OF SEEDING

1. Seed immediately after preparation of seedbed. Seeding shall be done between April 1 and June 1, or between August 15 and October 15. When delays in operations carry the work beyond the seasons specified, or when conditions of high winds (winds that exceed 5 mph velocity), drought, excessive moisture or ice are such that satisfactory results are not likely to be obtained at any stage of the work, the work will stop and it shall be resumed only when the desired results are likely to be obtained, or when approved corrective measures

- and procedures are adopted.
2. Seed indicated areas within contract limits and areas adjoining contract limits disturbed as a result of construction operations.
 3. Work notification: Notify College at least seven (7) working days prior to start of seeding operations.
 4. Protect existing utilities, paving, and other facilities from damage caused by seeding operations.
 5. Perform seeding work only after planting and other work affecting ground surface has been completed.
 6. Restrict traffic from lawn areas until grass is established. Erect signs and barriers as required.
 7. Provide hose and lawn watering equipment as required.

METHOD OF SEEDING

1. Mechanical drills or seeders shall place the seed to a depth not exceeding 1/4" (one quarter inch). Two passes of seeder shall be made over each area, the second pass being made at right angles to the direction of the first, one-half of the required amount of seed being sown in each pass.
2. Broadcast seed shall be covered to a depth not exceeding 1/4" (one-quarter inch) by raking, brush or chain harrowing, or other approved method. Broadcast seeding shall not be done during windy weather. After sowing, the seeded areas shall be lightly rolled and watered with fine spray.
3. Rollers for firming the seedbed before and after seeding shall weigh not more than 65 pounds per foot of width. Cultipaker, or similar equipment, may be used in one operation to cover the seed and firm the seedbed after seeding.

RECONDITIONING EXISTING LAWNS AND PLANTING AREAS

1. Recondition existing lawn and planting areas damaged by contractor's operations, including damage due to storage of materials and equipment and movement of vehicles. Also, recondition existing lawn and planting areas where minor re-grading is required.
2. Provide fertilizer, seed or sod, plants and soil amendments as specified for and as required, to provide a satisfactorily reconditioned lawn or planting area.
3. Cultivate bare and compacted areas thoroughly to provide a satisfactory planting bed. Allow for settling. Refill as needed, if additional settling occurs.
4. Remove deceased and unsatisfactory lawn areas; do not bury into soil. Remove topsoil containing foreign materials resulting from contractor's operations, including oil drippings, stone, gravel, and other loose building materials
5. Where substantial lawn remains, but is thin, mow. Rake aerate if compacted, fill low spots, remove humps, and cultivate soil, fertilize, and seed. Remove weeds before seeding, if extensive, apply selective chemical weed killers as required. Apply a seedbed mulch, if required, to maintain moist condition.
6. Water newly planted lawn/planting areas and keep moist until new roots are established.
7. Begin maintenance immediately after planting.

SODDING NEW LAWNS

1. Lay sod within 24 hours from time of stripping. Do not plant dormant sod or if ground is frozen.
2. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips; do not overlap. Stagger strips to offset joints in adjacent courses. Work from boards to avoid damage to sub grade or sod. Tamp or roll lightly to ensure contact with sub grade. Work sifted soil into minor cracks between pieces of sod; remove excess to avoid smothering of adjacent grass.
3. Water sod thoroughly with a fine spray immediately after planting.

CLEAN-UP AND PROTECTION

1. During landscape work, keep pavements clean and work area in an orderly conditions.
2. Protect landscape work and materials from damage during landscape operations, operations By other contractors, and trades and trespassers.
3. Maintain protection during installation and maintenance periods.
4. Treat, repair or replace damaged landscape work as directed.

DISPOSAL OF REFUSE AND OTHER MATERIALS

1. All landscape related items must be disposed of properly.
2. Permission must be granted before disposal of items on Bard College property is allowed.
3. Confirm disposal requirements with Building and Grounds.

INSPECTION AND ACCEPTANCE

1. When landscape work is completed, including maintenance, the College will, upon request, make an inspection to determine acceptability.
2. Landscape work may be inspected for acceptance in parts agreeable to the College, provided work offered for inspection is complete, including maintenance.
3. Where inspected, if landscape work does not comply with requirements, replace rejected work and continue specified maintenance until re-inspected by the College and found to be acceptable. Remove rejected plants and materials promptly from the project site.

LANDSCAPE SITE MAINTENANCE

All plants and newly seeded lawn areas will have an agreed upon survival rate and replacement guarantee when installed by subcontractors specified in the work contract.

In general, the Standards for Organic Land Care Practices for Design and Maintenance of Ecological Landscapes should be followed at all times. (see *References*). Also, refer to Landscape Specifications in this manual for specific landscape maintenance tasks.

IRRIGATION

1. Trees/shrubs/perennials shall be watered deeply, but infrequently, to promote deeper rooting, and shall be fertilized as required by ANSI A300.

DEAD PLANTS

1. Dead plants shall be removed and replaced. Damaged branches shall be removed and overgrown areas shall be thinned by the selective removal of unnecessary plants.

ACCESSIBILITY

1. Shrubs and vines used for screening trash enclosures and service areas shall be pruned to maximize screening while allowing access to the storage/service areas.

PRUNING

1. Depth pruning should always be practiced for all shrubs in addition to any hedge trimming to allow for proper air circulation.
2. Proper pruning cuts on all plant material are expected.

WEEDS

1. The preferred method of weeding is to do so after it has rained or with a hand tool to ensure that most of the root is removed. Basic hand weeding is not acceptable if the root remains in the grounds.

EDGING

1. A "Victorian" straight edge is preferred, aka, a clean cut bed edge that separates the lawn from the mulched bed. Clean, straight lines.
2. Mulch up to edge only.

MULCHING

1. Natural, brown, double ground mulch is recommended.
2. Mulch should only be applied if needed, or if existing mulch is less than 2".
3. Apply mulch at a maximum of 3- 4" only.
4. Newspaper or cardboard can be used as a weed barrier. No fabric is allowed.
5. No mulch should be piled around the base of the plant.

TRANSPLANTING

1. All transplants should be pruned prior or just after planting of all broken branches or awkward/dead limbs.
2. They should be planted at the proper soil level and no soil should be piled around the base of the plant. The soil must be tamped down, but not compacted such that air is not able to penetrate the root system at all, especially for spring plantings.
3. Transplants should be watered during and/or after planting is finished. Monitor all transplants

for 1 year.

CLEAN-UP

1. Debris and trimmings produced by thinning and pruning shall be removed from the site.

EQUIPMENT

1. All landscape maintenance equipment that is the property of Bard College and used on Bard grounds must be returned in the condition it was found in. Failure to return equipment will result in compensation or disciplinary action.
2. All handheld power equipment must be secured when traveling in the bed of a truck to prevent rollover and breakage.
3. No faulty equipment should be returned to the Horticulture tool cage. It must be repaired, disposed of properly and/or replaced.
4. JLG Manlift: Use of the Bard College JLG man lift requires the contractor to fill out an agreement form and to perform a visual inspection of the equipment prior to operation. Agreement and inspection forms are available at B&G.
5. String Trimming: No scalping of the lawn is permitted. String trimming is not be allowed around the base of tree trunks.

WILDLIFE

1. If any form of living wildlife (including bird eggs) is encountered, precautions should be made to not disturb or gently move the wildlife to a nearby location without disturbing it.
 - a. The Arboretum is part of the first “bird-friendly” campuses in the United States. We work in conjunction with a student-run group and the National Audubon Society to feed, house and water birds on campus. Whenever possible, bird-friendly and wildlife-friendly plants should be selected and protected.
2. If dead wildlife is encountered, it should be disposed of using proper methods to reduce infection and disposed of in a College dumpster or perimeter location.

LANDSCAPE MAINTENANCE SCHEDULE (TYPICAL FOR BARD COLLEGE HORTICULTURE DEPARTMENT)

PLEASE COORDINATE ALL CONTRACTED LANDSCAPE PROJECTS WITH ALREADY SCHEDULED LANDSCAPE CAMPUS WORK.

JANUARY	INTERCESSION TREE WORK ON MAIN CAMPUS AND DORM AREAS; FINISH GRASS CUT BACKS AND DR MOWING; SNOW REMOVAL
FEBRUARY	TREE WORK CAMPUS-WIDE; SNOW REMOVAL
MARCH	TREE WORK CAMPUS-WIDE; PRUNE CRABAPPLES, RED TWIG/YELLOW TWIG DOGWOODS, VIBURNUMS; PRUNE WISTERIA AT BLITHEWOOD; CUT DOWN LIROPE AND REMAINING GRASSES/PERENNIALS; SNOW REMOVAL
APRIL	PREPARE FOR COMMENCEMENT (ADMISSIONS, FACULTY CIRCLE AND COMMENCEMENT FIELD ARE PRIORITY); PLANT TREES; ARBOR DAY/EARTH DAY; PANSIES OUT; PLANT HEALTH CARE; OPEN BLITHEWOOD POOL
MAY	PREP FOR COMMENCEMENT; MULCHING; PLANTING; CONTAINERS
JUNE	PLANTING; LANDSCAPE PROJECTS
JULY	LANDSCAPE PROJECTS; HEDGE TRIMMING; PREP FOR 1ST YEAR STUDENTS; TREAT AILANTHUS
AUGUST	HEDGE TRIMMING; CUT BACK IVY; LANDSCAPE PROJECTS
SEPTEMBER	CUT BACK IVY; LANDSCAPE PROJECTS; PLANT TREES
OCTOBER	PLANT TREES; LEAF CLEAN UP; FAMILY WEEKEND (CLEAN UP ADMISSIONS/FISHER LOT); CLOSE UP BLITHEWOOD POOL
NOVEMBER	LEAF CLEAN UP; PERENNIALS CUT BACK; PLANT BULBS
DECEMBER	CONTINUE LEAF CLEAN UP; DR MOWING; TREE WORK CAMPUS WIDE; SNOW REMOVAL

GENERAL TREE CARE

GOALS AND TARGETS

Goal #1 of the tree care policies outlined below is to promote the health and care of our tree collection as well as the safety of our staff, in accordance with ANSI A300 requirements (2012 version) for the well-being of the Bard community. All ANSI Z133.1 safety requirements for tree care operations must be followed.

The **Target** is to have zero safety violations and zero safety concerns from community members, staff and contractors. This goal will be measured on an annual basis by the Horticulture Supervisor reviewing all complaints and workman's compensation claims.

Goal #2 is to inventory all the recognized canopy specimen trees and secondary ornamental trees as well as the naturalized trees within the Arboretum.

The **Target** is to conduct ongoing tree hazard evaluations of these trees, with repeating tree evaluations every 5 years. All specimen trees will be labeled with interpretive labels and all records will be kept in the Arboretum office on BG Base Collection Management software and all trees will be mapped using GPS data.

Goal #3 is to increase the campus tree canopy each year.

The **Target** is to replace as many trees to the campus as are removed each year, as well as add to the canopy each year by as many as the budget will allow through Arbor Day plantings, memorial plantings and new construction plantings.

All tree alterations (pruning, removals, attachments of any kind, etc.) must be approved by the College Horticulture Supervisor prior to the commencement of work.

All tree contractors must be licensed, certified, and insured for \$2 million dollars prior to the commencement of agreed upon work.

MULCHING

1. Mulch should be placed 2 to 4 inches deep and cover the entire root system, which may be as far as 2 or 3 times the diameter of the branch spread of the tree. If the area and activities happening around the tree do not permit the entire area to be mulched, it is recommended that you mulch as much of the area under the drip line of the tree as possible

2. Only mulch 2 to 4 inches deep around the base of trees, shrubs and perennials, allowing enough space for airflow to the roots. Avoid "mulch volcanoes" entirely. If mulch is piled against the stems or tree trunks, pull it back several inches so that the base of the trunk and the root crown are exposed. If there are

drainage problems, a thinner layer should be used. Avoid placing mulch against the tree trunks. Place mulch out to the tree's drip line or beyond.

3. Use only organic mulches including wood chips, pine needles, hardwood and softwood bark, cocoa hulls, leaves, compost mixes, and a variety of other products usually derived from plants. It should be well aerated and, preferably, composted. Avoid sour-smelling mulch. No dyed mulches permitted.

4. Weed barrier fabric is not permitted as an effective barrier between soil and mulch. Plastic also should

not be used because it interferes with the exchange of gases between soil and air, which inhibits root growth.

5. Inspect plants and soil in the area to be mulched. Determine whether drainage is adequate. Determine whether there are plants that may be affected by the choice of mulch.

6. If mulch is already present, check the depth. Do not add mulch if there is a sufficient layer in place. Rake the old mulch to break up any matted layers and to refresh the appearance.

PRUNING

1. Pruning is often desirable or necessary to remove dead, diseased, or insect-infested branches and to improve tree structure, enhance vigor, or maintain safety. Because each cut has the potential to change the growth of (or cause damage to) a tree, no branch should be removed without a reason.

2. Refer to the Best Management Practices Tree Pruning (International Society of Arboriculture).

3. Plants shall be pruned in accordance with ANSI A300 to maintain their intended shapes and sizes and to insure the health of the specimen and safety of the Bard community. All ANSI Z133.1 safety requirements for tree care operations must be followed.

4. It is required that only qualified individuals with sufficient training and experience shall be allowed to perform major tree pruning and thinning operations. Light trimming, grooming, or minor storm damage repair may be performed by semi-skilled personnel under the guidance or direction of trained personnel.

5. Pruning of newly planted trees should be limited to corrective pruning. Remove torn or broken branches, and save other pruning measures for the second or third year.

6. Proper selective pruning and thinning of major limbs should be performed as necessary to eliminate crossing and parallel wood, to remove damaged or diseased wood, to maintain open branching and to improve the overall structure of the tree. As trees mature, they will also require occasional lifting of the canopy to maintain ground clearance for pedestrian circulation, maintenance operations, and possibly vehicular access.

7. Do not use wound dressings on tree cuts.

8. Most routine pruning to remove weak, diseased, or dead limbs can be accomplished at any time during the year with little effect on the tree. As a rule, growth is maximized and wound closure is fastest if pruning takes place before the spring growth flush. Some trees, such as maples and birches, tend to

“bleed” if pruned early in the spring. It may be unsightly, but it is of little consequence to the tree. Heavy pruning just after the spring growth flush should be avoided.

9. Pruning cuts should be made just outside the branch collar. The branch collar

contains trunk or parent branch tissue and should not be damaged or removed. If the trunk collar has grown out on a dead limb to be removed, make the cut just beyond the collar. Do not cut the collar.

10. Major limb removals shall be properly cut at the base of the limb and shall not include collar removal. Flush cutting or collar removal of a large limb requires longer for the wound to heal which causes the tree to be at greater risk to heartwood rot, disease, pest penetration, etc. It is more desirable to have a smaller cross-sectional area cut that will heal or callus over, in a shorter length of time.

12. Plants shall be pruned to avoid blocking walks, roads, road signs, light poles, and sight distance views for vehicular traffic.
13. Debris and trimmings produced by thinning and pruning shall be removed from the site.
14. Only remove up to one-third of the total canopy at a time to allow the tree or shrub to recover properly.
15. Do not top or pollard trees unless specified in maintenance operations.

PRUNING SCHEDULE

1. The maintenance pruning schedule shall be dictated by tree species, age, function, and placement.
2. Trees less than 7 years old should receive structural pruning on an annual or biennial basis 3. Trees 7-20 years old should receive structural pruning every two to five years.
4. Trees 20 years old and older receive maintenance pruning every five to seven years to clean dead, diseased, dying, and defective branches from the crown.
5. Trees adjacent to roadways, walkways, signs, and street lights are annually inspected for safety and clearance issues and maintenance pruned as necessary

PRUNING TECHNIQUES

1. Specific types of pruning may be necessary to maintain a mature tree in a healthy, safe, and attractive condition.
2. **Cleaning** is the removal of dead, dying, diseased, crowded, weakly attached, and low-vigor branches from the crown of a tree.
3. **Thinning** is the selective removal of branches to increase light penetration and air movement through the crown. Thinning opens the foliage of a tree, reduces weight on heavy limbs, and helps retain the tree's natural shape.
4. **Raising** removes the lower branches from a tree in order to provide clearance for buildings, vehicles, pedestrians, and vistas.
5. **Reduction** reduces the size of a tree, often for clearance for utility lines. Reducing the height or spread of a tree is best accomplished by pruning back the leaders and branch terminals to lateral branches that are large enough to assume the terminal roles (at least one-third the diameter of the cut stem). Compared to topping, reduction helps maintain the form and structural integrity of the tree.

CABLING, BRACING, GUYING

1. All cabling, bracing and guying of new or mature trees must be approved by the College. 2. Only

trees, which are not self-supporting, shall be staked or guyed. Tree guys and stakes ties shall be inspected and adjusted periodically and removed when necessary, to insure that they are adequately surrounding the tree without girdling trunks or branches.

3. Refer to and abide by the Best Management Practices Tree Support Systems: Cabling, Bracing, and Guying. (International Society of Arboriculture) and ANSI A300 (Part 3) Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Support Systems a. Cabling, Bracing, and Guying). International Society of Arboriculture.

TREE REMOVAL

1. Removal is recommended when a tree is dead, dying, or considered irreparably hazardous ; is causing an obstruction or is crowding and causing harm to other trees and the situation is impossible to correct through pruning; is to be replaced by a more suitable specimen; should be removed to allow for construction (only when needed and cannot be avoided).
2. All tree removals must be approved by the College prior to the start of the work.
3. Only qualified individuals will be allowed to perform tree removals.
4. All individuals involved in tree removals must refer to and abide by ANSI Z133.1 American National Standard for Tree Care Operations (International Society of Arboriculture).
5. The Tree Ordinance Guidelines, Provision 31. (International Society of Arboriculture) must be consulted prior to any tree removal if the tree to be removed has the ability to qualify as a heritage or historic tree
6. Any tree that is located less than 25' from the center line of the road (on Annandale Road) is considered in the right-of-way and a "county tree." These trees should be pruned or removed by County personnel, unless other approval is granted.
7. Tree brush, debris, chips and logs should be disposed of properly. Bard personnel must approve alternative disposal methods.
8. All stumps must be cut as flush to the ground as possible. If this is not possible, Bard personnel must be consulted.
9. All Ailanthus and other weedy trees that resprout once cut, must be cut high to allow recutting in the spring season and treated with systemic.

STUMP GRINDING

1. Contract a professional-for-hire.
2. Consult College personnel on the specifications concerning whether to leave grindings in place, otherwise, remove them and fill hole with topsoil, grass seed and mulch hay.
3. Grind the entire stump and surrounding roots.
4. Any damage, ruts, or disturbance to lawn or garden beds during the grinding process, must be repaired to its original condition by subcontractor.
5. Leave a safety device (safety flagging or safety cone) if a hole in the ground is left from the grinding process overnight.
6. All grindings must be removed, topsoil added and left slightly mounded to allow for decay and settling to occur.

HAZARD AND EMERGENCY TREE REMOVAL

1. A tree is deemed "hazardous" based on the ISA Hazardous Evaluation. Currently trees on campus are being evaluated using this method. Contact the Horticulture Department for more

information.

