No Net Loss Act
P.L. 1993, c.106 (C.13:1L-14.2)

New Jersey No Net Loss Reforestation Act

N.J.S.A. 13:1L-14.1 et seq.

Program Guidelines

Revised July 2012

New Jersey No Net Loss Reforestation Act
P.L. 1993, c.106 (C.13:1L-14.2)

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Table of Contents

Guidelines for an Approved Reforestation Plan pages 1 - 9

Caliper Tree Substitution Size List page 10

Conifer and Ornamental Substitution Size List pages 11- 12

Reforestation Plan Approval Process page 13

General Information Form page 14

Off-Site Reforestation Form page 15

Reforestation Monetary Compensation Form page 16

Criteria for Exemptions pages 17 - 18

Glossary pages 19 - 20

Appendix page 21

- Sample Tree Planting Specifications page 22 - 27
- Sample Tree Planting Detail page 28
- Sample Maintenance and Care Specifications page 29 - 31
- Sample Memorandum of Agreement page 32 - 33

Guidelines for an Approved Reforestation Plan

No Net Loss Reforestation Program

Introduction

The following guidelines provide a list of requirements and a framework for state entities that are required to submit information pursuant to the No Net Loss Act, N.J.S.A. 13:1L-14.1 et seq. State entities should be aware that the guidelines undergo periodic updating and should contact the NJ Forest Service to determine if this document is the most current revision before proceeding with the creation of a reforestation plan.

Reforestation Plan General Requirements

All reforestation plans must be submitted on 8.5" x 11" paper, excluding landscape renderings. Six copies of the plan and any accompanying landscape renderings must be submitted in order for the approval process to begin. Comments from the public forum can be submitted during the reforestation plan approval process but final approval to proceed with the project will not be granted until they have been received and reviewed.

General Information Form

The General Information Form is composed of information about the state entity planning to do tree removal and some details about the project. A General Information Form must be filled out by the state entity for each project in which deforestation of ½ acre or more occurs (see form included in this packet). This form should be the first or second page in the reforestation plan.

Off-Site Reforestation Form

The Off-Site Reforestation Form must be completed only if the state entity cannot perform the entire required reforestation on the property where the tree removal occurred and is proposing to administer some or the entire necessary reforestation off-site from the original project location. This form may be omitted if the state entity elects to choose the option of making a monetary payment in lieu of off-site planting (see below). This form provides information about the location, ownership and natural features of the off-site area to be reforested (see form included in this packet).

Reforestation Monetary Compensation Form

The Reforestation Monetary Compensation Form must be filled out if the state entity proposes to make a monetary payment in lieu of either on-site or off-site plantings. This form provides information to determine the monetary compensation amount.

The monetary compensation option allows for the state entity to meet the requirements of the act without having to administer and manage a tree-planting project. The NJ Forest Service will use

the funds to meet the reforestation requirements and interact with local, county or other state agencies whose lands the trees will be planted on. Administrative costs incurred by the NJ Forest Service will be compensated by the state entity as agreed to in the memorandum of agreement mandated by the legislation. This option may be allowable for the entire reforestation obligation or for just part of it, depending upon the scope of the project and the suitability of tree planting success on the altered site. It is advisable that the state entity representative discusses the viability of this option with the program administrator prior to submitting the reforestation plan.

Project Narrative

The narrative section includes a description of the area that is scheduled for tree removal and a description of the proposed reforestation project/s. The intent of the law is to mitigate as much of the deforestation on or as close as possible to the project site. All state entities should design their reforestation plan to replant as many trees on the affected property as is feasible. Factors such as mature tree size, tree shape, and various site conflicts or constraints will determine the quantity of trees that can reasonably be replanted.

The following information must be included in the narrative:

1. The amount of land, in acres, that will have trees removed, including a description of the existing site, the major tree species and type of vegetation present and a forest land assessment. The site description should also address soil types, slope of the land, understory vegetation (excluding groundcover) and any unique site or microclimate conditions of the area.

