



Forest Conservation Enhanced Factsheet

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SUMMARY

Forests and trees provide a wide range of benefits to our communities, including: protecting water quality, mitigating flooding by reducing stormwater runoff, storing carbon; and providing wildlife habitat. The focus of these proposed amendments is on forest protection, resource preservation and enhancement – with an emphasis on the protection of forested areas that contain the highest habitat value – and conservation design. This legislation includes requirements for afforestation (planting of new trees/forest) and updated methods of defining areas for protection and enhancement. The Department of Land Use has worked with DNREC and other stakeholders to strengthen protections of valuable forests, trees, and habitat in the development process.

DISTRICT INTENSITY AND BULK STANDARDS

LANDSCAPING

Required Landscaping

This section essentially references when landscaping is required and whether land development sites will require afforestation (the establishment of forest cover on areas not presently forested).

Landscaping Standards for Required Open Space

All areas of open space shall be landscaped; a new provision is intended to reforest disturbed areas, as follows:

- Areas disturbed, but scheduled to be returned to natural conditions, shall be planted as forest (reforestation or afforestation) or with such other plant material that will return the area to its natural condition. All proposed plant material utilized shall be native and indigenous to the State of Delaware.

Afforestation Standards

In order to ensure adequate forest or planting coverage, afforestation establishes the requirement for forest cover on parcels or development areas that are either not presently forested or where existing forest cover is below the afforestation ratio in accordance with the associated zoning district.

Afforestation shall be based on existing tree cover to satisfy, wholly or in part, the afforestation requirements.

Demonstrated compliance with afforestation standards shall be submitted as part of a final landscape plan.

- The afforestation ratio is satisfied by calculating the total forest cover area or tree cover area as a percentage of the entire parcel or development area.
 - The Department of Land Use, in conjunction with DNREC, is developing afforestation ratios based on zoning districts defined in the Unified Development Code.
- Forest cover or tree cover is intended to be calculated concurrently with a conceptual or final landscape plan and modified as necessary.
- Forest cover consists of the area of all existing forest to remain or new forest to be planted on a parcel or development. This includes reforestation/afforestation associated with riparian buffers, WRPA's or forest mitigation etc.
 - All protected areas shall be maintained.
 - Areas of existing forest to remain shall be delineated.
 - Areas of new forest shall be delineated by the area proposed to be reforested/afforested.
- Tree cover consists of the total tree protection area based on the critical root zone (CRZ) of either existing trees to remain (outside of forest areas) or proposed new landscape plantings. The CRZ is essentially the zone in which the majority of a tree's roots are found that supply nutrients and water to the tree (see full definition below).
 - Tree protection areas shall be measured individually, with areas of overlap (either existing trees or proposed new landscape plantings) excluded from the sum total area.
 - Existing trees to remain shall be protected and maintained for tree protection.
 - For new landscape plantings, tree cover is based on either proposed medium to large canopy trees and their associated assumed tree protection areas or other landscaping that is converted to an assumed tree protection area.
 - Additional plantings required to meet tree cover standards (i.e. tree cover plantings) may be planted within any landscape area; with the exception of existing or new forest areas.

SITE CAPACITY AND CONCURRENCY CALCULATIONS

SITE RESOURCE CAPACITY

Calculation for Total Protected Land

The measurement of protected land is a determining factor in both site capacity (density calculation) and natural resource protection. A site capacity analysis will be used to assist applicants in measuring natural resources to determine protected land.

ENVIRONMENTAL STANDARDS

RESOURCE PROTECTION STANDARDS

This section assesses land for natural resource protection. The applicant will measure natural resources on site to determine protection levels.

Forests

Where forests exist within a project boundary that conform to definitions and standards and that may be impacted by development or construction activities, a Forest Habitat Value Assessment shall be required to be conducted.

The Department and DNREC are currently developing a methodology for assessing forest habitat value. This assessment will determine the health and longevity of forest systems and serve as the basis for enhancement and protection standards for forests.

The forested areas containing the highest habitat value, as determined by the Forest Habitat Value Assessment, shall be given the maximum priority for preservation.