2. If a tree is considered “hazardous” it is scheduled for removal. Tree removals are usually done by Bard staff or contractor.
 3. All hazardous or emergency tree removals should be cleaned up in a timely manner.
 4. If the hazardous tree has damaged any College or other property, it must be documented. Photos must be taken, College Security notified and in some cases the State Police must be notified.
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MANAGING FOR CATASTROPHIC EVENTS

1. **Prioritize, Plan and Prepare.** In the event of severe weather conditions such as tornadoes, hurricanes, ice, snow, and wind storms, falling trees will be removed by Bard College staff or a subcontractor.
 2. Roads and streets shall be cleared first, then access to critical buildings, administration, library, student center, dorms, etc., in that order.
 3. All trees damaged or broken will then be pruned to restore their health and structure.
 4. In advance of severe weather conditions, all necessary equipment shall be checked for readiness and safety by staff.
 5. All hazardous areas that cannot be cleaned up in advance car or pedestrian traffic, the area must be barricaded off with barricades, cones, caution tape, etc. for the safety and protection of the community.
 6. If during the course of the event, trees damage any College or other property, it must be documented. Photos must be taken, College Security notified and in some cases the State Police must be notified.
 7. Public gardens designate Core Collections to focus efforts and achieve excellence among a manageable set of defined plant groups. These “strong suits” help define a garden’s identity and contribute directly to its mission.
 7. If the Horticulture Department budget permits, lost trees will be replaced to restore the structure and function of the campus forest in a reasonable time frame.
 8. Refer to APGA guidelines:
<https://www.publicgardens.org/grow-your-garden/protect/disaster-readiness/>
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FLOODING

1. Floodwaters are contaminated with raw sewage, so vegetables from flooded gardens should be handled with caution.
2. Give the soil a chance to dry out before replanting. Working wet soils will lead to large dirt clots and soil compaction in the future.

Established landscape plants have a better chance of survival, depending on how long they were under water and how resilient the species. It is hard to predict which plants will survive, and which will have a slow or immediate reaction to low soil-oxygen levels. Most will show effects quickly and die or recover quickly, while others may not show the full signs of flood stress until next year or the year after.

3. Cover any exposed roots and remove excess silts and soils covering tree trunks and crowns. Some

trees species are more resilient to flooding conditions and will survive, while others will slowly show signs of lack of aeration (too much water around the roots and not enough oxygen). Leaves will turn yellow, drop off and eventually the plant will respond with branch dieback. Anticipate that plants may be stressed, with poor growth and more diseases. Excessively wet soils encourage root and crown diseases like *Fusarium* spp., *Phytophthora* spp., *Pythium* spp. and *Rhizoctonia solani*.

4. Reduce stress and disease by improving the site's drainage. Replace lost soils with organic matter. Maintain plant health by avoiding excessive nutrients while plants are recovering. Use fertilizers sparingly – they can accelerate disease populations. Organic matter will replace lost soil microbes as well as slow-release nutrients to promote plant health.

5. During this growing season, cut back only the branches that are dead or broken from the storms. Wait to see if other parts of the plant start to bud out in the next month or two.

6. Too much water can be just as damaging to turfgrasses as a severe drought. Although flooded turfs may be prone to erosion, turfgrass plants may not be directly injured by water. Unfortunately, saturated soils and the debris left on the turf surface after water recedes can be especially problematic.

7. Soil erosion is greatest when flood waters flow rapidly in channels across a turf. Several factors influence the amount of damage resulting from turf being covered with water. The level of turfgrass injury resulting from submersion also depends on the water temperature and depth, and the amount of time the turf is submerged. Turfgrass plants with leaves extending above the water surface usually survive longer than those that are completely submerged. When soils remain too wet for too long, oxygen becomes limiting near turfgrass roots and the carbon dioxide level rises. When the soil is saturated, the soil oxygen may be depleted within a few hours, and plants are less able to take up water and nutrients. The yellowing of turfgrass plants after being submerged may be due to a lack of nitrogen. More soil and debris are deposited by flood waters when water is moving slowly. Soil and debris two or more inches deep should be removed from the turf as soon as possible after flooding. It is often very difficult to remove a thin (e.g., one inch or less) layer of soil or debris. If the thin layer of soil and debris begins to restrict the rate at which water moves from the turf surface into soil, consider core aerifying during favorable weather.

FOREST MANAGEMENT PRACTICES FOR CONSERVING INDIANA BATS AND SUMMER HABITAT

The following general guidelines are intended to assist land managers and land owners in managing forests in a way that is consistent with the conservation of the endangered Indiana bat (*Myotis sodalis*). The guidelines consider the Indiana bat's needs for foraging and roosting habitat to survive and successfully reproduce. Note that these guidelines will likely result in habitat that is suitable, but generally

less than optimal, for Indiana bats. Application of these guidelines is intended to minimize the risk of “take” of Indiana bats.

FOREST MANAGEMENT GUIDELINES

1. Retain at least 60% canopy closure within forested stands.
2. Retain all snags, except where they pose a serious human safety hazard due to their location near a building, yard, road or powerline. A tree with less than 10% live canopy should be considered a snag. When possible, delay removal of hazard trees until bats are hibernating or concentrated near their hibernacula (between October 1 and March 31).
3. Do not harvest or manipulate shagbark hickory trees (*Carya ovata*) unless the density of shagbark hickory exceeds 16 trees per acre. If present, maintain at least 16 live shagbark hickory greater than 11" dbh (diameter at breast height) per acre. If there are no shagbark hickory trees greater than 11" dbh to leave, then the 16 live shagbark hickory trees per acre must include the largest specimens in the stand.
4. The following species of trees have been identified as having relatively high value as potential Indiana bat roost trees:

- shagbark hickory (*Carya ovata*)
- bitternut hickory (*Carya cordiformis*)
- mockernut hickory (*Carya tomentosa*)
- pignut hickory (*Carya glabra*)
- other hickories (*Carya* spp.)
- silver maple (*Acer saccharinum*)
- sugar maple (*Acer saccharum*)
- red maple (*Acer rubrum*)
- green ash (*Fraxinus pennsylvanica*)
- white ash (*Fraxinus americana*)
- eastern cottonwood (*Populus deltoides*)
- northern red oak (*Quercus rubra*)
- scarlet oak (*Quercus coccinea*)
- black oak (*Quercus velutina*)
- white oak (*Quercus alba*)
- chestnut oak (*Quercus prinus*)
- slippery elm (*Ulmus rubra*)
- American elm (*Ulmus americana*)
- black locust (*Robinia pseudoacacia*)

This list is based on review of literature and data on Indiana bat roosting requirements. Other species may be added as they are identified. Other tree species with exfoliating bark, crevices or cavities could also serve as potential roost trees.

5. At least 3 live trees per acre greater than 20" dbh (of the species listed above) should always be maintained in the stand. These must be the largest trees of these species in the stand. An additional 6 live trees per acre greater than 11" dbh (of the species listed above) must also be maintained. In area of the stand where there are no trees great than 20" dbh to retain, then 16 live trees per acre must be retained, and these must include the largest specimens of the preferred species (see list above) in the stand.
6. No harvest or timber stand improvement activities within 100 feet on both sides of perennial streams, and

within 50 feet on both sides of intermittent or ephemeral streams.

7. Do not cut trees between April 1 and September 30. This corresponds to the Indiana bat reproductive and spring/fall emergence and swarming seasons.

8. Do not carry out prescribed burns in forest habitat between April 1 and September 30.

FIREWOOD POLICY

Bard College is, at times, in a position of having to have trees or tree limbs removed for safety situations, resulting in wood remnants. The decision has been made to offer these remnants to any Bard College employee who wishes to cut and/or remove the wood for their own personal use. The following policy has been established for such purposes.

1. All wood will be stockpiled outside of the recycling yard located at the end of Woods Road.
2. Wood will be dispersed on a first come first serve basis.
3. The wood will be available to all Bard Campus employees only.
4. Employees must be present in the event that someone is assisting in the woodcutting and/or removal process.
5. Wood must be cut or removed after normal work hours.
6. Employees must use their own equipment to cut and/or remove the wood.
7. Abuse of this policy, as determined by the College, may warrant an individual to have their privileges suspended.
8. The College has the right to terminate or modify this policy without advanced notice. Employees will be notified of such changes or termination.
9. Employees will hold the College harmless of any injuries that may result from their participation in this privilege.

FERTILIZATION

1. When necessary, complete soil tests prior to fertilization to make sure that the appropriate type, quantity and frequency of fertilization applications corresponds to the needs of the soil. Refer to *Landscape Specifications, Soil Amendments*.

2. Whenever possible, use a slow-release fertilizer on all annuals, perennials, trees and shrubs, with at least 50% of the ingredients derived from natural organic sources. Processed or aged compost or leaf mulch may be used if appropriate.
3. Refer to the Best Management Practices Tree and Shrub Fertilization. (International Society of Arboriculture.) and ANSI A300 Tree Fertilization Standard. (International Society of Arboriculture).
4. New lawn fertilization/mature lawn fertilization. Some types of fertilizers Bard has used in the past include:
 - a. Starter fertilizer for newly planted areas and then one application after lawn is established.
 - b. General Maintenance use organic fertilizer such as Nature Safe 10-2-8.
5. Garden bed plantings. Some types of fertilizers Bard has used in the past include:
 - a. Newly planted trees-Dry Roots, Ironite.
 - b. Annuals and perennials - Osmocote.
 - c. Perennials and shrubs—Ironite or Epsoma.
6. If there are specific soil problems, soil samples should taken to determine corrective measures.
7. Fertilizer should be applied during April to June, if possible. Application of a granular or liquid fertilizer should avoid contact with all nearby leaves, to prevent leaf burn and applied according to manufacturer's directions.
8. Apply fertilizer before a rain event, otherwise water fertilizer into soil.
9. If large-scale fertilizers are applied, make sure to review type, quantity and location with College personnel prior to application.

TREE PROTECTION & PRESERVATION POLICIES & PROCEDURES

These policies and procedures must be followed for every project including construction and cut and fill activities, utility corridors, proposed walks and roads, and potential construction staging areas and trenching. Also, if there is any possibility that tree branches may be damaged by construction equipment the procedures below must be followed.

GENERAL PRESERVATION OF HISTORIC OR MATURE TREES

1. **Refer to “Defining Special Trees: Heritage, Historic and Landmark Trees”,** Provision 31 and “Conservation of Forest and Woodland During Development,” Provision 32, International Society of Arboriculture. <http://phytosphere.com/treeord/heritage.htm>
2. **Maintain mature trees unless the trees are dying, dead, diseased or pose a safety hazard** to the public or structure . Refer to Guidelines for the Treatment of Cultural Landscapes, established by the Department of the Interior, National Park Service.

Visit:http://www.nps.gov/history/hps/hli/landscape_guidelines/index.htm. For more information on mature tree care, consult the brochures produced by the International Society of Arboriculture (ISA) available for download at <http://www.treesaregood.com/treecare/treecareinfo.asp> or for order at 888-472-8733.
3. **Perform regular inspections** that will help assess the vitality of the tree(s) and identify any problems, such as dead limbs, signs of disease, detrimental insects or trunk decay. Refer to *Mature Tree Care* brochure, International Society of Arboriculture.
4. **Spread or plant an organic or living mulch** at a depth of 2-4” and cover as much of the tree’s root system as possible.
5. **Aerate compacted soil around the tree’s root zone** to increase the tree’s oxygen supply, root growth and water uptake.
6. **Control for insect and disease problems.** Depending on the situation, treatment might involve application of insecticides or horticultural oils, or removal of an infected limb, among other solutions.
7. **Cabling** involves the installation of steel cables, attached to screws or bolts that are placed in the tree’s limbs, to provide support or limit a tree’s movement. Cabling can help prevent the large limbs of a mature tree from breaking during storms or heavy wind, thereby extending the life of a tree. Cabling is a specialized job that should be performed only by a certified arborist. In addition, follow-up inspections by a certified arborist are essential to assess the effectiveness of the cable system.
8. **Pruning** may be necessary to remove dead or diseased limbs, to improve the overall tree structure or to influence the growth of the tree by increasing light and air penetration.
9. **Mature trees** must be pruned carefully, as they will not tolerate as aggressive a pruning as young trees and the job may require climbing and the use of special equipment. “Topping” or the removal of branches at the tree’s crown to reduce overall height—is never recommended. Topping causes severe stress on the tree and can create hazards. Refer to *Pruning Mature Trees* brochure, International Society of Arboriculture.
10. **Girdling roots** are tree roots that encircle the base of the tree trunk usually as a result of planting the tree too deeply or raising the grade, which may compromise the tree’s vascular system, and, ultimately, result in death. If detected early, girdling roots may be removed by a certified arborist,

thereby extending the life of the tree.

PROTECTION PROCESS

All new construction, initial project layout, design and grading shall recognize the desirability of protection and preservation of historic or mature trees with appropriate modifications and adjustments to accommodate preservation and maintenance. Design of the grading and other improvements shall reflect consideration of the following safeguards:

- a. Disruption or removal of structural feeder roots is prohibited without consent of Bard staff.
- b. Fencing of trees at or beyond their drip lines during grading and construction activities is required.
- c. Filling, cutting, development or compaction of soils within the drip line is prohibited.
- d. Perform other measures required by the species of tree to be preserved as recommended by the consulting arborist, horticulturist or landscape architect.

Step One: Perform a tree stand delineation.

This is an overview of the trees that includes: species composition, stocking density, diameter, distribution, age class and condition at a stand level. Stand delineations are useful at the conceptual stage of project planning to identify areas best suited or unsuitable for retention.

It is recognized that the complete preservation of healthy trees may sometimes conflict with normal land developmental considerations such as proper drainage, grading, circulation, safety and provision of utilities. In such instances, the design of the development must address preservation of the most desirable and significant of the healthy trees and the developer is encouraged to utilize creative land planning techniques to achieve this end.

Step Two: Survey Trees within the development area.

This level of the evaluation collects detailed information about either a defined segment of the trees present or all trees, depending on their proximity to construction.

Step Three: Identify trees suitable for preservation.

Trees that are retained should be healthy and structurally sound. Each tree is evaluated for species tolerance to impacts, tree condition, and potential longevity. For suitable trees, a tree protection zone is identified based on other species tolerance, size, age, and condition.

Step Four: Assess the potential impacts to trees.

Review all development and construction plans for possible impacts to trees.

Bard College, when reviewing development plans, shall determine the adequacy and appropriateness of the proposed protection plan.

Step Five: Suggest modification to development plans.

Identify areas where impacts are too severe and suggest modifications to reduce impacts to trees. On expansive clay soils, consider the trees' effects on soil movement.

Following approval of such a development, the developer shall submit grading, improvement and precise landscaping plans detailing the approved preservation plan. Such plans shall be approved by the project engineer and/or the approved architect, as appropriate. Prior to the commencement of construction, the preserved trees shall be trimmed for balance, structural integrity, and ornamental appearance and treated for any diseases.

Step Six: Identify the tree work needed prior to clearing and grading.

Arboricultural treatments such as pruning, irrigation, fertilization, mulching and pest management may be needed to provide clearance for construction activities and to invigorate the trees. If trees are grouped in a forest or woodlot, then only the location of the woodlot and any trees greater than 24 inches diameter at 4.5 feet above the ground (DBH) need to be identified.

Step Seven: Prepare specifications for tree preservation.

Specifications dictate what work will occur and how it will be performed. Specifications should include requirements for protective fencing.

Not salvageable

All trees that are within the footprint or in close proximity to the footprint of a proposed building. (Note: alternative footprints to save large, valuable trees should be considered, provided that the alternatives maintain the desired features and costs of the proposed building)

Trees of undesirable species or in very poor health. Examples include, but are not limited to species that have low landscape and educational value, and heavily diseased or damaged trees that have little chance of recovering desirable form and function, even if protected from construction damage.

Low priority for protecting

- a. Small trees (less than 10 inches DBH) that fall outside of the building footprint, but are likely to be impacted by construction activities.
- b. Larger trees outside of the building footprint with relatively low landscape value. Examples include but are not limited to, trees with poor form, species of relatively low landscape and educational value, or trees with inadequate space to accommodate current or future growth even if the site is ameliorated.

High priority for protecting

- a. Medium (> 10 inches DBH) to large (> 24 inches dbh) trees of desirable species with good form, good health, and room to continue to grow.
- b. Also, trees of specimen quality, regardless of size. To be determined by Bard Horticulture Supervisor.

For specific protection requirements, refer to "Protection of Existing Plant Materials on Construction Sites" in section IV. *Building and Site Design and Considerations* of this manual. Also, consult Chapter 11, *Preserving Existing Trees in Arboriculture, Integrated Management of Landscape Trees, Shrubs, and Vines* (2004).

Step Eight: Monitor trees during construction.

The arborist should be on hand to evaluate and treat any damage or change in health to trees that occurs, answer questions and tree care, and respond to design changes.

Step Nine: Prepare a post construction maintenance plan.

Trees affected by construction need routine monitoring for health and structural stability so that appropriate treatments can be applied.

PLANT HEALTH CARE & INTEGRATED PEST MANAGEMENT (IPM)

1. Use Plant Health Care (PHC) whenever possible. The objective of PHC is to maintain or improve the landscape's appearance, vitality and—in the case of trees—safety, using the most cost-effective and environmentally sensitive practices and treatments available. Plant Health Care involves monitoring and using preventive treatments.

2. When needed use Integrated Pest Management (IPM), which is the coordinated use of pest and environmental information with available pest control methods to prevent unacceptable levels of pest damage by the most economical means and with the least possible hazard to people, property, and the environment.
3. Use IPM Standards for Schools Tactics and Resources for Reducing Pests and Pesticide Risks in Schools and Other Sensitive Environments (see References).
4. Hire licensed and trained specialists for consultations and pesticide or herbicide applications.
5. All herbicides, pesticides, dormant oils and other potentially toxic applications must be approved by the College before application.
6. Appropriate and approved signage must be installed around the perimeter of the sprayed area 24 hours prior to the application and must remain in place for 24 hours after the application occurs.

PESTICIDE NOTIFICATION POLICY

Adopted March 14, 2014

Overview

Pesticide usage in a park setting is done only when necessary and in a selective manner when possible. When it is determined that the application of pesticides is the best approach to control a pest that is reducing the overall quality of a desirable product, notification of this activity must be given to park patrons during the period in which it is occurring and until it is deemed safe to reenter the treated area. This guide functions to define the manners in

which areas to be treated are designated.

Definitions

Pesticide- a chemical preparation for destroying plant, fungal, or animal pests. Includes all herbicides, fungicides and insecticides.

Herbicide- a substance or preparation for killing plants, especially weeds.

Fungicide- a substance or preparation, such as a spray or dust, used for destroying fungi.

Insecticide- a substance or preparation used for killing insects.

Reentry period- the minimum amount of time that must pass between the time a pesticide was applied to an area or crop and the time that people can go into that area without protective clothing and equipment.

Active Ingredient- chemical that controls the pest.