   The forest land assessment will include either plot samples of the existing forested land or a tree canopy survey, depending on the maturity of the trees (see Determination of Existing Forested Area). This forest land assessment will determine the amount of existing forest area that will be subject to reforestation. The summary must also include information about the ownership and land use of any property abutting the land scheduled for deforestation. Any adverse effects of deforestation to abutting properties should be addressed as well as proposed landscape solutions.

2. The amount of land in acres to be reforested on the site by the state entity. A summary explaining the rationale for the proposed tree selections must be included. It should focus on the compatibility and appropriateness of the product type, product size, plant spacing and plant species to the altered soil conditions, slope, site and climate conditions. Many proposed tree plantings may impact or conflict with built structures as the trees attain mature size. Conflicts with walkways, curbing, roadways, light poles or lampposts, sight lines, signs, utility lines (both above and below ground), buildings and other existing vegetation must be taken into consideration and addressed. Minimum distances between structures and the proposed trees should be stated.

Reforestation using seedlings or whip/container should only be proposed if the existing site is a seedling forest or an emerging forest, respectively, or the site slope or access would prevent the use of 2”-2.5” caliper trees.

3. The amount of land in acres to be reforested off-site by the state entity, if applicable. A description of the existing site/s, including the current land use, condition of the site, rationalization for selecting and planting on the site and description of the specific planting locations is required.

A summary explaining the compatibility and appropriateness of the product type, product size, plant spacing and plant species to the specific soil conditions and site conditions is required.

Many proposed tree plantings may impact or conflict with built structures as the trees attain mature size. For off-site reforestation projects, conflicts with walkways, curbing, roadways, light poles or lampposts, signs, utility lines (both above and below ground), buildings and other existing vegetation must be taken into consideration and addressed. Minimum distances between structures and the proposed trees should be stated.

The availability of the proposed plants in the nursery industry should be taken into account when selecting species for both on-site and off-site reforestation.

Project Plant List

The plant list should describe the plant species that will be used for reforestation of the project. A separate plant list should be done for each on-site reforestation and off-site reforestation project that the state entity is proposing to do. The following information is needed in each plant list:

The number of each species to be planted
The types of tree species, including both the common names and the botanical names (Latin)
The product type (Seedling, Bare Root Whip, Container or Balled & Burlapped)
The size of the trees being planted in English units (inches and feet)
- Landscape size B&B shade trees should use caliper size in inches.
- Container trees should use container size and/or caliper size in inches
- Whips should use height in feet.
- Conifers and broadleaf evergreens should use height in feet.
- Multi-stem trees should use height in feet
- Seedling size should be the height range in inches.

The cultivar name of tree (if applicable)

References

Hortus Third (Cornell University Press) is to be reference for plant names (Latin and common).

American Association for Nurseryman (AAN) Standards for Nursery Stock (American Association of Nurserymen, publisher) is to be the reference for plant quality.

Trees for New Jersey Streets (New Jersey Shade Tree Federation, publisher) is to be the reference for reforestation tree selection on county or municipal street right-of-ways.

The most recent editions of the references shall be used.

The standard size for established tree replacement is a 2 - 2 ½" caliper shade tree. However, factors such as site conditions, impacts on the adjoining land parcels or public comments may make choices other than standard shade trees a more appropriate choice. Substitute tree types such as larger trees, conifers and multi-stem trees are allowable in replanting designs but must be justified in the project narrative section. Lists of equivalent sizes for all three substitute tree types are included in these guidelines.

Maps

Maps and photographs of the areas that are scheduled for deforestation are necessary. The following photographs and maps are required as part of the reforestation plan:

A photocopy of a current county or municipal street map with the site clearly indicated. The photocopy should be no larger than 8 ½" x 11". It may be any scale but at least 1 major roadway should be present and identified so that the project location can be easily located.

Original color photographs, mounted or copied onto 8 ½" x 11" paper showing existing vegetation conditions should be included. Digital or film photographs are both acceptable.

An aerial photograph with a scale of 1:4800 delineating the location of the area to be deforested and the abutting properties that may be affected by the deforestation is necessary. The aerial photograph must be a color infrared Digital Orthophoto Quadrangle (DOQ) with 1-meter ground resolution or better, quarter quadrangle image cast on the State Plane NAD 83. The aerial photograph must identify the USGS quadrangle number used.