Forests may be cut or cleared over a greater area than permitted only if mitigation is provided and the following standards are met:

- Forest Habitat Value Assessment shall be conducted by a qualified professional landscape architect, forester, arborist, botanist, plant or wildlife ecologist, or other licensed or certified professional in the applicable environmental discipline. A forest habitat value assessment report and plan shall be submitted for approval by the Department.
- Where landscaping can occur, the protection level given forests after mitigation shall not be less than that being developed in a table of forest mitigation protection ratios. The acres of mitigation required is expressed as a ratio (acres planted to acres disturbed). In no case shall the increased cutting lead to a revision of the density permitted by the site resource capacity calculation.
- Except for CNA forest types, an applicant may be permitted to reduce the protection level with mitigation, provided mitigation is maintained and the area to be reforested is either on the same parcel or on an adjoining parcel. Any reduction of this standard shall require the approval of the Department and County Council.

Standards for Mitigation of Forests, Old Fields and Meadows

In low-quality forests, old fields and meadows (where over fifty (50) percent of plants are listed as "Plants to Avoid", mitigation shall be required. The developer shall submit a mitigation plan by a qualified professional forester or landscape architect. At a minimum, the plan shall provide for the elimination of invasive non-native species.

Environmental Impact Assessment Report

Some proposed uses may require the preparation of an environmental impact assessment report. In such instances, the applicant shall have such a report prepared and certified by a professional engineer, geologist, landscape architect, environmental consultant, botanist, plant or wildlife ecologist, forester, certified wetlands delineator or other licensed or certified professional in the applicable environmental discipline. The report shall contain the following information:

- *Site character.* Identify all on-site sensitive environmental resources and concerns and any potential impacts on adjoining land uses and populations.
- *Avoidance.* Identify alternative sites or routes that would not damage the resource or would result in less resource disturbance. Justification shall be provided for not using these alternative sites or routes.
- *Minimization.* The applicant shall demonstrate that a proposed activity in the plan minimizes the impact to the resource. The applicant shall also demonstrate that the areas impacted shall be the lowest quality and result in the least damage to the resource.
- *Resource Mitigation.* A mitigation plan shall be submitted that describes the site conditions of the area to be mitigated, the required size of the area of mitigation, detailed plans for monitoring and long-term maintenance, and the mitigation area boundaries.
 - On-site replacement is the most acceptable form of mitigation. However, mitigation can include restoration and enhancement of the existing resource.
 - Mitigation cannot be used where the conflict can be avoided or minimized.
 - Mitigation by replacement on another site shall be at a ratio of two to one (2:1).
 - Mitigation may also include enhancement; this ratio shall be four to one (4:1).
- *Conservation design.* Any use proposed within natural resource area open space shall demonstrate how the principles of conservation design will be implemented, how they will be advanced, and how the proposed use will be addressed in the natural resource area open space management plan.
- *Endangered species.* Prepare an inventory of federal and state threatened and endangered plant and animal species (as well as candidates for such designation) on-site and within five hundred (500) feet of the proposed site, determination of the proposed development's impact, and identification of any mitigation.
- *Cultural and Scenic Resources.* Prepare an inventory of federal, state or locally identified irreplaceable historical, archaeological, paleontological or scenic resources on site and within five hundred (500) feet of the proposed site, determination of the proposed development's impact on the resources and identification of any mitigation.

SUBDIVISION AND LAND DEVELOPMENT DESIGN PRINCIPLES

MAPPING AND MONUMENTS

Mapping Criteria



Measurements of forest area shall be made based on the exterior critical root zone (CRZ) of the trees. The CRZ is essentially the zone in which the majority of a tree's roots are found that supply nutrients and water to the tree (see full definition below).

LANDSCAPING, TREES, PLANT MAINTENANCE, AND EROSION AND SEDIMENT CONTROL

Existing Vegetation

As part of the development process, applicants are required to undertake an inventory of existing vegetation, which includes a tree survey of individual trees or defined forest to be preserved based on DBH (diameter at breast height) and protection of the CRZ. Individual trees described in the tree survey as healthy and intended to count toward the landscaping or afforestation requirements shall count only if sufficient protection is provided. Forested area may also be used to satisfy bufferyard requirements where required opacity standards are met. Developers are required to remove all invasive, non-native plant species and prepare a management plan for such.

TREE PROTECTION

Preserving Specimen Trees

A specimen tree is preserved by protecting one hundred (100) percent of the area within the tree's Critical Root Zone (CRZ).