Posting of Area

Any area in which pesticides of any form (liquid, dry) and type (herbicide, fungicide, Insecticide) will be posted prior to, during and after the application period for a period of time equal to the drying time or reentry period on the products label.

Signage that will serve as notification of the treatment will include the following information:

- Date
- Time of application
- Brief description of area being treated (ie, sidewalk along Weller Ave., lawn on east side of building)
- Active ingredient of product being applied
- Reentry timeframe (if necessary)

Signage will be posted at the most obvious points of interaction with the public. If multiple points of this occur at the area to be treated, then all must be posted.

Different areas will allow and call for a variety of types of actual signage material that will be used. As long as the above information is displayed legibly, any type and size of signage is permitted.

SUSTAINABLE LANDSCAPING PRINCIPLES

Sustainable Sites Initiative Guidelines and Performance Benchmarks (2009)

<https://digital.library.unt.edu/ark:/67531/metadc31157/m1/1/>

PRFCT Earth: "Promoting nature-based, toxic-free land care practices for the health of people, their pets

and the planet." <https://perfectearthproject.org/>

1. We are in a temperate region of the US with hot and humid summers (greater than 68 F) and cold winters (less than 32 F). All site planning and design should seek to control winter winds, and promote solar gain and storage. Structures should be sited on southerly slopes for solar gain in winter. Avoid northern entrances to buildings.
2. Plant deciduous trees for afternoon shade. Site structure on middle to upper slope for access to light winds, but protection from high winds.
3. Solar Power: Plant trees to the east and west of the building, rather than to the south to cool the building in the summer and warm the building in the winter.
4. Plant trees or shrubs to shade air conditioning compressor units – it can increase cooling efficiency as much as 10%.
5. Slowing the wind: For an average frame house, air infiltration from wind can cause about 1/3 of the winter heat loss. Heat loss can be significantly reduced by planting a windbreak in the direction from which prevailing winds blow. Plant evergreen trees close together to create a complete wall against the wind. Choose trees adapted to this region with branches close to the ground. Maximum protection from wind occurs when the windbreak is no more than the distance of one or two tree heights from the building.
6. Landforms, plants, and structures can be used to divert northerly winter winds while allowing cooling summer breezes. Windbreaks prevent or greatly reduce snow drifting around buildings, on walkways, and roadways. Windbreaks lower the costs of a home heating bill (up to 30%).(National Arbor Day Foundation – Conservation Trees).
7. Use of retention/detention ponds for stormwater provides for evaporative/cooling of the site. Foundations for structures and pavement must drain well to prevent damage from frost/thaw action.
8. Riparian buffers slow water flow, reducing the likelihood of downstream flooding. They also filter and spread water, and help hold stream bank soil during flooding. Grasses, trees and shrubs in the strip catch and hold sediments and attached pollutants from adjacent fields before they can wash into the stream.
9. Riparian forests trap and retain significant amounts of nutrients in runoff from agricultural fields. More than 80 % of nitrogen and phosphorus can be kept from entering the stream.
10. Use native or regional plants whenever possible to reduce the need for irrigation, pesticides and fertilizers.
11. Naturalistic design should include plants that produce fruits, nuts or berries that are wildlife friendly.
12. Design should avoid products that require frequent replacement or regular maintenance (to reduce future waste).
13. Right place, right plant.
14. Plant for the long term, by selecting healthy and long-lived plant varieties.
15. Strive for diversity and biomass by establishing and protecting areas of biological richness.
16. Use plants to capture airborne pollutants.

17. Design plantings and irrigation for efficient water use.
18. Design should lessen soil compaction while construction is on-going.
19. Use mulch to conserve water on garden beds and around trees.
20. Consider using storm water, grey water and /or condensate water for irrigation.
21. Irrigate early in the day.
22. Use of micro-irrigation is preferred whenever possible. Micro-irrigation (also known as drip, trickle, or dribble irrigation), rather than overhead sprinklers is a method of irrigation in which water is applied directly to the root zone of the plant in a small but frequent quantity in such a way as to maintain the most active part of the soil at an optimum moisture.
23. Refer to the latest version of the *Sustainable Sites Initiative—Guidelines for Performance Benchmarks*.
24. Strive for green infrastructure technologies (bioretention, bioswales, buffers, porous asphalt, porous pavers, green roofs) whenever possible.

ROAD & PATH SPECIFICATIONS

BARD COLLEGE PARKING POLICY: <https://www.bard.edu/security/vehicles/>

ROADS & PARKING LOTS

1. For **asphalt** areas such as roads and parking lots there should be a 6" to 8" base of Crusher Run Item #4, well compacted. The first course should be a base coat of 3" course binder and a top coat of 2" for total thickness of 5."

a). **Clay conditions** – Remove 8-12" of existing soils, install road fabric, regrade to desired height with College approved materials and compact. Install required amount of asphalt and compact to College approved finish height.

b) **Gravel conditions** – Remove existing gravel to a depth to be determined by the College, install road fabric and College approved materials and compact. Install required amount of asphalt and compact to College approved finish height.

2. For **porous asphalt**, consider the NYSDOT specification used at Olin Parking Lot (403.2999- XX). Olin's Detail included (from surface) 4" porous asphalt, 4" choker course 4" thickness of AASHTO No. 57, 8" thickness of No. 2 Stone, ADS o8o1T nonwoven geotextile fabric and ADS biaxial Geogrid BX124GG reinforcement on native soil. Site specific conditions must be evaluated through perc tests for proper design.

PATHS

1. For asphalt areas such as walkways, they should have a 4" to 6" base of Crusher Run Item #4, well-compacted. The first course of asphalt should be at least 2" of a course binder and topcoat of 1" for a total thickness of 3". Campus traveling asphalt paths between buildings should be 6' wide with 6-8" compacted stone shoulders.
2. For colored and stamped-asphalt paths, they should follow the same guidelines as above, but also have every stamp pressed out clearly, matching given path curves and grade. Two coats of paint should be applied such that it does not completely fill in the stamped pattern, but allows the pattern to show clearly.
3. For paver/stone paths, a good base must be established (4-6" base of Crusher Run Item #4, well compacted). High traffic flagstone walks must be grouted and sealed. Paver paths must have outside edging and selected pavers must be approved by the College.
4. Stamped asphalt paths should be painted with abrasive paint (sand or nut shell) or other similar product.
3. Concrete installations should always have a broom finish for traction unless they are painted and then the same applies as above for stamped asphalt. Concrete paths can have additional width standard due to their material.
4. For permeable paving, consider Olin Parking Lot's detail (minimum width of all new sidewalks to be six feet): Eco-Priora Permeable Interlocking Concrete Paver (by Unilock) or equivalent, ASTM No. 8 stone chip filled joints, Permedge PICP Edge Restraint by SEK Surebond or equivalent (extend bedding course 6" beyond restraint), 1.5"-2" ASTM No. 8 Stone Chip bedding course, 4" ASTM No. 57 Open graded base course, 12" ASTM No. 2 Stone Open graded subbase course. Permeable bricks were 9.45"x4.72" in the standard finish with color approved by Bard Horticulturist.
5. New road construction guidelines: prepare existing road to a width of 30'. Excavation of 12" of existing materials, install road fabric, replace removed materials at proper elevations and at 6" layers, roll with vibratory roller for proper compaction, and additional quarry run item #4 as needed (to be determined by

the College). Regarding maximizing drainage, directing runoff to storm water basins. Extend all stormwater basin grates and manhole covers as needed to meet new elevations. New asphalt to be put down as follows: A binder type #3 compacted to 3" total thickness, top coat of type #6 compacted to 2" for a total of 5" compacted asphalt. Road shoulders filled and compacted as per Bard specifications. Compact all disturbed areas with a vibratory roller to achieve maximum compaction. Seed and hay topped soiled areas where needed.

INDUSTRY PRACTICES & POLICIES IN HORTICULTURE

Bard College recognizes the significance of inclusivity in horticultural standards and procedures. Our arboretum is dedicated to ensuring that our practices are accessible to people of all races, genders, abilities, and backgrounds. We actively strive to adopt new Horticultural practices as the Industry continues to evolve.

RENAMING/DECOLONIZING PLANT NAMES

Bard Arboretum is invested in the ongoing dialogue surrounding the pervasiveness of colonialism in modern horticulture. Our institution is committed to renaming and decolonizing plant names, including a

more thorough incorporation of Indigenous knowledge that has historically been overlooked. Bard College strives to honor Indigenous people's relationship to the natural world as we move away from woody and herbaceous plant names associated with colonial legacies.

POLLINATOR AND PLANT PRIORITIZATION

Bard College is part of the Pollinator Pathway program, which creates public and private pesticide-free corridors of native plants that provide nutrition and habitat for pollinating insects and birds. Even the smallest green spaces, like flower boxes and curb strips, can be part of a pathway. Learn more about native plants and the benefits of pesticide-free methods here: <https://www.pollinator-pathway.org/>.

Furthermore, the Bard Arboretum is committed to plant prioritization for ecosystem services. As per the work of Douglas Tallamy, there is an unbreakable connection between native plants and native wildlife. The protection of native species is integral to the mission of Bard Arboretum as we work to incorporate native plants into existing and ongoing landscape projects.

WELLNESS IN HORTICULTURE

Incorporating wellness into our horticultural practices at Bard College isn't just about tending to the plants; it's about nurturing ourselves and our community. In recognizing the importance of wellness in horticulture, we can foster a more holistic experience in the plant stewardship on our campus. Creating an environment centered around well-being is essential. Horticulture, beyond being a science and art, is a practice that can enhance our physical, mental, and emotional health through a variety of practices.

RARE PLANT STATUS LISTS

Bard College works to protect and maintain rare plants on campus. The biodiversity of organisms represents a crucial element of healthy, functioning ecosystems upon which all life on earth is dependent. To learn more about Rare Plant Status Lists in New York, see: <https://www.nynhp.org/documents/5/rare-plant-status-lists-2022.pdf>.

CEMETERY GUIDELINES

INFORMATION FOR FAMILY & LOVED ONES

Bard College Cemetery is a small, private, two-acre historic cemetery located on the campus of Bard College. The cemetery traditionally has been reserved for notable figures in the College's history, including professors, trustees, presidents and alumni/ae. During a period of loss, families often have difficulty focusing on the details associated with a loved one's burial. This questionnaire for families and loved ones allows us to help make this process as simple as possible. We recommend designating one or two family members as primary communicators with the College. They will be in direct contact with the President's Office at president@bard.edu. Refer to Bard Cemetery [website](#) for most current

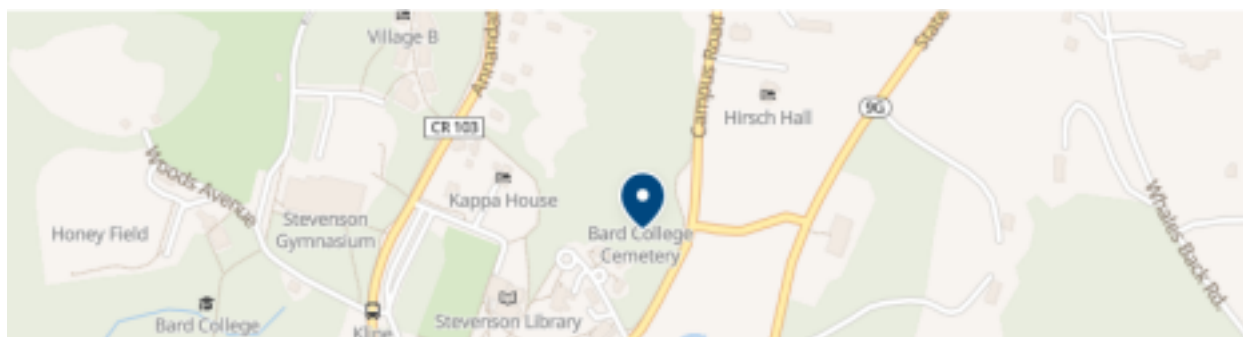
information.

REQUIREMENTS:

1. Standard burial plot is 4' x 8' and standard cremation site is 2' x 2'
2. Headstones can be a maximum of 2' x 3', depending on the size of the reserved plot. Suggested size is flat and no larger than 18" x 18" and 4" from the ground. A vertical stone requires a base.
3. All items on the grave site must be within the site dimensions, inclusive of the headstone and grave markers.
4. Bard College staff will maintain the plot, unless otherwise directed (mow lawn, remove leaves, repair settling or damage)
5. The planting of trees or shrubs is not permitted.
6. All graves must have a headstone/marker and corner markers.
7. All gravesite adornments must be approved by Bard College personnel prior to installment.
8. Items on the grave that have become withered, weathered, or worn are removed at the discretion of Bard College.

ALTERNATIVE CAMPUS MEMORIALS

Memorialize and honor your loved one with a dedicated tree, bench, or garden on campus. Your donation provides a living tribute to your loved one that withstands time while giving back to the earth for future generations to appreciate.



GPS coordinates: Latitude: 42.02354, Longitude: -73.90458

101 Campus Road

Annandale-on-Hudson, NY 12504

For more information, contact:

President's Office

Bard College

PO Box 5000

30 Campus Road

Annandale-on-Hudson, NY 12504

Email: cemetery@bard.edu

The Bard College is a private, independent, liberal arts college in Annandale-on-Hudson, New York. The campus overlooks the Hudson River and the Catskill Mountains and is within the Hudson River Historic District. The Bard College Cemetery is open for visitation year-round, dawn to dusk, although it is not easily accessible during the winter

months.

REFERENCES

Flood Information for Landscape and Garden

Beth Babbitt, Urban Horticulture Specialist & Dr. Tom Sample, Turf Specialist
Plant Sciences Department University of Tennessee Extension, 5/10/10

INTEGRATED PEST MANAGEMENT

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Clouting, Jennifer, Eleanor Hoffman, Todd Martin, and James Siesfeld. Management Recommendations for Blithewood's Northwest Forest. Graduate School of Environmental Studies, Ecology Tutorial. 1993.

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LANDSCAPE ARCHITECTURE AND DESIGN

Time-Saver Standards for Landscape Architecture: Design and Construction Data. Second Edition. McGraw Hill Publishing Company. New York. 1998.

Landscape & Tree Care Guidelines, Standards and Considerations Manual
Bard College November 2023

LANDSCAPE MAINTENANCE

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American Standard for Nursery Stock, ANSI Z60.1, latest edition. published by the American Nursery and Landscape Association (ANLA), 1000 Vermont Avenue, NW, Suite 300, Washington, DC 20005. 2004. www.anla.org, ISBN 1-890148-06-7.

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Georgia Tech Campus Tree Care Plan. 2008

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Smiley, E. Thomas, Sharon Lilly. Best Management Practices Tree Support Systems: Cabling, Bracing, and Guying. International Society of Arboriculture. Champaign, IL. 2001.

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ANSI Z133.1 American National Standard for Tree Care Operations. International Society of Arboriculture, PO Box 3129, Champaign, IL 61826. 2006.

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ANSI A300 Construction Management Standards. International Society of Arboriculture, PO Box 3129, Champaign, IL 61826. 2006.

ANSI A300 Pruning Standard. International Society of Arboriculture. PO Box 3129, Champaign, IL 61826. 2006

ANSI A300 Tree Fertilization Standard. International Society of Arboriculture, PO Box 3129, Champaign, IL 61826. 2006.

ANSI Z133.1 Pruning, Repairing, maintaining and Removing Trees and Cutting Brush – Safety

Requirements. International Society of Arboriculture. Champaign, IL . 2000.

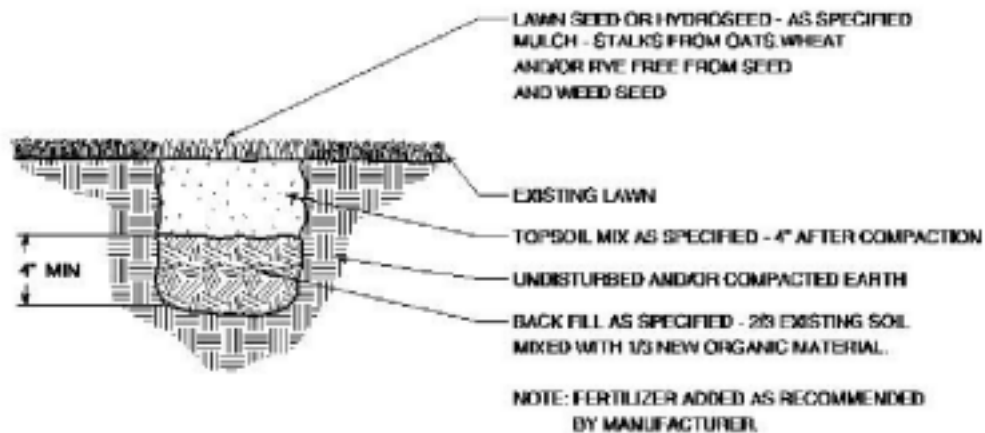
ANSI A300 (Part3) Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Support Systems a. Cabling, Bracing, and Guying). International Society of Arboriculture. Manchester, NH. 2000.