CD-ROM's with Digital Orthophoto Quadrangles can be obtained from the Department of Environmental Protection's Office of Maps and Publications at (609) 777-1038.

Reforestation Landscape Drawings

A scaled landscape drawing or blueprint of the proposed reforestation is required. If the proposed plant material is container grown or balled and burlapped material, the landscape drawing must indicate the proposed planting location of each tree. A plant identification key matching the species and size with the appropriate symbols used in the drawing or blueprint is also required. For any proposed seedling reforestation or bare root whips, individual planting locations do not need to be shown, but planting areas must be delineated for individual species or specific mixes of seedlings and spacing information must be provided.

The scale used in the landscape drawing must either be in English units (inches and feet) or a scale bar must be provided on the drawing that will allow distances to be measured in English units.

Planting Diagram

A diagram showing the proposed method of planting the trees must be included. Diagrams must reflect the current accepted standard for tree planting in the tree care industry. A sample diagram can be seen in the appendix of these guidelines.

Tree Planting Specifications

Specifications for the project shall be developed and submitted as part of the reforestation plan. Specifications should incorporate acceptable tree care industry standards for handling, shipping and planting of trees as well as specific requirements of the material such as branching height, the absence of wounds, broken branches, etc. Sample tree planting specifications can be seen in the appendix of these guidelines.

All plant material must be nursery grown. No collected or wild plant material is acceptable.

The Forest Service may mandate plant material or planting inspections to insure plant quality. The state entity must inform the Forest Service as to the date and time of plant delivery at least one week in advance. Any plant material that does not conform to the quality standards set forth in these guidelines shall be rejected.

Reforestation Protection and Care Methods

Reforestation protection and care methods shall be included in the plan to insure the long-term survivability of the trees. These shall include a narrative describing the methods to be utilized in caring for the trees during the establishment time period and a maintenance schedule. This schedule should include items such as watering, mulching, weed control, stake removal or insect and disease control. A sample tree maintenance schedule can be seen in the appendix of these guidelines.

The minimum survival rates, inspection time frames and replacement schedule of unhealthy trees text shown below must be incorporated into the reforestation protection and care section of the plan.

> The Forest Service and a representative of the state entity shall inspect the reforestation project after two years to determine the health and vitality of the reforestation stock.
>
> Seedling reforestation stock shall have an 80% survival rate.Whip or container reforestation stock shall have a 90% minimum survival rate.Balled and Burlapped reforestation stock shall have a 95% minimum survival rate.
>
> Projects that do not meet the minimum survival rate percentage shall have all the unhealthy stock replaced within 120 days of receiving notification from the NJ Forest Service. Inspections and replacement plantings shall continue with the same time frames until the minimum survival rate is achieved.

If the survival percentages are significantly lower than the minimum for each kind of tree reforestation stock, the Forest Service will review the planting and maintenance methods and the state entity may be required to make modifications to them.

The Forest Service may make field inspections during the two-year establishment period to insure that the tree maintenance program is adequate for the trees.

Pirone's Tree Maintenance (Oxford University Press) is to be the reference for tree planting and maintenance practices not specifically outlined in the appendixes. The most recent edition shall be used.

Project Completion and Conformity to Legislation

The compensatory reforestation projects will be considered completed and acceptable when the actual tree survival percentages are within the percentages outlined in these guidelines two years from the date of planting. A notice of compliance will be sent to the state entity at that time.

An approval to proceed notification will be sent to the state entity after all arranged compensatory monies have been transferred, any public comments have been sent, and the reforestation plan has been approved by the Forest.

Determination of Existing Forested Area

Existing forested areas for this legislation are land areas that are either undeveloped tracts with naturally occurring tree cover, areas that have been landscaped and planted with trees or land that has been disturbed and has returned to a naturalized treed condition. Areas such as parking lots, courtyards and other built environments that are primarily impervious surfaces but have tree canopy over them because of engineered planting sites are not forested areas. The act is concerned with deforestation of land and does not address minor tree removal issues. Therefore, some individual tree removals will occur in areas that are not deemed forested areas as defined in these guidelines.