During construction, the CRZ shall be fenced with five (5) foot temporary fencing, and no earth moving, material storage, vehicular storage or vehicular incursions shall be permitted inside the fenced area. Existing impervious cover within the CRZ may be removed or altered with limited disturbance, provided measures are taken to minimize root disturbance and soil compaction. This may include recommendations for pruning, fertilization and other means to ensure the tree's survival both during and after completion of construction activities. Only those trees with a high probability of survival may be credited.

PROCEDURES AND ADMINISTRATION

APPLICATION REVIEW PROCEDURES

Pre-Application Sketch Plan Review/Conference

Applicability. A pre-application sketch plan review conference is required for all rezoning requests and major land development applications. Applicability to major land development applications is a new

provision (in the past this provision only applied to major residential subdivisions). An applicant may request a pre-application sketch plan review conference for all other major or minor plans at any time. The pre-application sketch plan review conference may be waived by the Department when it is determined, after a review of the submission, that no departmental concerns exist.

DEFINITIONS

GENERAL DEFINITIONS

Afforestation. Is the establishment of Forest Cover on areas that are not presently forested, or where existing forest cover is below the afforestation threshold for the use. If an applicant can demonstrate that afforestation using Forest Cover is inappropriate for a site or portions of a site, then, at the Department's discretion, afforestation requirements may be satisfied, wholly or in part, by Tree Cover; which consists of existing trees to remain or new landscape plantings.

Canopy. The uppermost layer in a forest, formed from a crown of trees.

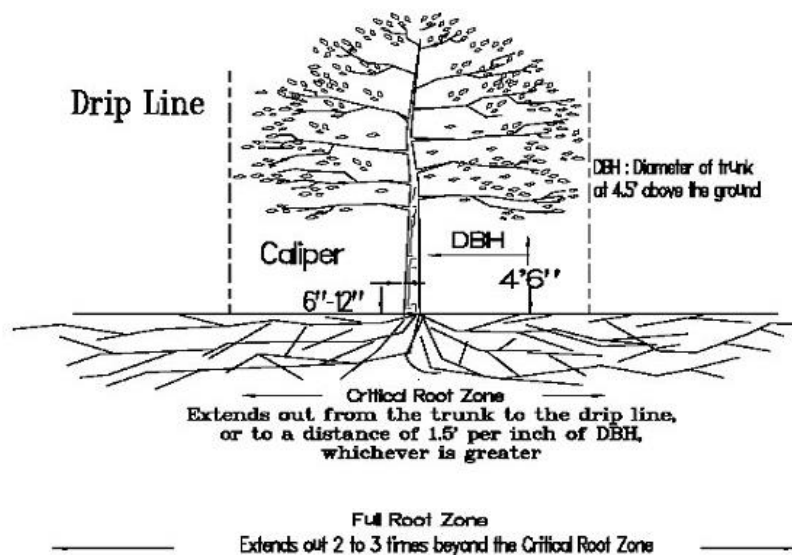
Conservation design. A series of design goals that - maximize protection of key land and environmental resources, preserves significant concentrations of open space and greenways, evaluates and maintains site hydrology, and ensures flexibility in development design to meet community needs for a complimentary and aesthetically pleasing development. Conservation design encompasses the following objectives: conservation/enhancement of natural resources, wildlife habitat, biodiversity corridors, and greenways (interconnected open space); minimization of environmental impact resulting from a change in land use (minimum disturbance, minimum maintenance); maintenance of a balanced water budget by making use of site characteristics and infiltration; incorporation of unique natural, scenic and historic site features into the configuration of the development; preservation of the integral characteristics of the site as viewed from adjoining roads; and reduction in maintenance required for storm-water management practices. Such objectives can be met on a site through an integrated development process that respects natural site conditions and attempts (to the maximum extent possible), to replicate or improve the natural hydrology of a site.

Critical Root Zone (CRZ). The Critical Root Zone (CRZ) around the base of a tree is also known as the "tree protection zone."

- A. The CRZ is the zone in which the majority of a tree's roots are found that supply nutrients and water to the tree. In ideal growing conditions, a tree's roots are often concentrated in the upper 12 to 18 inches of soil. Once 50 percent of a tree's root mass is lost, the death of the tree is typically inevitable.
- B. To determine the CRZ utilize one of two methods:
 - 1. Either the outer Drip Line of the tree canopy or;

2. Measure the tree diameter in inches about 4.5 feet above the ground (DBH), then multiply the diameter by a standard factor of 1.5 ft. An 18-inch diameter tree would have a CRZ of 27 feet (18 x 1.5 ft.) measured radially from the center of the tree trunk.
3. Of the two methods, the greater area shall always constitute the CRZ.