TOPSOIL

Active Standard: D5268-02 Standard Specification for Topsoil Used for Landscaping Purposes. ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959 USA

LANDSCAPE DETAILS

LAWN AREA SEEDING DETAIL



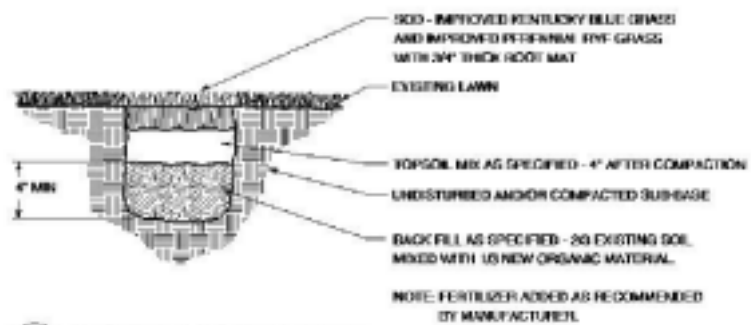
LAWN AREA-SEEDING DETAIL
NO SCALE

DETAIL 1.1.1
8/5/2000

DESIGN and CONSTRUCTION STANDARDS
PLANNING, DESIGN and CONSTRUCTION: CORNELL UNIVERSITY

DRAWN BY	DATE	CELL LIBRARY	CELL NAME	SECTION	DETAIL NO.
LEC	8/3/2000	CIVIL STD DET.CEL	USEED	CIVIL/LANDSCAPE LAWNS	1.1.1

LAWN AREA-SODDING DETAIL



LAWN AREA-SODDING DETAIL

NO SCALE

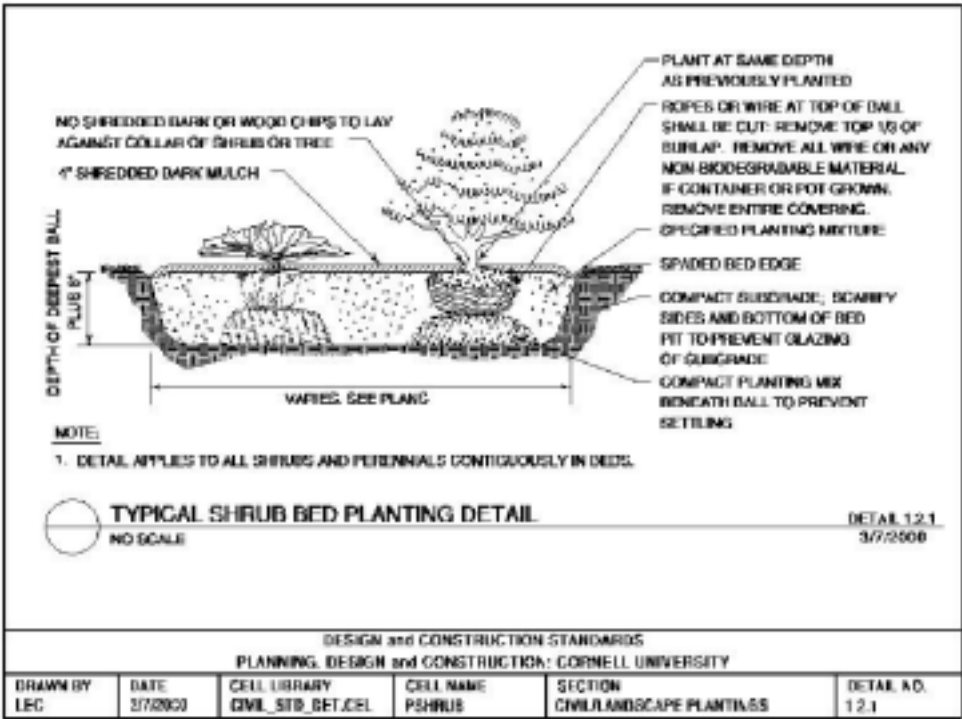
DETAIL 1.1.2

8.0.2000

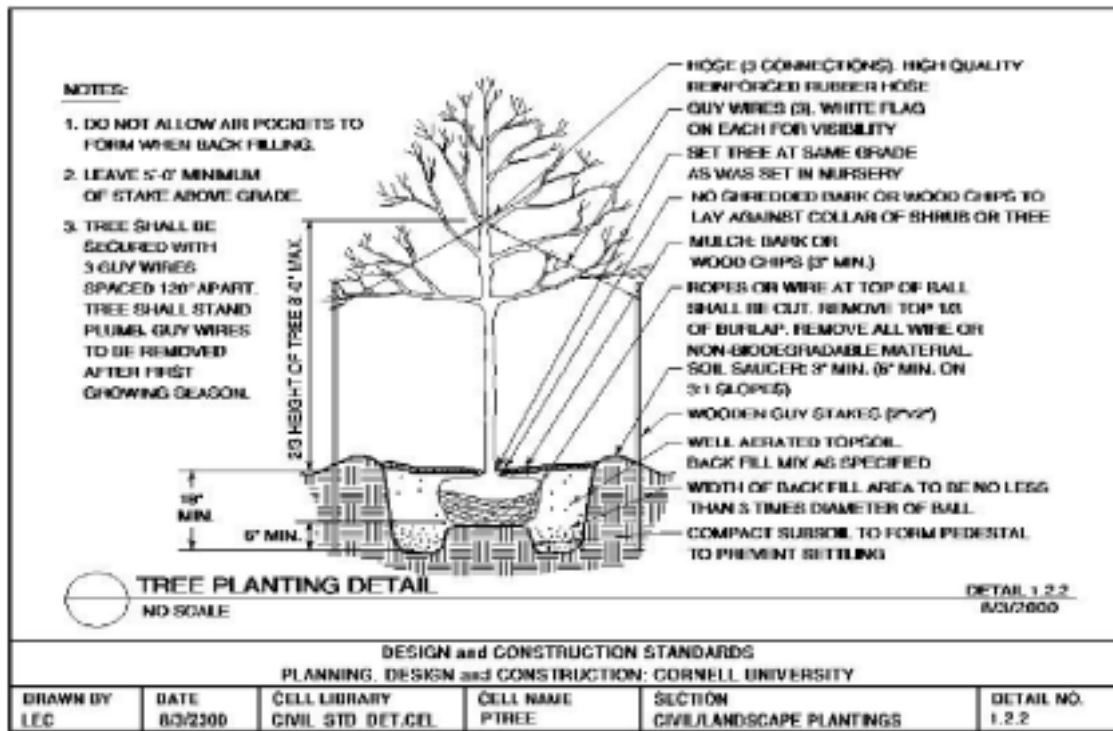
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PLANNING, DESIGN and CONSTRUCTION: CORNELL UNIVERSITY

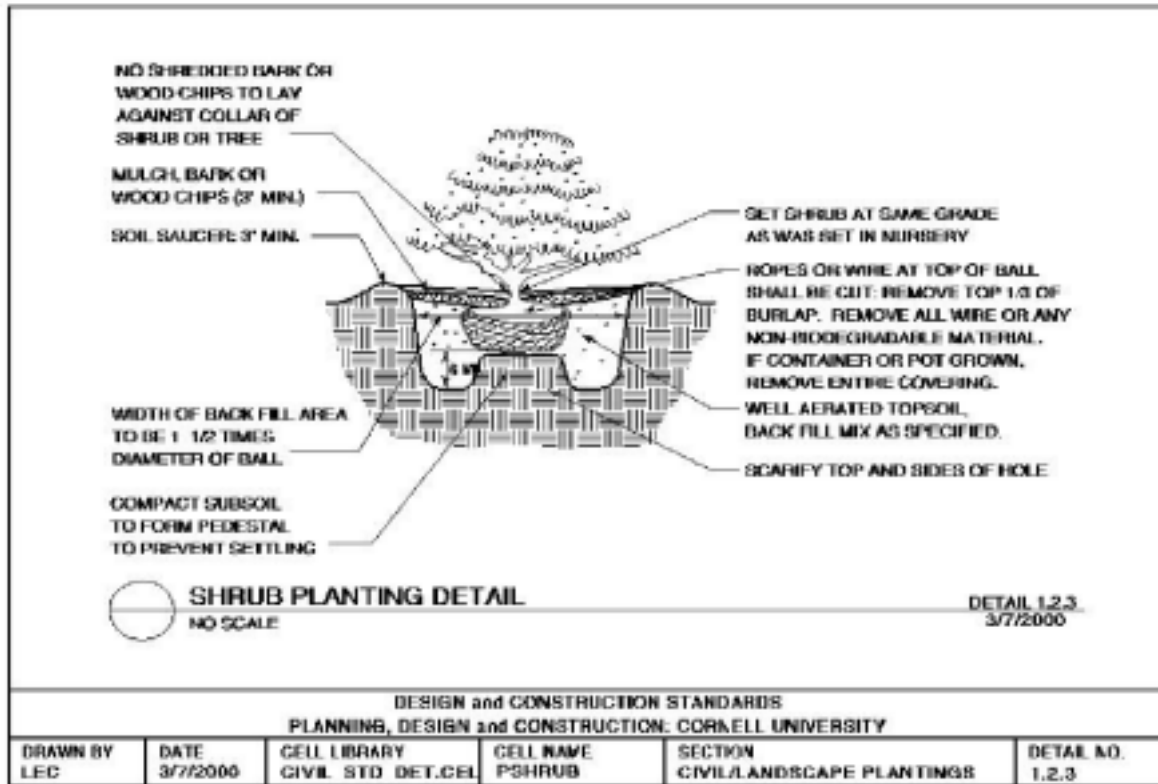
DRAWN BY	DATE	CELL LIBRARY	CELL NAME	SECTION	DETAIL NO.
LEC	8/5/00	CIVIL STD. DET. CEL	LS00	CIVIL LANDSCAPE LAWS	1.1.2

TYPICAL SHRUB BED PLANTING DETAIL



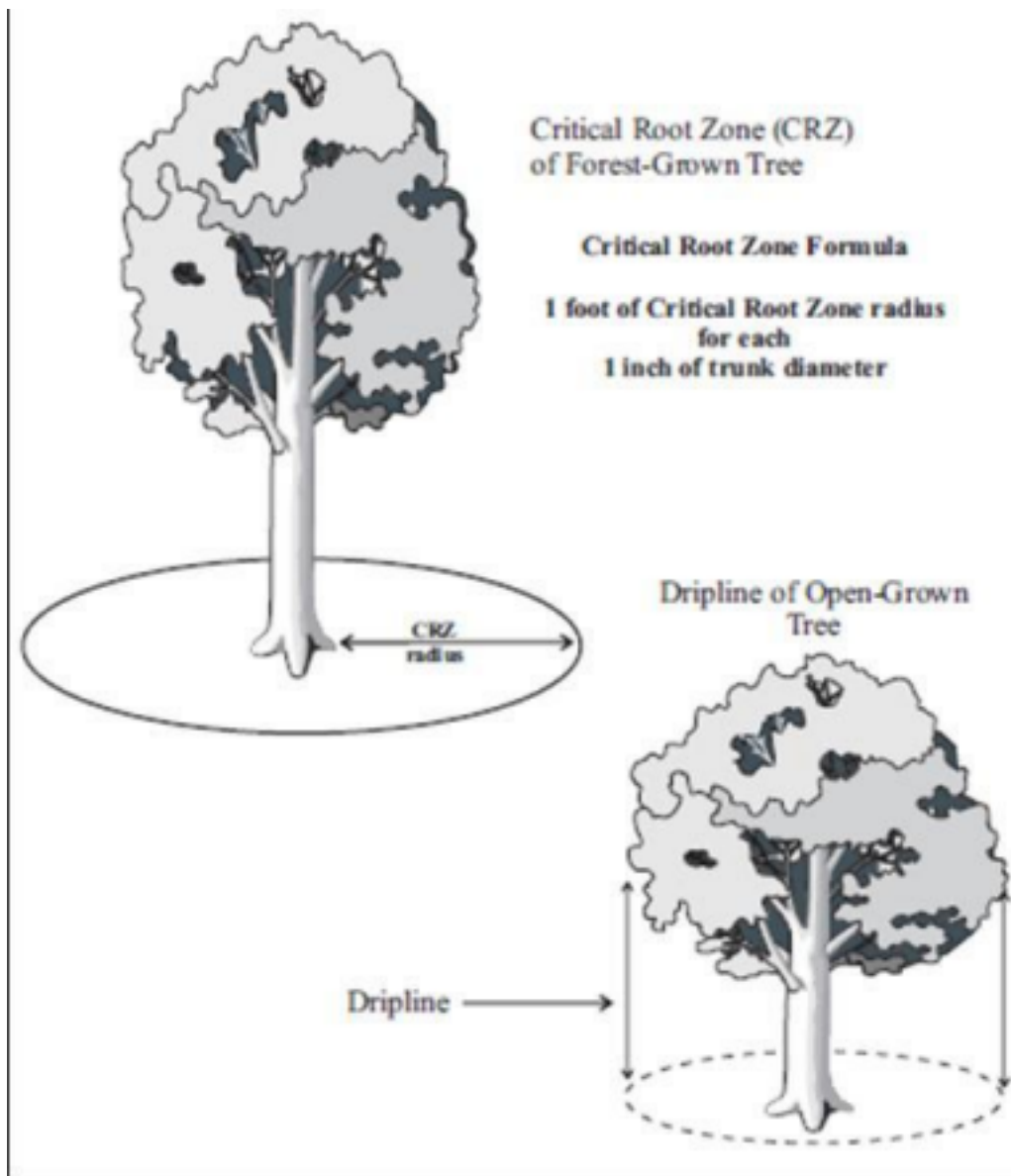
TREE PLANTING DETAIL





Bard College November 2023

CRITICAL ROOT ZONE



Examples of how a Critical Root Zone is measured. Many jurisdictions require a CRZ that is 1.5 times the diameter. A larger CRZ is recommended for trees of sensitive species or less than stellar condition. Source: Fairfax County, VA Public Facilities Manual - See more at:

<http://www.ecolandscaping.org/01/trees/preserving-trees-through-collaboration/#sthash.x1Tx7Mnb.dpuf>

ADDENDUM

Vegetative Damage Assessment

Prohibited Practices

Bard Dump/Recycle Yard Policy

Code of Conduct and Rules

Bard College Historic Tree List

Temporary Installations

Property Damage or Loss Notice Report

Bard College Living Collection Policy and Development Plan

Commemorative Gift Policy

Arboretum Layout Map

Recommendations for Outdoor Spaces – Site Furniture

Terminology Definitions

Memorandum of Understanding for Bard Contractors

Annual Annandale Dam Tree Work Guidelines

Protected Native Plants in New York State

Checklist for Bard College Project Manager

VEGETATIVE DAMAGE & ASSESSMENT

1. All trees or vegetation on campus property that is damaged due to either accident or deliberate action will be assessed by the Horticulture Manager using the *Property Damage or Loss* notice form (see Addendum) and submitted to the proper College authorities and a copy will additionally be submitted to the person or party responsible for the damage (if known) within seven (7) business days of the violation.
2. The results from the initial evaluation will determine whether the tree or vegetation should be removed, pruned, or receive treatment such as fertilization and insect/disease control.
3. All removed trees and plants will be removed from the campus-wide inventory list.
4. Assessment of the value of the repair will be determined using the ISA Guide for Plant Appraisal.
5. Enforcement – Enforcement of tree protection measures is performed by the Horticulture Manager. Bard College Student Accounts office and Bard personal accounts administration will oversee proper enforcement of applied charges.
6. Penalty - If known, the person or party responsible for the damage will be charged for any repairs, removals, or replanting in order to restore the vegetation to its original or close to original state, purpose and appearance.
7. Appeals – If the person or party responsible for the damage chooses to appeal the charges, then the appropriate authorities must be notified in writing and then hear the appeal in person, in order to make their own judgments based on individual cases.

PROHIBITED PRACTICES

1. No faculty, staff, student, resident or contractor may alter the campus environment, trees, shrubs or other plantings without permission or in direct opposition to the best practices described in this manual. This includes additional plantings, art installations or any form of digging in and around campus trees.
2. Grading and excavations will not occur within the drip line of existing plant materials that have been identified to remain. It will additionally avoid as much of the root system as possible. Air spade around root systems whenever it is needed to avoid root removal.
3. When trenching, no more than 25% of the root system should be removed.
4. No construction waste materials shall be stored, dumped, poured or buried, in the proximity of any trees or any other plant materials on site. These waste materials may include but are not limited to: fuels, solvents, paints, detergents, caustics, etc. The contractor shall report the occurrence of any soil contamination incident. In the event that soil contamination does occur, the contractor shall be responsible for the removal and replacement of the affected topsoil and the replacement of existing plant materials.
5. No plant with multiple “invasive” characteristics will be allowed to be planted on the Bard College campus.
6. Trees should not be located any closer to a structure than a distance equal to the tree’s mature spread.
7. Do not plant within 3 feet of the tree trunk.
8. Do not plant anything within the drip line that will compete with the tree for moisture and nutrients, such as another tree or large shrubs.
9. Do not cut roots 1-inch diameter or greater.
10. Do not use wet grass seed or seed that is moldy or otherwise damaged in transit or storage.
11. No dyed mulches permitted.
12. Do not use wound dressings on tree cuts.
13. Only remove up to one-third of the total canopy at a time to allow the tree or shrub to recover properly.
14. Do not top or pollard trees unless specified in maintenance operations.
15. No vandalization of any kind to campus plantings is tolerated.
16. No weed barrier fabric is permitted in planting beds or around trees.
17. Topping, heading, hat-racking, or any other form of inappropriate crown/branch reduction pruning shall not be permitted except in emergency situations or in executing a crown restoration procedure.

18. No bike locking to trees.
19. Parking enforcement of any vehicle on top of or near tree roots.
20. No removal of campus vegetation of any sort, without permission from the Horticulture Department.
21. All temporary or permanent installations on campus property MUST be granted permission by Buildings and Grounds before they are installed, otherwise they are subject to removal.
22. Bard Dump Materials – What is allowed and not allowed – see list below

BARD DUMP/ RECYCLE YARD POLICY

What goes into the Brush Pile?

- Dead or live branches from trees or shrubs
- Branches or logs up to 24”diameter
- Minimize poison ivy – remove and put in Landfill
- Minimize ailanthus mature seedheads –remove and put in Landfill
- Ornamental grasses
- No weeds/vines/seedheads
- No soil/mulch/sod
- No stone
- No metal
- No trash
- No PVC pipe
- No C&D (lumber, construction debris, etc.)

What goes into the Compost Pile?

- Food waste
- Herbaceous plant material (clean weeds, plant soft cuttings, etc.)
- No brush
- No mature seedheads
- No poison ivy/vines
- No ornamental grasses
- No clean leaves
- No trash

What goes into the “landfill area”?

- Anything with mature seedheads, especially invasive plants
- Poison ivy
- No ornamental grasses
- Sod/discarded soil
- Discarded stone
- No brush/herbaceous material
- No trash

What goes into the Log Pile?

- Any logs under 24” diameter

What goes into the Firewood Pile?

- Any good burnable wood cut into at least 8’ lengths
- No brush

What goes into the Wood Chip Pile?

- Clean wood chips
- No trash
- No logs

What goes into the Horticulture Leaf Pile?

- Clean leaves only
- No weeds
- No grasses
- No trash

Contractor, Employee, Student: CODE OF CONDUCT AND RULES for all work performed at Bard College

(Adopted from Office of Sustainability)

1. A job will not be considered complete until work materials, trash and recyclables are removed from the work site. Uniform Policy: Contractors should wear clothing that identifies their company. Bard employees should wear work uniforms.
2. Recycling Policy - Bard complies with Dutchess County Recycling Laws and has campus wide mandatory recycling. All materials from jobs must be separated by type as follows: Paper (no waxed containers like juice cartons) Metal, Commingled containers (glass, plastic - with #1-#8 on the bottom, metal, Corrugated cardboard (flattened)
3. According to New York State Law (NY 217-3.2, 3.3) diesel trucks may idle for no more than five minutes. This policy extends to gasoline vehicles. Idling for more than 30 seconds uses more gasoline than restarting your car.
4. Notify the Horticulture and Grounds Department of any site clearing, demolition or erosion control work to be done.
5. Utilities: Determine location of underground utilities and perform work in a manner, which will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.
6. Consult with the Horticulture and Grounds Department regarding all proposed site improvements or proposed construction sites before final planning is underway.
7. Contractors must provide protection to existing trees and planting areas on the site.
8. Whenever possible, construction access to the work site should be limited to only one access route on and off the property

BARD COLLEGE HISTORIC TREE LIST

Please see the Arboretum Director for the most recent listing of the trees that have been deemed "historic" by Bard College. If any alterations to the tree itself or within the root zone of the tree(s) are planned, the Bard Arboretum and Horticulture Dept. must be contacted prior to the commencement of the site work. Please refer to the Preservation Guidelines for Historic Guidelines for Historic Trees in this document. *(Compiled March 6, 2008 using Bard's Hazardous Tree Evaluations.*

TEMPORARY INSTALLATIONS

What is a "Temporary Installation"?

Temporary installations include any and all alterations to the physical environment on the Bard campus. This includes: outdoor artwork, sculpture, structures, performances, that include: digging removal or addition of any materials to the landscape or buildings, and the alteration of any of Bard's property in any way. It is also an installation that will be removed at a foreseen date or time.