The method used to determine an established forested area (see definition below) will be a tree canopy coverage delineation using aerial photography and a statewide GIS ½ acre grid that has been established by NJDEP. This statewide grid was developed to remedy the problem of varying sizes and shapes of deforestation areas and the multiple plot configurations that could be proposed for interpretation. The grid is laid out in square shaped ½ acre plots, each plot comprising 21,780 square feet. The grid has been compiled onto compact discs grouped together by USGS quads in a single GIS layer. Discs are available from the New Jersey Forest Service, No Net Loss Program Coordinator.

Using the grid pattern, aerial photography and an on-site inspection, a determination of the acreage of forest canopy cover will be made. Representatives from the state entity and the New Jersey Forest Service should physically survey the site, note the actual forest make-up and density and use the most recent aerial photos obtainable to delineate and agree on the acreage of forest area scheduled for removal.

Fixed-point plot sampling shall be used for any acreage that is identified as seedling forest or emerging forest (see below). The standard grid system shall also be used to delineate the ½ acre plots for seedling or emerging forests. The plot centers shall be located in areas of the ½ acre that are typical in tree size and density of the entire area being determined.

Seedling Forest

Any half-acre area that is predominately a regenerating forest at the seedling stage should be sampled using a $1/10^{th}$ acre plot to determine the density of the seedlings. The half-acre area shall be considered existing forested area if the seedling density would be 484 live seedlings or greater for a half-acre area. This would mean that any sample $1/10^{th}$ acre plot with 96 or more live seedlings in it shall be considered existing forested area. The square foot area of seedling coverage as determined using on-site measurement shall constitute the area used to determine reforestation quantities.

Emerging Forest

Any half-acre area that is predominately young trees having a dbh of 4" or less should be sampled. The sample area must be representative of the total area. The half-acre area shall be considered existing forested area if the density of the young trees would be 230 trees per half-acre or greater. This would mean any 1/10th acre sample plot with 46 or more live trees in it shall be considered existing forested area. The square foot area of young tree coverage as determined using on-site measurement shall constitute the area used to determine reforestation quantities.

Established Forest

Any half-acre area that is predominately trees with a dbh greater than 4" shall be termed an established forest. Any established forest ½ acre plot that has 33% canopy cover or greater shall be considered existing forested area and counted for reforestation. Any plot that has canopy cover less than 33% is not defined as a forested area and is not included for reforestation purposes. Any trees removed from plots that do not meet the minimum canopy coverage do not have to be replaced.

Each standard ½ acre plot that falls within the limits of the project is evaluated for canopy coverage regardless of ownership boundary lines that may bisect the plot. If the plot is determined to be forested (33% canopy coverage) then the square footage of any deforestation on property owned or controlled by the state entity is included for reforestation purposes. These parcels are added together to get the total deforestation area. If the total of these deforestation parcels is less than ½ acre, or 21,780 square feet, the deforestation falls under the minimum impacted area and no compensation is required by the state entity.

The square foot area of tree canopy cover that is deforested, as determined using aerial photographs and/or on-site measurement, shall constitute the area used to determine the reforestation quantities.

Example: An aerial photograph containing four ½ acre vegetated plots were determined to have 100%, 35%, 18% and 45% tree canopy coverage, respectively. A field survey verified the accuracy of the aerial photograph. The project plans called for total deforestation of the first three plots and one-half deforestation of the fourth plot. The third plot falls below the minimum 33% canopy coverage, is not considered forested area and is not included. The first two plots have 21,780 sq. ft. (100%), 7,623 sq. ft. (35%) of forest canopy scheduled for removal respectively. The fourth plot has 9,801 sq. ft. (45%) * ½ equaling 4,901 sq. ft. scheduled for removal. Total square footage of removed forests equals 34,304 or .79 acres. The amount of trees to mitigate this deforestation is .79 * 204 tree/acre or 162 trees. All fractions of a tree are rounded up.