Critical root zone and drip-line of a tree



Critical natural areas report. A report analyzing the impact of a development or subdivision proposal on a CNA located on the site which shall include the following elements:

- A. A statement that...
- B. A narrative description of the extent to which the applicant proposes land disturbing activities within any critical natural areas which are shown on the scaled plan; and

Forest. An area covered by a canopy of trees (see Tree Definition), covering a land area of a set size in acres or greater (the Department is currently considering the most appropriate land area). Forests do not include trees planted and grown for commercial purposes, and do not include canopy cover over existing or historical home sites, gardens and lawns.

Forest Corridors. Forested areas that are linked, connected to, or are contiguous with nearby or adjacent forested areas or corridors, including stream corridors. Forests are contiguous if breaks between adjacent forest patches do not exceed 100 feet (e.g., right-of-way, secondary road, or natural canopy gap).

Forest Cover. Is the total area of a site under the cover of an existing stand of trees or new stand of trees (reforestation or afforestation), meeting the minimum requirement of forest to be preserved and maintained.

Forest Habitat Value Assessment. A methodology for determining the area or areas within a forest that contain high habitat value. Several widely recognized ecological attributes, characteristic of high habitat value for native plants and animals are measured, that result in a numerical score to create varying levels of protection.

Forest Interior. The forest interior or the “core,” is habitat deep within woodlands, away from the influence of forest edges and open habitats. Forest interior is of high ecological value and is directly related to the forests size and shape. Large woodlands with round or square outlines have the greatest amount of forest interior. While small, narrow forests may have no forest interior conditions at all. Research has shown that forest interior habitat begins at 300 feet from the forest edge. Forest interior has become quite rare in the fragmented landscape of today, and many species of wildlife are dependent on forest interior habitat for their survival.

Forest Protection Level. Levels of forest protection are being considered by the Department. Current thinking is to divide forest into three Tiers.

Tier 1: A forested area or areas with the highest habitat value based on the forest habitat value assessment and a numerical point system.

Tier 2: A forested area or areas with the second highest habitat value relative to a Tier 1 forest.

Tier 3: A forested area or areas with the third highest habitat value relative to a Tier 2 forest.

Invasive plants. Plants which have a tendency to spread, encroach, and displace native plant species.

Old field. Lands formerly cultivated, timbered or grazed but later abandoned. The dominant plants include grasses and herbaceous plants, with encroaching woody vegetation, which evidences secondary succession; in particular, areas covered by woody plants eight (8) or more feet in height which either cover forty (40) percent or more of a property or cover eighty (80) percent of a contiguous area one (1) acre or greater in size.

Over-cut Area. An area where trees are to be cut or removed over a greater area than is permitted.

Site analysis plan. For all minor or major land development applications, the applicant shall be required to submit a site analysis plan as the first phase of the pre-application sketch or exploratory plan review process. The Department may also require a site analysis plan for any other application type. The site analysis plan shall serve as a basis for the planning process and shall be used to

determine the best areas of the site for open space and natural resource preservation, land conservation and development. The site analysis plan allows both the applicant and the Department the opportunity to utilize the natural site conditions to determine how the development of each parcel or tract can be designed to minimize environmental degradation while achieving highest possible community character design standards.

Non-native plants. A species that is not native to North America (north of Mexico). Non-native species are thought to have been introduced by humans, primarily through agricultural or horticultural practices. These species have become established in Delaware and are reproducing as if native (i.e., naturalized). Also called exotic or alien plants. Also see Invasive Plants.

Tree. A living perennial woody plant with single or multiple stems, that branch into a well-formed crown of foliage and reaching a height of at least 15-20 feet under optimal growing conditions.

Tree, canopy. A tree or group of trees whose [leaves] foliage would occupy the upper level of a forest. These trees are also called shade trees, and typically reach heights of fifty (50) or greater at maturity under ideal growing conditions.

Tree Cover. Is based on either the area of protected CRZ for existing trees to remain or an assumed CRZ after 20 years of growth for newly planted trees (properly planted and maintained). Tree Cover is an optional substitute for Forest Cover, in order to meet minimum afforestation ratio standards, where the planting of forest is not appropriate.