To propose a Temporary Installation on the Bard Campus, you must fill out this form and give it to the appropriate individuals prior to the commencement of the installation or performance. Failure to do so may result in the removal of your project without notice and a charge for the clean up. In addition, if there are

any changes to the project description after submittal, you MUST contact Buildings & Grounds BEFORE the proposed alterations can be approved, otherwise you may be subject to related charges.

Here is the [Bard College Temporary Installation Form](https://forms.gle/auijgHo8wyXvH15B6) that everyone must fill out if anyone is planning on proposing a temporary installation on Bard's campuses. <https://forms.gle/auijgHo8wyXvH15B6>

Property Damage or Loss Notice Report

**Bard College
Buildings and Grounds - Arboretum
PO Box 5000
30 Campus Road
Annandale-on-Hudson, NY 12504
845-758-7465 (phone)
845-758-9654 (fax)**

General Information

Date of Claim:

Date if previously reported:

Date and time of Occurrence:

Insured Dept/Individual Information

Insured Name:

Contact Name (if different):

Address:

Email:

Phone Number:

Loss Information

Location of Loss:

Type of Loss (accident, fire, theft, vandalism, other)

Cause of Damage (include description of how damage occurred):

Description of Occurrence (include property involved, repairs, replacements, clean ups, etc.):

Remarks:

Insurance

Insurance Company Name:

Insurance Company Contact Information:

Insurance Policy Number:

Type of Coverage:

Amount:

Reported by:

Date and Time Reported:

Reported to:

Bard Arboretum Living Collection Policy & Development Plan

See Arboretum Director for a copy of the most recent Living Collections Policy.

Bard Arboretum Commemorative Gift Policy for Trees, Gardens, Art/Objects and Plaques

See Arboretum Director for a copy of the most recent Commemorative Gift Policy.

Montgomery Place Conservation Easement Maps

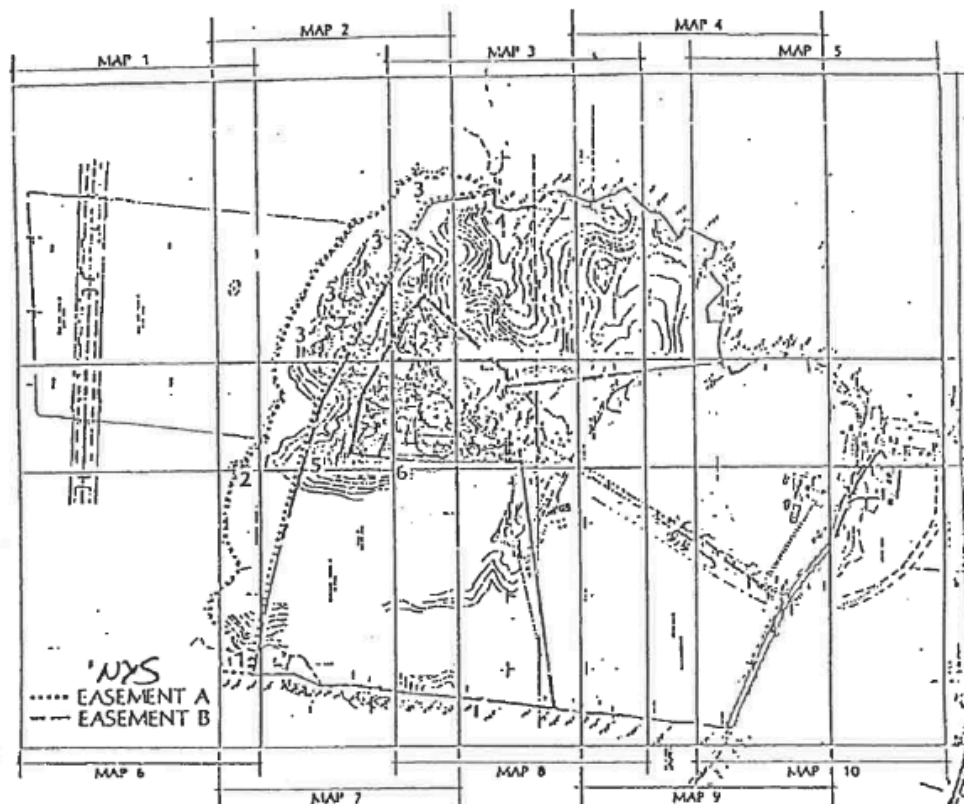
Conservation Easement

What is a conservation easement?

A Conservation Easement is “a voluntary, legal agreement that permanently limits uses of the land in order to protect its conservation values. also known as a conservation restriction or conservation agreement, a conservation easement is one option to protect a property for future generations.” See here [for more information:](https://www.conservationeasement.us/what-is-a-conservation-easement/)
<https://www.conservationeasement.us/what-is-a-conservation-easement/>



EXHIBIT B



KEY

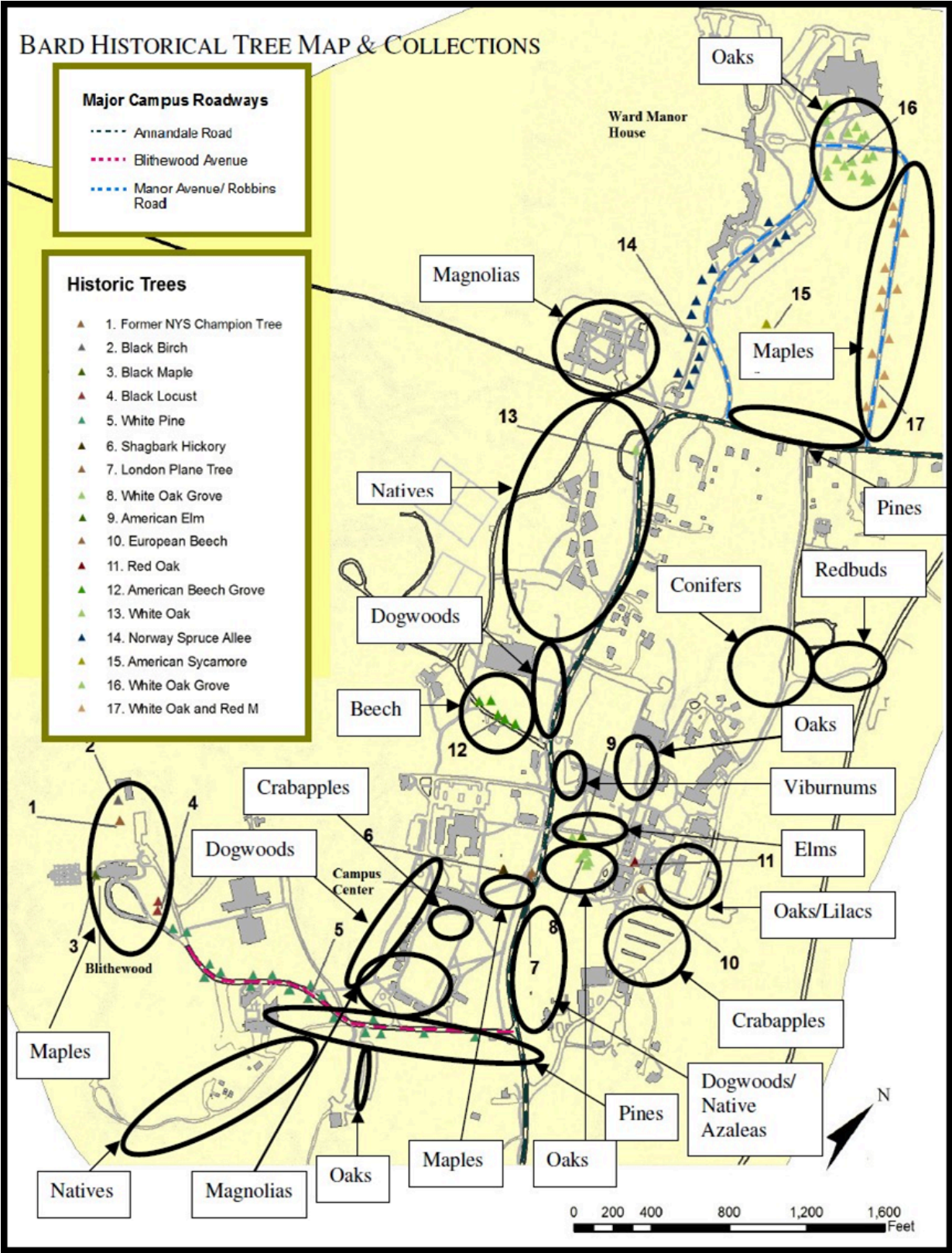
- 1 Pre 1802 farm site
- 2 Dock area-current location
- 3 19th century gazebos
- 4 19th century pedestrian bridge joining Montgomery Place trails with Blithewood trails to north
- 5 Early 19th century orchard/nursery
- 6 Stone overlook for ravine

The Conservation Fund, September, 1907

1946 PAGE 881

581

Arboretum Map (original version)



RECOMMENDATIONS FOR OUTDOOR SPACES: SITE FURNITURE

The following recommendations were made by the Bard Sites: Design Committee (2010). Due to the limited time frame of this project, this is only a partial listing of the possible improvements to outdoor spaces on campus. Also refer to Comprehensive Landscape Plan (2024).

LIBRARY PLAZA

- +Provide benches beneath Kellogg eaves
- +Create a small enclosed seating area at Northeast part of patio with trash/recycling, and benches against south wall of Stevenson

KLINE PATIO

- +Increase number of picnic tables beneath maples
- +Long-term, improve access from patio to outdoor seating area with picnic tables, and provide permeable pavers for their footing

BUILDINGS AND GROUNDS/RKC PATIO

- +Create safe access point across Campus Road in addition to existing crosswalk from Main parking lot to Buildings and Grounds, thereby extending North-South axis from Ludlow to the Physical Plant

HENDERSON CIRCLE

- +Long-term, create a North-South axis from Henderson Circle to Franklin W. Olin Humanities steps, making a pedestrian-only walking corridor
- +Line pedestrian path with benches, planters, another outdoor furnishings

ROBBINS PATIO

- +Complete patio spaces at New and Old Robbins Dorms with outdoor furnishings: benches, trash and ash cans, and potentially patio furniture

CENTER FOR CURATORIAL STUDIES

- +Improve pedestrian and bicyclist access to CCS café by providing benches on West side of lawn to demarcate entrance point, and strengthen connection with Blithewood

VILLAGE DORMS

- +Provide seating for private interaction, and maintain the main walkway as a public thoroughfare
- + At L-shaped dorms, improve small outdoor spaces with clusters of site furnishings (benches, tables, etc.)

HOPSON COTTAGE

- +Improve outdoor seating area for visitors to campus, including large trash can

BLITHEWOOD PORCH

- +Provide benches West porch, overlooking the garden

THEATRE TWO ENTRANCE

- +Improve patio area outside of Theatre Two by selecting patio furnishings to replace existing picnic tables

TERMINOLOGY DEFINITIONS

Air spade - rugged and durable handheld tool that produces a stream of supersonic air; effectively penetrates and dislodges most types of soil, but is harmless to non-porous objects such as plant roots, buried pipes, or cables

Allee – passage formed by two rows of trees where canopies grow together to form a long, continuous row

Balled and burlapped – type of nursery stock in which the plant is dug with soil surrounding the roots, then wrapped with protective material

Bare root – type of nursery stock in which the plant is sold without soil around the roots

Bleeding – the flow of sap from wounds or other injuries; maybe accompanied by foul odor or insects

Branch bark ridge – enlarged area of bark tissue on the upper side of a branch junction; a normal pattern of development

Branch collar - a swelling at the base of a branch where it joins the trunk or larger branch resulting from overlapping of tissues of the two.

“Bowl” – mulching technique where soil and mulch is mounded at the edge of the root zone of a newly planting tree to hold in water long enough to saturate roots, instead of run off; mulch should not touch the base of the trunk

Cabling, bracing and guying

Cabling – installation of thick heavy wire (often in strands) and associated hardware in the crown of a tree to provide support

Bracing – installation of metal rods through weak portions of a tree

Guying - a rope, cable, or hardware used to guide and steady a tree being hoisted or lowered, or to secure anything likely to shift its position

Caliper – synonym for trunk diameter used to measure the size of nursery stock; by convention, measured 6 inches above the ground for stems less than 4 inches and at 12 inches above ground for stems greater than 4 inches.

Cleaning - the removal of dead, dying, diseased, crowded, weakly attached, and low-vigor branches from the crown of a tree.

Compaction - the compression of soil, causing a reduction of pore space and an increase in the density of the soil. Tree roots cannot grow in compacted soil.

Crown – the leaves and branches of a tree measured from the lowest branch on the trunk to the top of the tree

Corrective pruning - an essential part of good health care for shrubs and other plantings, discouraging disease and other problems caused by the invasion of pests; also enhances appearance, and promotes proper growing characteristics. Corrective pruning will help your plantings adapt to their surroundings and improve and beautify the entire area

Deciduous – perennial plant that loses all its leaves at one time during the year

Diameter at Breast Height (DBH) – diameter of the trunk, measured at breast height (54 inches above the ground)

Dieback – progressive death of twigs and small branches, generally from tip to base

Excavation - digging, unearthing, disinterring, quarrying, exhuming, scooping out, digging out, scouring, shoveling, blasting, removal, using a back hoe, using a trencher, cut and fill, burrowing, tunneling, pick and shoveling, mucking out

Evergreen – plant that retains its leaves for more than one growing season

Flush (flush cut) – pruning technique in which both branch and stem tissue are removed

Girdling (roots) – roots that grow around the trunk in a circular manner, constricting other roots or restricting trunk growth

Hazardous - a tree with structural defects likely to cause failure of all or part of the tree, which could strike a 'target.' A target can be a vehicle, building, or a place where people gather such as a park bench, picnic table, street, or backyard.

Integrated Pest Management (IPM) – system of controlling pests and their damaging effects through mechanical, chemical, biological, cultural and regulatory techniques.

Invasive - a species that does not naturally occur in a specific area and whose introduction does or is likely to cause economic or environmental harm or harm to human health

National Register Historic District - is the official list of the Nation's historic places worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

Native - A population of plants within a defined geographic area that exist there without direct or indirect human introduction

Picturesque – an aesthetic ideal first introduced into English cultural debate in 1782 by William Gilpin; Enlightenment rationalist ideas about aestheticism based on experiences of beauty and sublimity as being non-rational (instinctual) ;naturalistic

Plant Health Care (PHC) – a multidimensional strategy for plant care that focuses on plant vigor and relies on plant selection and integration of a broad range of techniques aimed at protecting and enhancing plant health; an outgrowth of integrated pest management

Pollard – pruning technique where young trees or branches are initially headed, then reheaded on an annual basis without disturbing the callus knob.

Raising - removes the lower branches from a tree in order to provide clearance for buildings, vehicles, pedestrians, and vistas.

Reduction - reduces the size of a tree, often for clearance for utility lines. Reducing the height or spread of a tree is best accomplished by pruning back the leaders and branch terminals to lateral branches that are large enough to assume the terminal roles (at least one-third the diameter of the cut stem). Compared to topping, reduction helps maintain the form and structural integrity of the tree.

Restoration – reshaping a tree that has been damaged to a more natural form

Riparian buffers - Riparian buffers are vegetated areas next to water resources that protect water resources from nonpoint source pollution and provide bank stabilization and aquatic and wildlife habitat.

Root zone - the area and volume of soil around the tree in which roots are normally found. May extend to three or more times the branch spread of the tree, or several times the height of the tree

Sense of Place - a characteristic that some geographic places have and some do not, while to others it is a feeling or perception held by people (not by the place itself). It is often used in relation to those characteristics that make a place special or unique, as well as to those that foster a sense of authentic human attachment and belonging

Shallow rooted trees – a majority of the roots are found just below the ground's surface; usually very susceptible to drought

Stewardship - an ethic that embodies cooperative planning and management of environmental resources with organizations, communities and others to actively engage in the prevention of loss of habitat and facilitate its recovery in the interest of long-term sustainability

Subcontractors - is an individual or in many cases a business that signs a contract to perform part or all of the obligations of another's contract.

Taproot – the primary descending root of a seedling, usually lost as the tree enlarges in size

Temporary installation - any and all alterations to the physical environment to the Bard College campus. This includes: outdoor artwork, sculpture, structures, performances, that include: digging, removal or addition of any materials to the landscape or buildings, and the alteration of any of Bard's property in any way. It is also an installation that will be removed at a foreseen date or time.

Thinning- is the selective removal of branches to increase light penetration and air movement through the crown. Thinning opens the foliage of a tree, reduces weight on heavy limbs, and helps retain the tree's natural shape.

Tree protection zone - A designated area around trees where maximum protection and preservation efforts are implemented to minimize soil compaction, etc.

Topping – pruning technique to reduce height by heading of large branches

MEMORANDUM OF UNDERSTANDING FOR BARD CONTRACTORS

BARD COLLEGE

PO Box 5000

30 Campus Road

Annandale-on-Hudson, New York 12504

845-758-6822 (switchboard)

845-758-7465 (Buildings and Grounds)

845-758-7179 (Arboretum)

Attn:

Date:

As the contractor, I have read through the document entitled, Landscape and Tree Care Guidelines, Standards, and Considerations Manual, Revised November 2025 and I understand and agree to abide by the established set of minimum standards as indicated in this document, for all related work done on Bard College campus. I will consult and conform to these guidelines while engaged in related work on the Bard College campus grounds. I will also ensure any subcontractors under my supervision conform to these guidelines while engaged in related work on the Bard College campus.

CONTRACTOR SIGNATURE : _____

DATE: _____

Your signature is the acceptance of these guidelines, standards and considerations outlined in the above document and authorizes Bard College to enforce these guidelines to ensure an established level of quality work.

Please sign and return this document to: Arboretum Director at arboretum@bard.edu.

ANNUAL ANNANDALE DAM TREE WORK GUIDELINES

----- Forwarded message -----

From: **Laurie B Husted** <husted@bard.edu>
Date: Mon, Mar 10, 2025 at 3:33 PM
Subject: micro hydro project - Bat and Bald Eagle Protection Plan (draft)
To: Amy Parrella <aparrell@bard.edu>, Andrew Anderson <aanderson@bard.edu>
Cc: Michael Emerich <memerich@bard.edu>

Hi we got comments back from FERC requesting revisions to our draft B&BE Protection Plan for the area around the dam - here's the latest for your info - it's a little stricter:

Bat and Bald Eagle Protection Plan

We appreciate the opportunity to provide the following comments pertaining to threatened or endangered species under our jurisdiction pursuant to the Endangered Species Act (ESA)(87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). We note that the Tri-colored Bat does not reliably utilize trees of a certain size. References that indicate the clearing of trees less than three inches in diameter at breast height should be removed from the Plan. As such, the **tree clearing guidelines** in the Plan should read:

1. The Exemptee may remove hazard trees that the Exemptee has a reasonable basis to believe pose a material threat to human life or property at any time without prior consultation with NYSDEC and USFWS and inform the NYSDEC and the USFWS if any bats are observed.
2. The Exemptee will avoid the removal of non-hazardous trees of any size diameter (i.e., suitable roost trees) from April 1 through October 31 to protect all three bat species.
3. The Exemptee may remove suitable roost trees within the Project boundary between November 1 and March 31.
4. Should the Exemptee find it necessary to remove or be required by FERC to remove suitable roost trees between April 1 and October 31, the Exemptee will consult with the USFWS pursuant to the Endangered Species Act. The Exemptee will also consult with the NYSDEC and may request a determination under NYCRR Part 182.9 as to whether a proposed activity is likely to result in the take or taking of listed bat species and/or may apply for an incidental take permit in accordance with NYCRR Part 182.11.