Public Forum

In accordance with the law, if the proposed deforestation is greater than 1 acre, a public forum must be conducted within the affected municipality to present information concerning the deforestation and reforestation of the project site. The forum shall be held at least 180 days prior to the scheduled start of deforestation and the state entity is required to collect

written and oral comments. Public comments and the state entity's written responses shall be submitted to the NJ Forest Service during the reforestation plan review and approval process. In accordance with the law, if the proposed deforestation is more than ½ acre but less than 1 acre, a reforestation plan must be submitted and approved but a public forum is not necessary.

Caliper Tree Substitution Size List

The standard size tree for reforestation purposes of an established forest is 2”–2.5” caliper. Because of plant availability, design constraints and site considerations, it may be more appropriate to plant smaller or larger sized trees. The list below shows the corresponding amount of trees needed to equal the amount of standard sized trees for replacement purposes.

Proposed Tree Size	**Standard Size Eqivalent**
1.75” to 2” caliper	.80
(Planting 5 trees of this size will equate to 4 standard size trees)	
2.5” to 3” caliper	1.25
(Planting 4 trees of this caliper will equate to 5 standard size trees)	
3” to 3.5” caliper	1.5
(Planting 2 trees of this caliper will equate to 3 standard size trees)	
3.5” to 4” caliper	2
(Planting 1 tree of this caliper will equate to 2 standard size trees)	

Note: The proposed use of larger trees must be fully justified in the reforestation plan narrative. Any projected use of shade trees larger or smaller than the standard size should be discussed with the Forester in Charge FIC prior to design work being initiated.

Conifer and Ornamental Tree Substitution Size List

Screening Conifers

Botanical Name	Common Name	Size
Cupressocyparis leylandii	Leyland Cypress	8’-10’
Juniperus sp.	Junipers-Upright Varieties	7’-8’
Pinus strobus	Eastern White Pine	7’-8’
Pinus thunbergiana	Japanese Black Pine	7’-8’
Psuedotsuga menziesii	Douglas-Fir	7’-8’
Picea abies	Norway Spruce	7’-8’
Picea pungens	Colorado Spruce	7’-8’
Thuja occidentalis	Arborvitae	8’-10’
Tsuga canadensis	Eastern Hemlock	7’-8’

Specimen Conifers and Broadleaf Evergreens

Botanical Name	Common Name	Size
Abies concolor	White Fir	7’-8’
Cedrus atlantica glauca	Blue Atlas Cedar	8’-10’
Cedrus deodora	Deodora Cedar	8’-10’
Cedrus libani	Cedar of Lebanon	8’-10’
Cryptomeria japonica	Japanese Cryptomeria	8’-10’
Ilex sp.	Holly Species	6’-7’
Larix sp.	Larch Species	8’-10’
Metasequoia glyptostroboides	Dawn Redwood	8’-10’
Taxodium distichum	Bald Cypress	8’-10’

Ornamental Trees-Low Branched or Single Stem

Botanical Name	Common Name	Size
Cornus florida	Flowering Dogwood	7’-8’
Cornus kousa	Kousa Dogwood	7’-8’
Cornus mas	Conelian Cherry	7’-8’