Tree Cover Plantings. Additional landscape plantings necessary to meet minimum afforestation ratio standards when utilizing the Tree Cover option.

Tree, understory. A tree, or group of trees whose [leaves] foliage would occupy the intermediate level of a forest.

APPENDIX 1: APPLICATION AND PLAN REVIEW REQUIREMENTS

- Land Development Application Submission Requirements

Exploratory Plan submission requirement that includes new provisions, as follows:

- If not previously completed as part of a Pre-Application Sketch Plan, a Site Analysis plan pursuant to the Appendix;
- A Conceptual Landscape Plan that generally delineates all planting areas and planting requirements;
- Final Landscape/Open Space and Site Management Plan (part of Construction Plan submission).
- Conceptual architectural renderings of proposed site development shall be required for all rezonings and major land development plans.

- Other Reports and Applications

The following new provisions will require a conceptual landscape plan at the exploratory plan phase and a final landscape plan at the construction plan phase.

- Conceptual and Final Landscape Plans.
 - The Conceptual Landscape Plan shall serve as a means to conceptually demonstrate the proper spatial arrangement of pervious planting areas to impervious site features and structures or utilities and other constraints. As well as to address and memorialize the integration of the proposed site development with both existing natural resources and with the surrounding context.
 - The Conceptual Landscape Plan shall be accompanied by architectural renderings when required.
 - For clarity, both the Conceptual and Final Landscape plans shall be separate from a Site Analysis Plan or a Natural Resource Analysis Plan.
 - A Final Landscape Plan shall include an Open Space or Site Management Plan.
- Site analysis plan. For all minor or major land development applications, the applicant shall be required to submit a site analysis plan as the first phase of the pre-application sketch or exploratory plan review process. The Department may also require a site analysis plan for any other application type.

The site analysis plan shall serve as a basis for the planning process and shall be used to determine the best areas of the site for open space and natural resource preservation, land conservation and development.

The site analysis plan allows both the applicant and the Department the opportunity to utilize the natural site conditions to determine how the development of each parcel or tract can be designed to minimize environmental degradation while achieving highest possible community character design standards.

- Natural resources management plans.
 - Natural resource analysis plan. The following must be submitted:
The site analysis plan as a base map with the following additions, all clearly delineated on the plan, as necessary, with appropriate nomenclature and symbology.
 - Wetlands delineation. A wetlands report/jurisdictional determination with areas determined to be wetlands.
 - Forest survey. In accordance with Article 10 of this Chapter, a description of the condition and location of the forest stands on-site, as well as their constituency within contiguous forested areas and corridors located off-site.
 - Tree survey. All individual or groups of trees determined to not be located within forest areas shall be identified to the species taxonomic level, with annotation of trunk diameter in inches (see Diameter breast height), the tree's Specimen Tree

status, the tree's condition, and location of both the center of the tree trunk and CRZ demarcated.

- Floodplain or floodway areas.
 - WRPA or Cockeysville Formation areas.
 - Steep slope areas.
 - Water bodies, streams or drainageways with top of bank.
 - Riparian buffer areas; Zone 1 and Zone 2.
 - All other resources as defined in Article 10 of this Chapter.
- Open space or site management plan. The following must be submitted with the appropriate nomenclature and symbology clearly delineated on a plan, as necessary:
 - A narrative description of the goals and objectives based on the findings of the natural resource analysis plan.
 - Limit of disturbance and natural resource protection measures.
 - Non-native, invasive plant species identified on-site, with a control or eradication plan describing specific practices and areas to be treated.
 - Planting details or narratives describing where and how any reforestation, meadow creation or other plantings will occur and are to be maintained. Including proper methodologies and long-term schedules for: irrigation or watering; mulching (e.g. mulch shall not be piled onto trunks of trees); pruning, shearing or thinning; soil amendments or fertilization --both initial and long-term; grass or herbaceous plant mowing, cutting, control or removal; soil aeration.
 - Wetland features to be protected, created or enhanced.
 - A project time line to include a proposed long-term maintenance program.
 - A [P]project cost estimate that includes itemized entries and provisions for long-term maintenance needed to implement the plan until completion and in perpetuity.
 - Native, naturally occurring non-invasive weeds are permissible within the natural resource areas.