--

Laurie Husted (she/hers), Chief Sustainability Officer
Bard College | [Office of Sustainability](#) (Achebe House, 23 Walters Road)
Mail to: PO Box 5000, 30 Campus Road, Annandale-on-Hudson, NY 12504-5000

Bard [sustainability calendar](#)
Instagram [@BardSustainability](#) [@BardFarm](#)

PROTECTED NATIVE PLANTS IN NEW YORK STATE (as of October 2025)

6 CRR-NY 193.3

<https://govt.westlaw.com/nycr/Document/I21efe775c22211ddb7c8fb397c5bd26b?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=%28sc.Default%29>

OFFICIAL COMPILATION OF CODES, RULES AND REGULATIONS OF THE STATE OF NEW YORK TITLE 6. DEPARTMENT OF ENVIRONMENTAL CONSERVATION CHAPTER II. LANDS AND FORESTS PART 193. TREES AND PLANTS

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193.3 Protected native plants.

All plants enumerated on the lists of endangered species in subdivision (a) of this section, threatened species in subdivision (b) of this section, rare species in subdivision (c) of this section, or exploitably vulnerable species in subdivision (d) of this section are protected native plants pursuant to section 9-1503 of the Environmental Conservation Law. The common names contained on these lists are included for information purposes only; the scientific name shall be used for the purpose of determining any violation. *Site* means a colony or colonies of plants separated from other colonies by at least one-half mile.

(a) Endangered native plants.

The following are endangered native plants in danger of extirpation throughout all or a significant portion of their ranges within the State and requiring remedial action to prevent such extinction. Listed plants are those with five or fewer extant sites, or fewer than 1,000 individuals, or restricted to fewer than four U.S.G.S. 7½ minute series maps, or species listed as endangered by the United States Department of Interior in the *Code of Federal Regulations*.

Scientific name	Common name
<i>Acalypha virginica</i>	Virginia Three-seeded Mercury
<i>Aconitum noveboracense</i>	Northern Monk's-hood
<i>Adoxa moschatellina</i>	Musk Root
<i>Agalinis acuta</i>	Sandplain Gerardia
<i>Ageratina aromatica</i> var. <i>aromatica</i>	Small White Snakeroot
<i>Allium tricoccum</i> var. <i>burdickii</i>	Burdick's Wild Leek
<i>Amelanchier nantucketensis</i>	Nantucket Juneberry
<i>Ammophila breviligulata</i> ssp. <i>champlainensis</i>	Champlain Beachgrass
<i>Amphicarpum purshii</i>	Peanut Grass
<i>Anthoxanthum monticola</i> ssp. <i>monticola</i>	Alpine Sweetgrass
<i>Aplectrum hyemale</i>	Puttyroot
<i>Arnica lanceolata</i> ssp. <i>lanceolata</i>	Lanceleaf Arnica
<i>Arnoglossum atriplicifolium</i>	Pale Indian-plantain
<i>Asclepias variegata</i>	White Milkweed
<i>Asplenium bradleyi</i>	Bradley's Spleenwort
<i>Asplenium trichomanes-ramosum</i>	Green Spleenwort
<i>Astragalus neglectus</i>	Cooper's Milkvetch
<i>Atriplex dioica</i>	Thickleaf Orach
<i>Atriplex glabriuscula</i>	Seaside Orach
<i>Bartonia paniculata</i> ssp. <i>paniculata</i>	Screw-stem
<i>Betula glandulosa</i>	Tundra Dwarf Birch

<i>Betula minor</i>	Dwarf White Birch
<i>Bidens hyperborea</i> var. <i>hyperborea</i>	Estuary Beggar-ticks
<i>Blephilia ciliata</i>	Downy Wood-mint
<i>Bolboschoenus novae-angliae</i>	Saltmarsh Bulrush
<i>Botrychium campestre</i>	Prairie Dunewort
<i>Botrychium lunaria</i>	Common Moonwort
<i>Botrychium minganense</i>	Mingan Moonwort
<i>Botrychium rugulosum</i>	Rugulose Grape Fern
<i>Bouteloua curtipendula</i> var. <i>curtipendula</i>	Side-oats Grama
<i>Bromus nottowayanus</i>	Nottoway Brome Grass
<i>Buchnera americana</i>	Blue-hearts
<i>Calamagrostis perplexa</i>	Wood Reedgrass
<i>Calamagrostis porteri</i> ssp. <i>porteri</i>	Porter's Reedgrass
<i>Calamagrostis stricta</i> ssp. <i>stricta</i>	Northern Reedgrass
<i>Callitriche hermaphrodita</i>	Autumnal Water-starwort
<i>Calypso bulbosa</i>	Calypso
<i>Campanulastrum americanum</i>	Tall Bellflower
<i>Cardamine rotundifolia</i>	Mountain Watercress
<i>Carex abscondita</i>	Thicket Sedge
<i>Carex aggregata</i>	Glomerate Sedge
<i>Carex amphibola</i>	Narrow-leaved Sedge
<i>Carex arcta</i>	Northern Clustered Sedge
<i>Carex atratiformis</i>	Scabrous Black Sedge
<i>Carex barrattii</i>	Barratt's Sedge
<i>Carex bullata</i>	Button Sedge
<i>Carex capillaris</i>	Hair-like Sedge
<i>Carex careyana</i>	Carey's Sedge
<i>Carex caroliniana</i>	Carolina sedge
<i>Carex collinsii</i>	Collins' Sedge
<i>Carex conjuncta</i>	Soft Fox Sedge
<i>Carex decomposita</i>	Cypress-knee Sedge
<i>Carex echinoides</i>	Bristly Nodding Sedge
<i>Carex emoryi</i>	Emory's Sedge
<i>Carex frankii</i>	Frank's Sedge
<i>Carex garberi</i>	Elk Sedge
<i>Carex gynocrates</i>	Northern Bog Sedge
<i>Carex haydenii</i>	Cloud Sedge
<i>Carex livida</i>	Livid Sedge
<i>Carex meadii</i>	Mead's Sedge
<i>Carex mitchelliana</i>	Mitchell's Sedge
<i>Carex nigra</i>	Black Sedge
<i>Carex reznicekii</i>	Reznicek's Sedge
<i>Carex sartwellii</i>	Sartwell's Sedge
<i>Carex scirpoidea</i> ssp. <i>scirpoidea</i>	Canadian Single-spike Sedge
<i>Carex shortiana</i>	Short's Sedge
<i>Carex straminea</i>	Straw Sedge

<i>Carex striatula</i>	Lined Sedge
<i>Carex styloflexa</i>	Bent Sedge
<i>Carex sychnocephala</i>	Many-head Sedge
<i>Carex tenuiflora</i>	Sparse-flowered Sedge
<i>Carex tinctoria</i>	Tinged Sedge
<i>Carex typhina</i>	Cat-tail Sedge
<i>Carex vaginata</i>	Sheathed Sedge
<i>Carex venusta</i>	Dark-green sedge
<i>Carex wiegandii</i>	Wiegand's Sedge
<i>Castilleja coccinea</i>	Scarlet Indian-paintbrush
<i>Ceanothus herbaceus</i>	Prairie Redroot
<i>Chaerophyllum procumbens</i>	Spreading Chervil
<i>Chamaelirium luteum</i>	Fairy Wand
<i>Chasmanthium laxum</i>	Slender Spikegrass
<i>Cheilanthes lanosa</i>	Wooly Lip-fern
<i>Chenopodium berlandieri</i> var. <i>macrocalycium</i>	Large-calyx Goosefoot
<i>Collinsia verna</i>	Blue-eyed-Mary
<i>Corallorhiza striata</i> var. <i>striata</i>	Striped Coralroot
<i>Corema conradii</i>	Broom Crowberry
<i>Cornus drummondii</i>	Rough-leaf Dogwood
<i>Crassula aquatica</i>	Water Pigmyweed
<i>Crataegus berberifolia</i>	Barberry-leaved Hawthorn
<i>Crataegus mollis</i>	Downy Hawthorn
<i>Crataegus uniflora</i>	Dwarf Hawthorn
<i>Crotalaria sagittalis</i>	Rattlebox
<i>Cuscuta campestris</i>	Field Dodder
<i>Cuscuta cephalanthi</i>	Button-bush Dodder
<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>	Southern Dodder
<i>Cuscuta polygonorum</i>	Smartweed Dodder
<i>Cynoglossum virginianum</i> var. <i>virginianum</i>	Wild Comfrey
<i>Cynoglossum virginianum</i> var. <i>boreale</i>	Northern Wild Comfrey
<i>Cyperus echinatus</i>	Globose Flatsedge
<i>Cyperus flavescens</i>	Yellow Flatsedge
<i>Cyperus polystachyos</i> var. <i>texensis</i>	Coast Flatsedge
<i>Cyperus retrorsus</i> var. <i>retrorsus</i>	Retorse Flatsedge
<i>Cypripedium candidum</i>	Small White Ladyslipper
<i>Cypripedium parviflorum</i> var. <i>parviflorum</i>	Small Yellow Ladyslipper
<i>Cystopteris protrusa</i>	Lowland Fragile Fern
<i>Descurainia pinnata</i> ssp. <i>brachycarpa</i>	Northern Tansy-mustard
<i>Desmodium humifusum</i>	Spreading Tick-clover
<i>Desmodium laevigatum</i>	Smooth Tick-clover
<i>Desmodium nuttallii</i>	Nuttall's Tick-clover
<i>Desmodium obtusum</i>	Beggar-lice
<i>Desmodium pauciflorum</i>	Small-flowered Tick-clover
<i>Dichanthelium leibergii</i>	Leiberg's Panic Grass
<i>Dichanthelium oligosanthes</i> var. <i>oligosanthes</i>	Few-flowered Panic Grass

<i>Dichanthelium scabriusculum</i>	Panic Grass
<i>Dichanthelium scoparium</i>	Velvet Panic Grass
<i>Dichanthelium wrightianum</i>	Wright's Panic Grass
<i>Digitaria filiformis</i>	Slender Crabgrass
<i>Diphasiastrum complanatum</i>	Northern Running-pine
<i>Diphasiastrum sitchense</i>	Sitka Clubmoss
<i>Draba glabella</i>	Smooth Rock-cress
<i>Dracocephalum parviflorum</i>	American Dragonhead
<i>Dryopteris celsa</i>	Log Fern
<i>Dryopteris fragrans</i>	Fragrant Cliff Fern
<i>Elatine americana</i>	American Waterwort
<i>Eleocharis aestuum</i>	Tidal Spikerush
<i>Eleocharis diandra</i>	Wright's Spikerush
<i>Eleocharis engelmannii</i>	Engelmann's Spikerush
<i>Eleocharis fallax</i>	Creeping Spikerush
<i>Eleocharis ovata</i>	Ovate Spikerush
<i>Eleocharis quadrangulata</i>	Angled Spikerush
<i>Eleocharis tenuis</i> var. <i>pseudoptera</i>	Slender Spikerush
<i>Eleocharis tricostata</i>	Three-ribbed Spikerush
<i>Elymus glaucus</i> ssp. <i>glaucus</i>	Blue Wild Rye
<i>Empetrum atropurpureum</i>	Purple Crowberry
<i>Epilobium hornemannii</i> ssp. <i>hornemannii</i>	Alpine Willow-herb
<i>Erechtites hieraciifolius</i> var. <i>megalocarpa</i>	Fireweed
<i>Erigenia bulbosa</i>	Harbinger-of-spring
<i>Erigeron hyssopifolius</i>	Daisy Fleabane
<i>Erigeron philadelphicus</i> var. <i>provancheri</i>	Provancher's Fleabane
<i>Eriophorum angustifolium</i> ssp. <i>angustifolium</i>	Narrow-leaf Cottongrass
<i>Euonymus americanus</i>	American Strawberry-bush
<i>Eupatorium album</i> var. <i>album</i>	White Boneset
<i>Eupatorium leucolepis</i> var. <i>leucolepis</i>	White-bracted Boneset
<i>Eupatorium pubescens</i>	Serrate Round-leaf Boneset
<i>Eupatorium rotundifolium</i> var. <i>rotundifolium</i>	Round-leaf Boneset
<i>Euphorbia ipecacuanhae</i>	American Ipecac
<i>Eurybia radula</i>	Swamp Aster
<i>Festuca saximontana</i> var. <i>saximontana</i>	Sheep Fescue
<i>Galium concinnum</i>	Shining Bedstraw
<i>Galium kamtschaticum</i>	Northern Wild-licorice
<i>Gaylussacia bigeloviana</i>	Dwarf Huckleberry
<i>Gentiana saponaria</i>	Soapwort Gentian
<i>Gentianopsis virgata</i>	Lesser Fringed Gentian
<i>Geocaulon lividum</i>	Purple Comandra
<i>Geum macrophyllum</i> var. <i>macrophyllum</i>	Bigleaf Yellow Avens
<i>Gymnocladus dioicus</i>	Kentucky Coffee Tree
<i>Hackelia deflexa</i> var. <i>americana</i>	Northern Stickseed
<i>Halenia deflexa</i>	Spurred Gentian
<i>Hasteola suaveolens</i>	Sweet-scented Indian-plantain

<i>Hippuris vulgaris</i>	Common Mare's-tail
<i>Houstonia purpurea</i> var. <i>calycosa</i>	Southern Bluets
<i>Houstonia purpurea</i> var. <i>purpurea</i>	Purple Bluets
<i>Huperzia selago</i>	Fir Clubmoss
<i>Hydrocotyle ranunculoides</i>	Floating Pennywort
<i>Hydrocotyle verticillata</i>	Whorled-pennywort
<i>Hydrophyllum appendiculatum</i>	Appendaged Waterleaf
<i>Hylotelephium telephioides</i>	Live-forever
<i>Hypericum densiflorum</i>	Bushy St. John's-wort
<i>Hypericum denticulatum</i>	Coppery St. John's-wort
<i>Hypericum hypericoides</i> ssp. <i>multicaule</i>	St. Andrew's Cross
<i>Ipomoea pandurata</i>	Wild Potato-vine
<i>Iris virginica</i> var. <i>shrevei</i>	Southern Blue Flag
<i>Isoetes riparia</i>	Riverbank Quillwort
<i>Isotria medeoloides</i>	Small Whorled Pogonia
<i>Juncus ambiguus</i>	Doubtful Toad-rush
<i>Juncus biflorus</i>	Large Grass-leaved Rush
<i>Juncus brachycarpus</i>	Short-fruit Rush
<i>Juncus debilis</i>	Weak Rush
<i>Juncus ensifolius</i>	Ensiform Rush
<i>Juncus scirpoides</i>	Scirpus-like Rush
<i>Juncus stygius</i> ssp. <i>americanus</i>	Moor-rush
<i>Juncus subcaudatus</i>	Woods-rush
<i>Juniperus horizontalis</i>	Creeping Juniper
<i>Kalmia procumbens</i>	Alpine Azalea
<i>Lachnanthes carolina</i>	Carolina Redroot
<i>Lactuca floridana</i>	False Lettuce
<i>Lactuca hirsuta</i>	Downy Lettuce
<i>Lathyrus venosus</i>	Rough Veiny Vetchling
<i>Lechea pulchella</i> var. <i>moniliformis</i>	Bead Pinweed
<i>Lemna perpusilla</i>	Minute Duckweed
<i>Lemna valdiviana</i>	Pale Duckweed
<i>Leptochloa fusca</i> ssp. <i>fascicularis</i>	Salt-meadow Grass
<i>Liatris cylindracea</i>	Slender Blazing-star
<i>Liatris scariosa</i> var. <i>nieuwlandii</i>	Nieuwland's Blazing-star
<i>Ligusticum scoticum</i> ssp. <i>scoticum</i>	Scotch Lovage
<i>Lilium michiganense</i>	Michigan Lily
<i>Liparis liliifolia</i>	Large Twayblade
<i>Lipocarpa micrantha</i>	Dwarf Bulrush
<i>Listera auriculata</i>	Auricled Twayblade
<i>Listera australis</i>	Southern Twayblade
<i>Listera convallarioides</i>	Broad-lipped Twayblade
<i>Lithospermum caroliniense</i> ssp. <i>croceum</i>	Golden Puccoon
<i>Littorella uniflora</i>	American Shore-grass
<i>Luzula spicata</i>	Spiked Woodrush
<i>Lycopus rubellus</i>	Gypsy-wort

<i>Lygodium palmatum</i>	Climbing Fern
<i>Lysimachia hybrida</i>	Lance-leaved Loosestrife
<i>Lysimachia quadriflora</i>	Four-flowered Loosestrife
<i>Lythrum lineare</i>	Saltmarsh Loosestrife
<i>Magnolia virginiana</i>	Sweetbay Magnolia
<i>Malaxis bayardii</i>	Bayard's Adder's-mouth Orchid
<i>Melanthium virginicum</i>	Virginia Bunchflower
<i>Monarda clinopodia</i>	Basil-balm
<i>Myriophyllum pinnatum</i>	Green Parrot's-feather
<i>Najas guadalupensis ssp. muenscheri</i>	Hudson River Water-nymph
<i>Najas guadalupensis ssp. olivacea</i>	Southern Naiad
<i>Najas marina</i>	Holly-leaved Naiad
<i>Oenothera laciniata</i>	Cut-leaved Evening-primrose
<i>Oldenlandia uniflora</i>	Clustered Bluets
<i>Oligoneuron houghtonii</i>	Houghton's Goldenrod
<i>Omalotheca sylvatica</i>	Woodland Cudweed
<i>Onosmodium virginianum</i>	Virginia False Gromwell
<i>Oxypolis rigidior</i>	Stiff Cowbane
<i>Panicum rigidulum var. elongatum</i>	Tall Flat Panic Grass
<i>Paspalum laeve</i>	Field Beadgrass
<i>Persicaria careyi</i>	Carey's Smartweed
<i>Persicaria setacea</i>	Swamp Smartweed
<i>Petasites frigidus var. palmatus</i>	Sweet Coltsfoot
<i>Phlox maculata ssp. maculata</i>	Wild Sweet-william
<i>Phlox pilosa</i>	Downy Phlox
<i>Physalis virginiana</i>	Virginia Ground-cherry
<i>Pinus echinata</i>	Shortleaf Pine
<i>Pinus virginiana</i>	Virginia Pine
<i>Platanthera ciliaris</i>	Orange Fringed Orchis
<i>Platanthera cristata</i>	Crested Fringed Orchis
<i>Platanthera hookeri</i>	Hooker's Orchid
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid
<i>Poa cuspidata</i>	Bluegrass
<i>Poa glauca ssp. glauca</i>	White Bluegrass
<i>Poa interior</i>	Inland Bluegrass
<i>Poa laxa ssp. fernaldiana</i>	Fernald's Bluegrass
<i>Poa paludigena</i>	Slender Marsh Bluegrass
<i>Poa sylvestris</i>	Woodland Bluegrass
<i>Polygala lutea</i>	Orange Milkwort
<i>Polygonum aviculare ssp. buxiforme</i>	Small's Knotweed
<i>Polystichum lonchitis</i>	Northern Holly-fern
<i>Potamogeton diversifolius</i>	Water-thread Pondweed
<i>Potamogeton ogdenii</i>	Ogden's Pondweed
<i>Potamogeton strictifolius</i>	Straight-leaf Pondweed
<i>Potentilla paradoxa</i>	Bushy Cinquefoil
<i>Prenanthes boottii</i>	Boott's Rattlesnake-root