Conifer and Ornamental Tree Substitution Size List

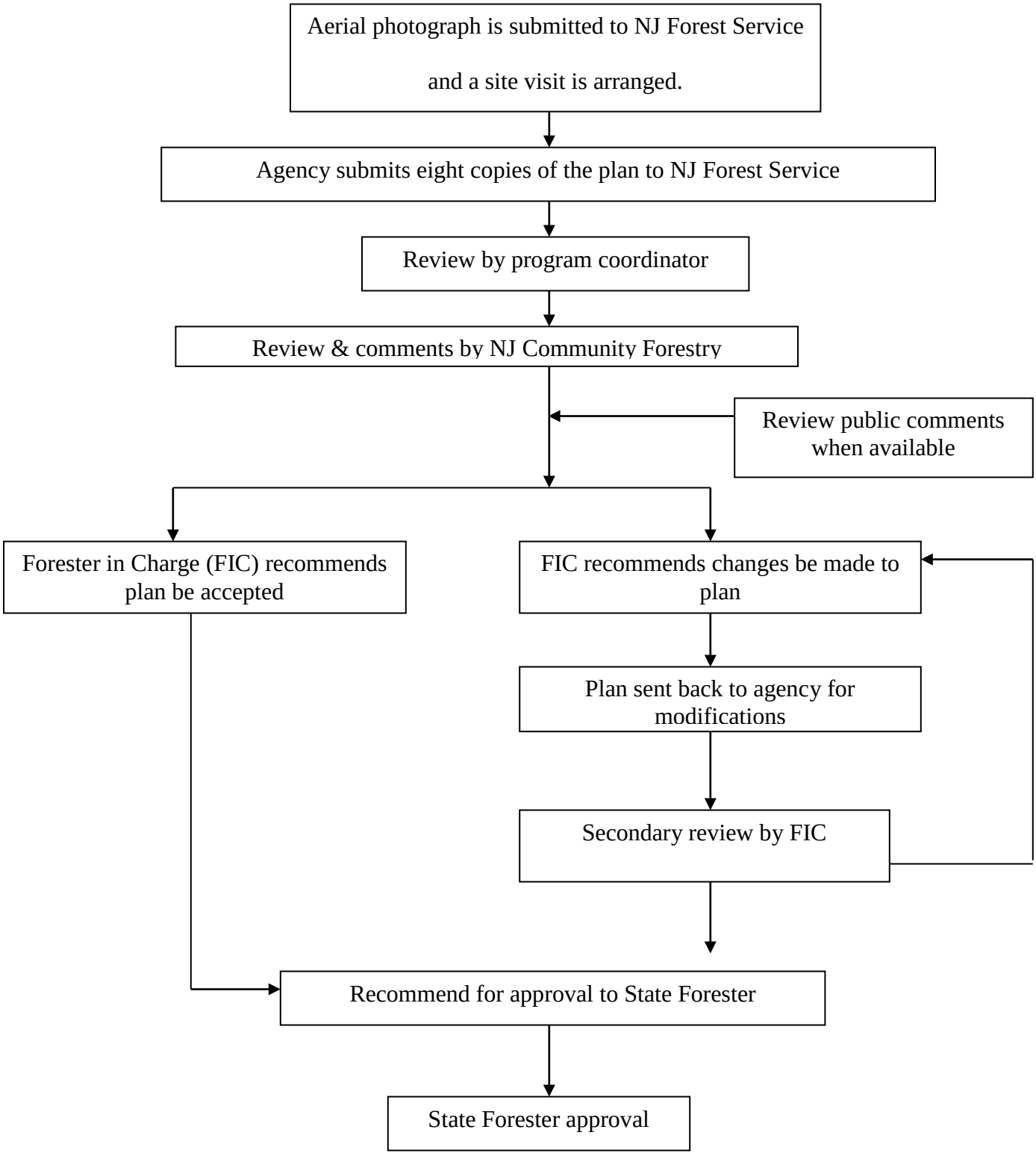
Multi-Stem Ornamentals

Botanical Name	Common Name	Size
Amelanchier sp.	Multi-Stem Serviceberry	7’-8’
Betula sp.	Clump Birch	10’-12’
Cercis canadensis	Clump Redbud	8’-10’
Chionanthus virginicus	Multi-Stem Fringetree	6’-7’
Magnolia sp.	Magnolias	7’-8’
Viburnum sp.	Viburnums-selected species	6’-8’
V. dentatum	Arrowwood Viburnum	
V. lantana	Wayfaring Tree	
V. lentago	Nannyberry	
V. prunifolium	Blackhaw Viburnum	
V. sieboldii	Sibold Viburnum	

Note: This list may be used to equate multi-stem trees, broadleaf evergreens and conifers to the 2”-2.5” caliper size shade trees required in reforestation plans for the No Net Loss Reforestation Act. Any projected use of multi-stem trees, broadleaf evergreens and conifers larger or smaller than the standard size should be discussed with the program coordinator prior to design work being initiated. The proposed use of larger trees must be fully justified in the reforestation plan narrative. All plant material on this list must be nursery field-grown B&B stock.