<i>Prenanthes crepidinea</i>	Nodding Rattlesnake-root
<i>Prunus pumila</i> var. <i>pumila</i>	Low Sand-cherry
<i>Pseudognaphalium micradenium</i>	Catfoot
<i>Pseudolycopodiella caroliniana</i>	Carolina Clubmoss
<i>Ptelea trifoliata</i> ssp. <i>trifoliata</i>	Wafer-ash
<i>Pteridium aquilinum</i> var. <i>pseudocaudatum</i>	Southeastern Bracken
<i>Pterospora andromedea</i>	Giant Pine-drops
<i>Pycnanthemum clinopodioides</i>	Basil Mountain-mint
<i>Pycnanthemum torrei</i>	Torrey's Mountain-mint
<i>Pycnanthemum verticillatum</i> var. <i>verticillatum</i>	Whorled Mountain-mint
<i>Pyrola minor</i>	Snowline Wintergreen
<i>Pyxidantha barbulata</i>	Flowering Pixiemoss
<i>Quercus phellos</i>	Willow Oak
<i>Quercus shumardii</i> var. <i>shumardii</i>	Shumard Oak
<i>Ranunculus cymbalaria</i>	Seaside Crowfoot
<i>Ranunculus hispidus</i> var. <i>nitidus</i>	Swamp Buttercup
<i>Rhodiola integrifolia</i> ssp. <i>leedyi</i>	Leedy's Roseroot
<i>Rhodiola rosea</i>	Roseroot
<i>Rhododendron lapponicum</i> var. <i>lapponicum</i>	Lapland Rosebay
<i>Rhynchospora pallida</i>	Pale Beakrush
<i>Rosa acicularis</i> ssp. <i>sayi</i>	Prickly Rose
<i>Rubus cuneifolius</i>	Sand Blackberry
<i>Rumex fueginus</i>	Golden Dock
<i>Rumex hastatulus</i>	Heart Sorrel
<i>Rumex persicarioides</i>	Seaside Dock
<i>Sabatia angularis</i>	Rose-pink
<i>Sabatia campanulata</i>	Slender Marsh-pink
<i>Sagina decumbens</i> ssp. <i>decumbens</i>	Small-flowered Pearlwort
<i>Sagittaria teres</i>	Quill-leaf Arrowhead
<i>Salix herbacea</i>	Dwarf Willow
<i>Salvia lyrata</i>	Lyre-leaf Sage
<i>Saxifraga oppositifolia</i> ssp. <i>oppositifolia</i>	Purple Mountain-saxifrage
<i>Saxifraga paniculata</i> ssp. <i>neogaea</i>	White Mountain-saxifrage
<i>Schizaea pusilla</i>	Curlygrass Fern
<i>Schoenoplectus heterochaetus</i>	Slender Bulrush
<i>Scirpus ancistrochaetus</i>	Northeastern Bulrush
<i>Scirpus georgianus</i>	Georgia Bulrush
<i>Scleria minor</i>	Slender Nutrush
<i>Scleria muehlenbergii</i>	Reticulate Nutrush
<i>Scleria pauciflora</i> var. <i>caroliniana</i>	Few-flowered Nutrush
<i>Scleria triglomerata</i>	Whip Nutrush
<i>Scleria verticillata</i>	Low Nutrush
<i>Scutellaria incana</i> var. <i>incana</i>	Hoary Skullcap
<i>Scutellaria integrifolia</i>	Hyssop-skullcap
<i>Selaginella eclipes</i>	Hidden Spike-moss
<i>Sesuvium maritimum</i>	Sea Purslane

<i>Sisyrinchium mucronatum</i>	Michaux's Blue-eyed-grass
<i>Smallanthus uvedalius</i>	Bear's-foot
<i>Smilax pseudochina</i>	False China-root
<i>Smilax pulverulenta</i>	Jacob's-ladder
<i>Solidago latissimifolia</i>	Coastal Goldenrod
<i>Solidago sempervirens</i> var. <i>mexicana</i>	Seaside Goldenrod
<i>Solidago simplex</i> var. <i>racemosa</i>	Mountain Goldenrod
<i>Sphenopholis obtusata</i>	Prairie Wedgegrass
<i>Sphenopholis pensylvanica</i>	Swamp Oats
<i>Spinulum canadense</i>	Northern Bristly Club-moss
<i>Spiraea septentrionalis</i>	Mountain Meadow-sweet
<i>Spiranthes vernalis</i>	Spring Ladies'-tresses
<i>Sporobolus clandestinus</i>	Rough Rush-grass
<i>Strophostyles umbellata</i>	Pink Wild Bean
<i>Stuckenia filiformis</i> ssp. <i>alpina</i>	Slender Pondweed
<i>Stuckenia filiformis</i> ssp. <i>occidentalis</i>	Sheathed Pondweed
<i>Suaeda linearis</i>	Narrow-leaf Sea-blite
<i>Suaeda rolandii</i>	Roland's Sea-blite
<i>Subularia aquatica</i> var. <i>americana</i>	Water Awlwort
<i>Symphyotrichum ciliolatum</i>	Lindley's Aster
<i>Symphyotrichum concolor</i> var. <i>concolor</i>	Silvery Aster
<i>Symphyotrichum laeve</i> var. <i>concinnum</i>	Smooth Blue Aster
<i>Symphyotrichum lanceolatum</i> var. <i>interior</i>	Tall White Aster
<i>Symphyotrichum oolentangiense</i> var. <i>oolentangiense</i>	Sky-blue Aster
<i>Thalictrum venulosum</i> var. <i>confine</i>	Veiny Meadow-rue
<i>Thaspium barbinode</i>	Meadow-parsnip
<i>Tilia american</i> var. <i>heterophylla</i>	White Basswood
<i>Tipularia discolor</i>	Crane-fly Orchid
<i>Triantha glutinosa</i>	Sticky False Asphodel
<i>Trichomanes intricatum</i>	Appalachian Trichomanes
<i>Trichophorum clintonii</i>	Clinton's Clubrush
<i>Trichostema setaceum</i>	Tiny Blue-Curls
<i>Trillium flexipes</i>	Nodding Trillium
<i>Trillium sessile</i>	Toad-shade
<i>Trisetum melicoides</i>	Melic-oats
<i>Utricularia juncea</i>	Rush Bladderwort
<i>Uvularia puberula</i>	Mountain Bellwort
<i>Vaccinium cespitosum</i>	Dwarf Blueberry
<i>Valeriana uliginosa</i>	Marsh Valerian
<i>Valerianella chenopodiifolia</i>	Goosefoot Corn-salad
<i>Valerianella umbilicata</i>	Navel-fruited Corn-salad
<i>Vernonia gigantea</i> ssp. <i>gigantea</i>	Tall Ironweed
<i>Viburnum nudum</i> var. <i>nudum</i>	Possum-haw
<i>Viola bicolor</i>	Field Pansy
<i>Viola brittoniana</i>	Coast Violet

<i>Viola hirsutula</i>	Southern Wood Violet
<i>Viola nephrophylla</i>	Northern Bog Violet
<i>Viola novae-angliae</i>	New England Violet
<i>Vitis vulpina</i>	Winter Grape
<i>Vittaria appalachiana</i>	Appalachian Shoestring Fern
<i>Woodsia alpina</i>	Alpine Cliff Fern
<i>Woodsia glabella</i>	Smooth Cliff Fern

(b) Threatened native plants.

The following are threatened native plants that are likely to become endangered within the foreseeable future throughout all or a significant portion of their ranges within the State. Listed plants are those with 6 to fewer than 20 extant sites, or 1,000 to fewer than 3,000 individuals, or restricted to not less than four or more than seven U.S.G.S. 7½ minute series maps, or species listed as threatened by the United State Department of Interior in the *Code of Federal Regulations*.

<i>Scientific name</i>	<i>Common name</i>
<i>Agalinis maritima</i> var. <i>maritima</i>	Seaside Gerardia
<i>Agastache nepetoides</i>	Yellow Giant-hyssop
<i>Agrimonia rostellata</i>	Woodland Agrimony
<i>Agrostis mertensii</i>	Northern Bentgrass
<i>Aletris farinosa</i>	Stargrass
<i>Alisma gramineum</i>	Water-plantain
<i>Allium cernuum</i> var. <i>cernuum</i>	Nodding Wild Onion
<i>Amaranthus pumilus</i>	Seabeach Amaranth
<i>Angelica lucida</i>	Seacoast Angelica
<i>Anticlea elegans</i> ssp. <i>glaucus</i>	Mountain Death Camas
<i>Arethusa bulbosa</i>	Dragon's Mouth Orchid
<i>Argentina egedii</i> ssp. <i>egedii</i>	Coastal Silverweed
<i>Asclepias purpurascens</i>	Purple Milkweed
<i>Asclepias viridiflora</i>	Green Milkweed
<i>Asimina triloba</i>	Pawpaw
<i>Asplenium montanum</i>	Mountain Spleenwort
<i>Asplenium scolopendrium</i> var. <i>americanum</i>	Hart's-tongue Fern
<i>Betula pumila</i>	Swamp Birch
<i>Bidens laevis</i>	Smooth Bur-marigold
<i>Boechera dentata</i>	Toothed Rock-cress
<i>Boechera grahamii</i>	Purple Rock-cress
<i>Boechera missouriensis</i>	Green Rock-cress
<i>Boechera stricta</i>	Drummond's Rock-cress
<i>Bolboschoenus maritimus</i> ssp. <i>paludosus</i>	Seaside Bulrush
<i>Botrychium oneidense</i>	Blunt-lobe Grape Fern
<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>	New England Northern Reedgrass
<i>Callitriche terrestris</i>	Terrestrial Starwort
<i>Cardamine douglassii</i>	Purple Cress
<i>Cardamine longii</i>	Long's Bittercress
<i>Carex backii</i>	Back's Sedge
<i>Carex bigelowii</i>	Bigelow's Sedge

<i>Carex buxbaumii</i>	Brown Bog Sedge
<i>Carex chordorrhiza</i>	Creeping Sedge
<i>Carex crawei</i>	Crawe's Sedge
<i>Carex cumulata</i>	Clustered Sedge
<i>Carex davisii</i>	Davis' Sedge
<i>Carex debilis</i> var. <i>debilis</i>	White-edge Sedge
<i>Carex formosa</i>	Handsome Sedge
<i>Carex glaucoidea</i>	Glaucous Sedge
<i>Carex hormathodes</i>	Marsh Straw Sedge
<i>Carex houghtoniana</i>	Houghton's Sedge
<i>Carex jamesii</i>	James' Sedge
<i>Carex lupuliformis</i>	False Hop Sedge
<i>Carex merriitt-fernaldii</i>	Fernald's Sedge
<i>Carex mesochorea</i>	Midland Sedge
<i>Carex molesta</i>	Troublesome Sedge
<i>Carex nigromarginata</i>	Black-edge Sedge
<i>Carex retroflexa</i>	Reflexed Sedge
<i>Carex schweinitzii</i>	Schweinitz' Sedge
<i>Carya laciniosa</i>	Big Shellbark Hickory
<i>Cenchrus tribuloides</i>	Dune Sandspur
<i>Chamaecyparis thyoides</i>	Atlantic White Cedar
<i>Chenopodium rubrum</i>	Red Pigweed
<i>Corydalis aurea</i>	Golden Corydalis
<i>Crocanthemum dumosum</i>	Bushy Rockrose
<i>Crocanthemum propinquum</i>	Early Frostweed
<i>Cyperus lupulinus</i> ssp. <i>lupulinus</i>	Hop Sedge
<i>Cypripedium arietinum</i>	Ram's-head Ladyslipper
<i>Desmodium ciliare</i>	Little-leaf Tick-trefoil
<i>Diapensia lapponica</i> var. <i>lapponica</i>	Diapensia
<i>Diarrhena obovata</i>	Beakgrass
<i>Diospyros virginiana</i>	Persimmon
<i>Draba arabisans</i>	Rock-cress
<i>Draba reptans</i>	Carolina Whitlow-grass
<i>Eleocharis equisetoides</i>	Knotted Spikerush
<i>Eleocharis tuberculosa</i>	Long-tubercled Spikerush
<i>Eleocharis uniglumis</i> var. <i>halophila</i>	Salt-marsh Spikerush
<i>Endodeca serpentaria</i>	Virginia Snakeroot
<i>Equisetum palustre</i>	Marsh Horsetail
<i>Equisetum pratense</i>	Meadow Horsetail
<i>Eupatorium album</i> var. <i>subvenosum</i>	White Boneset
<i>Eupatorium torreyanum</i>	Fringed Boneset
<i>Eurybia spectabilis</i>	Showy Aster
<i>Fimbristylis castanea</i>	Marsh Fimbry
<i>Frasera caroliniensis</i>	Green Gentian
<i>Geum triflorum</i> var. <i>triflorum</i>	Prairie-smoke
<i>Geum virginianum</i>	Rough Avens

<i>Hedeoma hispida</i>	Mock-pennyroyal
<i>Helianthus angustifolius</i>	Swamp Sunflower
<i>Hottonia inflata</i>	Featherfoil
<i>Hydrangea arborescens</i>	Wild Hydrangea
<i>Hydrastis canadensis</i>	Golden-seal
<i>Hypericum adpressum</i>	Creeping St. John's-wort
<i>Hypericum prolificum</i>	Shrubby St. John's-wort
<i>Iris prismatica</i>	Slender Blue Flag
<i>Jeffersonia diphylla</i>	Twin-leaf
<i>Juncus trifidus</i>	Arctic Rush
<i>Lechea tenuifolia</i>	Slender Pinweed
<i>Lespedeza angustifolia</i>	Narrow-leaved Bush-clover
<i>Lespedeza stuevei</i>	Velvety Bush-clover
<i>Liatris scariosa</i> var. <i>novae-angliae</i>	Northern Blazing-star
<i>Lilaeopsis chinensis</i>	Eastern Grasswort
<i>Linum intercursum</i>	Sandplain Wild Flax
<i>Linum medium</i> var. <i>texanum</i>	Southern Yellow Flax
<i>Linum sulcatum</i>	Yellow Wild Flax
<i>Ludwigia sphaerocarpa</i>	Globe-fruited Ludwigia
<i>Lycopus amplexans</i>	Water-horehound
<i>Myriophyllum alterniflorum</i>	Water Milfoil
<i>Myriophyllum farwellii</i>	Farwell's Water-milfoil
<i>Oenothera oakesiana</i>	Oakes' Evening Primrose
<i>Oligoneuron ohioense</i>	Ohio Goldenrod
<i>Oligoneuron rigidum</i> var. <i>rigidum</i>	Stiff-leaf Goldenrod
<i>Orontium aquaticum</i>	Golden Club
<i>Oxalis violacea</i>	Violet Wood-sorrel
<i>Pedicularis lanceolata</i>	Swamp Lousewort
<i>Pellaea glabella</i> ssp. <i>glabella</i>	Smooth Cliff Brake
<i>Pinguicula vulgaris</i>	Butterwort
<i>Piptatherum canadense</i>	Canada Ricegrass
<i>Plantago maritima</i> var. <i>juncoides</i>	Seaside Plantain
<i>Podostemum ceratophyllum</i>	Riverweed
<i>Polygala nuttallii</i>	Nuttall's Milkwort
<i>Polygonum douglasii</i>	Douglas' Knotweed
<i>Populus heterophylla</i>	Swamp Cottonwood
<i>Potamogeton alpinus</i>	Northern Pondweed
<i>Potamogeton hillii</i>	Hill's Pondweed
<i>Potamogeton pulcher</i>	Spotted Pondweed
<i>Primula mistassinica</i>	Bird's-eye Primrose
<i>Proserpinaca pectinata</i>	Comb-leaved Mermaid-weed
<i>Prunus pumila</i> var. <i>depressa</i>	Dwarf Sand-cherry
<i>Pycnanthemum muticum</i>	Blunt Mountain-mint
<i>Pyrola asarifolia</i> ssp. <i>asarifolia</i>	Pink Wintergreen
<i>Rhododendron canadense</i>	Rhodora
<i>Rhynchospora inundata</i>	Drowned Beakrush

<i>Rhynchospora nitens</i>	Short-beaked Beakrush
<i>Rorippa aquatica</i>	Lake-cress
<i>Rotala ramosior</i>	Tooth-cup
<i>Sabatia stellaris</i>	Sea-pink
<i>Sagittaria montevidensis</i> var. <i>spongiosa</i>	Spongy Arrowhead
<i>Salicornia bigelovii</i>	Dwarf Glasswort
<i>Salix cordata</i>	Sand Dune Willow
<i>Salix uva-ursi</i>	Bearberry Willow
<i>Saxifraga aizoides</i>	Yellow Mountain-saxifrage
<i>Sericocarpus linifolius</i>	Flax-leaf Whitetop
<i>Silene caroliniana</i> ssp. <i>pennsylvanica</i>	Wild Pink
<i>Solidago leiocarpa</i>	Alpine Goldenrod
<i>Solidago simplex</i> var. <i>monticola</i>	Rand's Mountain Goldenrod
<i>Sparganium natans</i>	Small Bur-reed
<i>Sporobolus heterolepis</i>	Northern Dropseed
<i>Stachys hyssopifolia</i>	Rough Hedge-nettle
<i>Stellaria longipes</i>	Longstalk Starwort
<i>Symphyotrichum boreale</i>	Northern Bog Aster
<i>Symphyotrichum subulatum</i> var. <i>subulatum</i>	Saltmarsh Aster
<i>Trichophorum cespitosum</i> ssp. <i>cespitosum</i>	Deer's Hair Sedge
<i>Triglochin palustre</i>	Marsh Arrow-grass
<i>Triphora trianthophora</i>	Nodding Pogonia
<i>Tripsacum dactyloides</i>	Northern Gamma Grass
<i>Ulmus thomasii</i>	Cork Elm
<i>Utricularia radiata</i>	Small Floating Bladderwort
<i>Utricularia striata</i>	Fibrous Bladderwort
<i>Vaccinium boreale</i>	High-mountain Blueberry
<i>Veronicastrum virginicum</i>	Culver's-root
<i>Viburnum dentatum</i> var. <i>venosum</i>	Southern Arrowwood
<i>Viburnum edule</i>	Squashberry
<i>Viola primulifolia</i>	Primrose-leaf Violet
<i>Xyris smalliana</i>	Large Yellow-eyed-grass

(c) Rare native plants.

The following are rare native plants that have from 20 to 35 extant sites or 3,000 to 5,000 individuals statewide.

Scientific name	Common name
<i>Agalinis fasciculata</i>	Fascicled False Foxglove
<i>Agalinis paupercula</i> var. <i>borealis</i>	Northern False Foxglove
<i>Agrimonia parviflora</i>	Swamp Agrimony
<i>Angelica venenosa</i>	Hairy Angelica
<i>Asclepias verticillata</i>	Whorled Milkweed
<i>Betula nigra</i>	River Birch
<i>Bidens bidentoides</i>	Delmarva Beggar-ticks
<i>Calamagrostis pickeringii</i>	Pickering's Reedgrass
<i>Carex albicans</i> var. <i>emmonsii</i>	Emmons' Sedge
<i>Carex atherodes</i>	Awned Sedge
<i>Carex bicknellii</i>	Bicknell's Sedge

<i>Carex bushii</i>	Bush's Sedge
<i>Carex cryptolepis</i>	Northeastern Sedge
<i>Carex muehlenbergii</i> var. <i>enervis</i>	Muhlenberg's Sedge
<i>Carex oligosperma</i>	Few-seed Sedge
<i>Carex striata</i> var. <i>brevis</i>	Walter's Sedge
<i>Carex willdenowii</i>	Willdenow's Sedge
<i>Celastrus scandens</i>	American Bittersweet
<i>Ceratophyllum echinatum</i>	Prickly Hornwort
<i>Clintonia umbellulata</i>	Speckled Woodlily
<i>Coreopsis rosea</i>	Rose Coreopsis
<i>Corydalis flavula</i>	Yellow Harlequin
<i>Cuscuta compacta</i>	Sessile Dodder
<i>Cuscuta pentagona</i>	Five-angled Field-dodder
<i>Cyperus erythrorhizos</i>	Red-rooted Flatsedge
<i>Cyperus houghtonii</i>	Houghton's Flatsedge
<i>Cyperus odoratus</i>	Rusty Flatsedge
<i>Cyperus schweinitzii</i>	Schweinitz's Flatsedge
<i>Drosera filiformis</i>	Dew-thread
<i>Eleocharis melanocarpa</i>	Black-fruited Spikerush
<i>Eleocharis robbinsii</i>	Robbins Spikerush
<i>Empetrum nigrum</i>	Black Crowberry
<i>Fuirena pumila</i>	Dwarf Umbrella Sedge
<i>Heteranthera reniformis</i>	Kidneyleaf Mud-plantain
<i>Heuchera americana</i> var. <i>americana</i>	American Alumroot
<i>Huperzia appressa</i>	Appalachian Firmoss
<i>Hydrocotyle umbellata</i>	Water-pennywort
<i>Hypericum ascyron</i>	Great St. John's-wort
<i>Isoetes lacustris</i>	Large-spored Quillwort
<i>Lathyrus ochroleucus</i>	Creamy Wild-pea
<i>Lechea racemulosa</i>	Illinois Pinweed
<i>Lespedeza frutescens</i>	Violet Bush-clover
<i>Lespedeza repens</i>	Trailing Bush-clover
<i>Limosella australis</i>	Mudwort
<i>Linum striatum</i>	Stiff Yellow Flax
<i>Lobelia nuttallii</i>	Nuttall's Lobelia
<i>Lupinus perennis</i>	Wild Lupine
<i>Luzula bulbosa</i>	Hairy Woodrush
<i>Luzula echinata</i>	Spiny Woodrush
<i>Mimulus alatus</i>	Winged Monkeyflower
<i>Minuartia caroliniana</i>	Pine-barren Sandwort
<i>Minuartia glabra</i>	Appalachian Sandwort
<i>Minuartia groenlandica</i>	Mountain Sandwort
<i>Oclemena nemoralis</i>	Bog Aster
<i>Oligoneuron album</i>	Upland Goldenrod
<i>Panicum amarum</i>	Bitter Panic Grass
<i>Panicum flexile</i>	Wiry Panic Grass

<i>Phragmites australis</i> ssp. <i>americanus</i>	American Phragmites
<i>Pinus banksiana</i>	Jack Pine
<i>Plantago cordata</i>	Heartleaf Plantain
<i>Polemonium vanbruntiae</i>	Jacob's-ladder
<i>Polygala cruciata</i> var. <i>aquilonia</i>	Cross-leaf Milkwort
<i>Polygonum glaucum</i>	Seabeach Knotweed
<i>Polygonum tenue</i>	Slender Knotweed
<i>Potamogeton confervoides</i>	Algae-like Pondweed
<i>Ptilimnium capillaceum</i>	Mock Bishop's-weed
<i>Quercus marilandica</i> var. <i>marilandica</i>	Blackjack Oak
<i>Ranunculus micranthus</i>	Small-flowered Crowfoot
<i>Rhynchospora fusca</i>	Sooty Beakrush
<i>Rhynchospora macrostachya</i>	Tall Beakrush
<i>Rhynchospora scirpoides</i>	Long-beaked Beakrush
<i>Sagittaria subulata</i>	Strap-leaf Arrowhead
<i>Salix pyrifolia</i>	Balsam Willow
<i>Scheuchzeria palustris</i>	Pod Grass
<i>Scleria reticularis</i>	Reticulated Nutrush
<i>Scutellaria parvula</i> var. <i>parvula</i>	Small Skullcap
<i>Symphyotrichum ontarionis</i>	Ontario Aster
<i>Symphyotrichum tenuifolium</i> var. <i>tenuifolium</i>	Slender Saltmarsh Aster
<i>Trichostema brachiatum</i>	False-pennyroyal
<i>Trollius laxis</i>	Spreading Globeflower
<i>Utricularia geminiscapa</i>	Hiddenfruit Bladderwort
<i>Utricularia minor</i>	Lesser Bladderwort
<i>Utricularia subulata</i>	Zigzag Bladderwort
<i>Vaccinium uliginosum</i>	Bog Bilberry
<i>Veronica peregrina</i> ssp. <i>xalapensis</i>	Neckweed
<i>Viola pedata</i>	Bird's-foot Violet

(d) Exploitably vulnerable native plants.

The following are exploitably vulnerable native plants likely to become threatened in the near future throughout all or a significant portion of their ranges within the State if causal factors continue unchecked.

<i>Scientific name</i>	<i>Common name</i>
<i>Actaea pachypoda</i>	White Baneberry
<i>Actaea rubra</i>	Baneberry
<i>Adiantum pedatum</i>	Maidenhair Fern
<i>Arisaema dracontium</i>	Green Dragon
<i>Asclepias tuberosa</i> ssp. <i>interior</i>	Butterfly-weed
<i>Asplenium platyneuron</i> var. <i>platyneuron</i>	Ebony Spleenwort
<i>Asplenium rhizophyllum</i>	Walking Fern
<i>Asplenium ruta-muraria</i>	Wall-rue Spleenwort
<i>Asplenium trichomanes</i> ssp. <i>quadrivalens</i>	Maidenhair Spleenwort
<i>Asplenium trichomanes</i> ssp. <i>trichomanes</i>	Maidenhair Spleenwort
<i>Athyrium filix-femina</i> ssp. <i>angustum</i>	Lady Fern
<i>Athyrium filix-femina</i> ssp. <i>asplenioides</i>	Lady Fern
<i>Azolla caroliniana</i>	Mosquito-fern

<i>Botrychium dissectum</i>	Cut-leaf Grape Fern
<i>Botrychium lanceolatum</i> ssp. <i>angustisegmentum</i>	Lance-leaf Grape Fern
<i>Botrychium matricariifolium</i>	Matricary Grape Fern
<i>Botrychium multifidum</i>	Leathery Grape Fern
<i>Botrychium simplex</i>	Least Moonwort
<i>Botrychium virginianum</i>	Rattlesnake Fern
<i>Calopogon tuberosus</i> var. <i>tuberosus</i>	Grass Pink
<i>Campanula rotundifolia</i>	Harebell
<i>Celastrus scandens</i>	American Bittersweet
<i>Chelone glabra</i>	Turtle-heads
<i>Chimaphila maculata</i>	Spotted Wintergreen
<i>Chimaphila umbellata</i> ssp. <i>cisatlantica</i>	Pipsissewa
<i>Clintonia umbellulata</i>	Speckled Woodlily
<i>Coeloglossum viride</i>	Long-bracted Orchid
<i>Conopholis americana</i>	Squawroot
<i>Corallorhiza maculata</i> var. <i>maculata</i>	Spotted Coralroot
<i>Corallorhiza odontorhiza</i> var. <i>odontorhiza</i>	Autumn Coralroot
<i>Corallorhiza odontorhiza</i> var. <i>pringlei</i>	Autumn Coralroot
<i>Cornus florida</i>	Flowering Dogwood
<i>Cryptogramma stelleri</i>	Slender Cliff Brake
<i>Cypripedium acaule</i>	Pink Ladyslipper
<i>Cypripedium parviflorum</i> var. <i>makasin</i>	Small Yellow Ladyslipper
<i>Cypripedium parviflorum</i> var. <i>parviflorum</i>	Small Yellow Ladyslipper
<i>Cypripedium parviflorum</i> var. <i>pubescens</i>	Yellow Ladyslipper
<i>Cypripedium reginae</i>	Showy Ladyslipper
<i>Cystopteris bulbifera</i>	Bulblet Fern
<i>Cystopteris fragilis</i>	Common Fragile Fern
<i>Cystopteris tenuis</i>	Fragile Fern
<i>Dendrolycopodium dendroideum</i>	Northern Tree Clubmoss
<i>Dendrolycopodium obscurum</i>	Ground Pine
<i>Deparia acrostichoides</i>	Silvery Spleenwort
<i>Diphasiastrum digitatum</i>	Running-pine
<i>Diphasiastrum tristachyum</i>	Ground Cedar
<i>Diplazium pycnocarpon</i>	Glade Fern
<i>Drosera filiformis</i>	Dewthread
<i>Drosera intermedia</i>	Sundew
<i>Drosera rotundifolia</i> var. <i>comosa</i>	Sundew
<i>Drosera rotundifolia</i> var. <i>rotundifolia</i>	Sundew
<i>Dryopteris campyloptera</i>	Mountain Wood Fern
<i>Dryopteris carthusiana</i> Spinulose	Wood Fern
<i>Dryopteris clintoniana</i>	Clinton's Shield Fern
<i>Dryopteris cristata</i>	Crested Wood Fern
<i>Dryopteris goldiana</i>	Giant Wood Fern
<i>Dryopteris intermedia</i> ssp. <i>intermedia</i>	Fancy Fern
<i>Dryopteris marginalis</i>	Marginal Wood Fern

<i>Epigaea repens</i>	Trailing Arbutus
<i>Euonymus obovata</i>	Running Strawberry-bush
<i>Galearis spectabilis</i>	Showy Orchis
<i>Gentiana andrewsii</i>	Closed Gentian
<i>Gentiana clausa</i>	Blind Gentian
<i>Gentiana linearis</i>	Closed Gentian
<i>Gentianella quinquefolia</i> ssp. <i>quinquefolia</i>	Stiff Gentian
<i>Gentianopsis crinita</i>	Fringed Gentian
<i>Goodyera pubescens</i>	Downy Rattlesnake-plantain
<i>Goodyera repens</i>	Dwarf Rattlesnake-plantain
<i>Goodyera tessellata</i>	Rattlesnake Plantain
<i>Gymnocarpium dryopteris</i>	Oak Fern
<i>Huperzia lucidula</i>	Shining Firmoss
<i>Ilex glabra</i>	Gallberry
<i>Ilex laevigata</i>	Smooth Winterberry
<i>Ilex montana</i>	Mountain Winterberry
<i>Ilex opaca</i> var. <i>opaca</i>	American Holly
<i>Ilex verticillata</i>	Black Alder
<i>Isotria verticillata</i>	Large Whorled Pogonia
<i>Juglans cinerea</i>	Butternut
<i>Kalmia angustifolia</i>	Sheep Laurel
<i>Kalmia latifolia</i>	Mountain Laurel
<i>Kalmia polifolia</i>	Bog Laurel
<i>Lilium canadense</i> spp. <i>canadense</i>	Canada Lily
<i>Lilium canadense</i> spp. <i>editorium</i>	Canada Lily
<i>Lilium philadelphicum</i>	Woodlily
<i>Lilium superbum</i>	Turk's-cap Lily
<i>Limonium carolinianum</i>	Sea Lavender
<i>Liparis loeselii</i>	Bog Twayblade
<i>Listera cordata</i> var. <i>cordata</i>	Heartleaf Twayblade
<i>Lobelia cardinalis</i>	Cardinal-flower
<i>Lobelia dortmanna</i>	Water Lobelia
<i>Lycopodiella alopecuroides</i>	Foxtail Clubmoss
<i>Lycopodiella appressa</i>	Swamp Clubmoss
<i>Lycopodiella inundata</i>	Northern Bog Clubmoss
<i>Lycopodium clavatum</i>	Running Cedar
<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	White Adder's-mouth
<i>Malaxis unifolia</i>	Green Adder's-mouth
<i>Matteuccia struthiopteris</i>	Ostrich Fern
<i>Mertensia virginica</i>	Virginia Bluebells
<i>Monarda didyma</i>	Bee-balm
<i>Myrica caroliniensis</i>	Bayberry
<i>Ophioglossum pusillum</i>	Adder's-tongue
<i>Opuntia humifusa</i> var. <i>humifusa</i>	Eastern Prickly Pear
<i>Osmunda cinnamomea</i>	Cinnamon Fern
<i>Osmunda claytoniana</i>	Interrupted Fern

<i>Osmunda regalis</i> ssp. <i>spectabilis</i>	Royal Fern
<i>Panax quinquefolius</i>	Ginseng
<i>Parnassia glauca</i>	Grass-of-parnassus
<i>Pellaea atropurpurea</i>	Purple Cliff Brake
<i>Phegopteris connectilis</i>	Northern Beech Fern
<i>Phegopteris hexagonoptera</i>	Broad Beech Fern
<i>Platanthera blephariglottis</i> var. <i>blephariglottis</i>	White Fringed Orchid
<i>Platanthera clavellata</i>	Green Woodland Orchid
<i>Platanthera dilatata</i> var. <i>dilatata</i>	Bog-candle
<i>Platanthera flava</i> var. <i>herbiola</i>	Tubercled Orchid
<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid
<i>Platanthera aquilonis</i>	Northern Green Orchid
<i>Platanthera lacera</i>	Ragged Fringed Orchid
<i>Platanthera obtusata</i>	Blunt-leaved Orchid
<i>Platanthera orbiculata</i>	Large Round-leaved Orchid
<i>Platanthera psycodes</i>	Small Purple Fringed Orchid
<i>Pogonia ophioglossoides</i>	Rose Pogonia
<i>Polypodium virginianum</i>	Rock Polypody
<i>Polystichum acrostichoides</i>	Christmas Fern
<i>Polystichum braunii</i>	Braun's Holly Fern
<i>Rhododendron maximum</i>	Great Laurel
<i>Rhododendron periclymenoides</i>	Pinkster
<i>Rhododendron prinophyllum</i>	Early Azalea
<i>Rhododendron viscosum</i>	Swamp Azalea
<i>Salvinia minima</i>	Water-fern
<i>Sanguinaria canadensis</i>	Bloodroot
<i>Sarracenia purpurea</i>	Pitcher-plant
<i>Silene caroliniana</i> spp. <i>pensylvanica</i>	Wild Pink
<i>Spinulum annotinum</i>	Bristly Clubmoss
<i>Spiranthes casei</i> var. <i>casei</i>	Lady's-tresses
<i>Spiranthes cernua</i>	Nodding Lady's-tresses
<i>Spiranthes lacera</i> var. <i>lacera</i>	Slender Lady's-tresses
<i>Spiranthes lucida</i>	Wide-leaved Lady's-tresses
<i>Spiranthes ochroleuca</i>	Creamy Lady's-tresses
<i>Spiranthes romanzoffiana</i>	Hooded Lady's-tresses
<i>Spiranthes tuberosa</i>	Little Lady's-tresses
<i>Thelypteris noveboracensis</i>	New York Fern
<i>Thelypteris palustris</i> var. <i>pubescens</i>	Marsh Fern
<i>Thelypteris simulata</i>	Massachusetts Fern
<i>Trillium cernuum</i>	Nodding Trillium
<i>Trillium erectum</i>	Purple Trillium
<i>Trillium grandiflorum</i>	White Trillium
<i>Trillium undulatum</i>	Painted Trillium
<i>Viola pedata</i>	Bird's-foot Violet
<i>Vittaria appalachiana</i>	Grass Fern
<i>Woodsia ilvensis</i>	Rusty Woodsia

Woodsia obtuse spp. obtusa

Blunt-lobed Woodsia

Woodwardia areolata

Netted Chain Fern

Woodwardia virginica

Virginia Chain Fern

(e) It is a violation for any person, anywhere in the State, to pick, pluck, sever, remove, damage by the application of herbicides or defoliants, or carry away, without the consent of the owner, any protected plant. Each protected plant so picked, plucked, severed, removed, damaged or carried away shall constitute a separate violation.

6 CRR-NY 193.3

Current through January 15, 2022

End of Document

IMPORTANT NOTE REGARDING CONTENT CURRENCY: The "**Current through**" date indicated immediately above is the date of the most recently produced official NYCRR supplement covering this rule section. **For later updates to this section, if any, please: consult editions of the [NYS Register](#) published after this date; or contact the NYS Department of State Division of Administrative Rules at dos.dl.InetAdminRules@dos.ny.gov. See [Help](#) for additional information on the currency of this unofficial version of NYS Rules.**

CHECKLIST FOR BARD COLLEGE PROJECT MANAGER

- ☐ Ensure compliance with Bard, tribal, and federal guidelines, policies and/or regulations.
- ☐ Work effectively with indigenous people and respect tribal cultural and intellectual property, and recognize the rights the involved Tribe(s) retains over all shared information (e.g., cultural knowledge, practices, and traditions)
- ☐ Comply with tribal requirements regarding cultural and data ownership, and adhere to the feedback of the involved Tribe(s) regarding collection or handling of materials, information, data, and samples.
- ☐ Collaborate with the involved Tribe(s) to identify what information should be protected, and establish and agree upon safeguards.
- ☐ Secure appropriate written permission from the involved Tribe(s) that details any expectations of the Tribe regarding reports or involvement.
- ☐ Work closely with the involved Tribe(s) and provide - in layman's terms - reports, presentations, or other updates as requested and entertain feedback and suggestions.
- ☐ Update the tribal governing body on project progress as requested.
- ☐ Provide the tribal governing body a written report, unless the involved Tribe(s) requests otherwise, that contains a full summary of all project activities.
- ☐ Request and secure permission to disseminate project findings in academic or popular literature, conferences, and/or any other endeavors that will involve the presentation of the research findings (e.g., submission of abstracts, poster presentations, oral presentations, and publication).