Reforestation Plan Approval Process

No Net Loss Act



General Information Form

No-Net Loss Reforestation Program

Agency or Department Name: _____

Contact Person: _____

Title: _____

Mailing Address: _____

_____

Telephone Number: _____ Fax:_____

E-Mail Address: _____

Project Name:_____

Estimated Project Start Date: _____ Estimated Project Duration: _____

Project Location: _____(municipality/municipalities)

_____ (county/counties)

_____

_____

_____ (specific location)

Total amount of acreage proposed to be deforested: _____

Amount of acreage proposed to be reforested on-site: _____

Amount of acreage proposed to be reforested off-site: _____

(If reforestation objectives cannot be achieved on site the Secondary Reforestation Form must be filled out)

Off-Site Reforestation Form

No-Net Loss Reforestation Program

Off- Site Land Owner _____

Mailing Address: _____

_____

Off-Site Contact Person: _____

Title: _____

Telephone Number: _____ Fax:_____

E-Mail Address: _____

Project Location: _____(Municipality/municipalities)

_____ (County/counties)

_____

_____

_____(Street address or specific location)

State Entity Contact Person: _____
(If different from General Information Form)

Title: _____

Telephone Number: _____ Fax:_____

Estimated Planting Dates: _____

Amount of compensated acreage to be reforested off-site: _____

Reforestation Monetary Compensation

No-Net Loss Reforestation Program

State Entity _____
Project Name _____

Total Forested Acreage Removed _____

Proposed Acreage Reforested On-Site _____

Proposed Acreage Reforested Off-Site _____

Proposed Acreage not Reforested

Established Forest _____

Emerging Forest _____

Seedling Forest _____

State Entity Financial Officer _____

Title _____

Mailing Address _____

_____

Telephone Number _____ Fax _____

Criteria for Exemptions

No-Net Loss Reforestation Program

Standard Forestry Practices

The following activities are exempted from the no-net loss legislation as per N.J.S.A. 13:1L-14.3

- Any tree removal activity by the NJ Division of Parks and Forestry that is part of a Forest Resource Management Plan or an Annual Forestry Work Plan for a specific state park or state forest.

- Any tree removal activity by the NJ Division of Parks and Forestry that is part of a Forestry Resource Recovery Management Plan.

- Any tree removal activity by the NJ Division of Parks and Forestry that is part of a Forestry Demonstration Project at the NJ Forest Resource Education Center.

- Any tree removal activity by the NJ Division of Parks and Forestry that is done to prepare land for the growing of tree seedlings at the NJ State Nursery.

- Any tree removal activity by the NJ Division of Parks and Forestry that is done as part of a forestry research project or hazard fuel reduction plan.

- Any tree removal activity by the NJ Division of Parks and Forestry that is done in response to natural disasters, including such events as forest fires, floods, insect infestations or disease infestations in state parks and forests.

- Any tree removal activity by a state entity that is deemed by the Division of Parks and Forestry to constitute standard forestry and is part of an approved plan by the division.

Arboricultural Practices

The following activities are exempted from the no-net loss legislation as per N.J.S.A. 13:1L-14

- Any tree removal activity by a state entity deemed appropriate by the division that is done on developed or maintained lands in response to natural disasters including events such as fires, floods, insect infestations or disease infestations on state lands. Such activity shall be to done with the intent to minimize the spread of infestations or maintain the public safety.

Wildlife Management

The following activities are exempted from the no-net loss legislation as per N.J.S.A. 13:1L-14.3

- Any tree removal activity conducted by the NJ Division of Fish and Wildlife that is done on state wildlife management areas for the purpose of fish and wildlife habitat improvement.

- Any tree removal activity conducted by the NJ Division of Fish and Wildlife that is done on state wildlife management areas in response to natural disasters including, but not limited to such events as forest fires, floods, hurricanes, insect infestations or disease infestations.

- Any tree removal activity by a state entity that constitutes a standard wildlife management practice and is part of a plan approved by the NJ Division of Parks and Forestry.

Actively Managed Existing Utility Easements

The following activities are exempted from the no-net loss legislation as per N.J.S.A. 13:1L-14.3

- Any tree removal activity by a public utility or a contractor of the utility that is done on existing utility rights-of-way as part of an ongoing, scheduled vegetation management program.

- Any tree removal activity by a public utility deemed appropriate by the division that is done on utility line rights-of-way in response to natural disasters including events such as fires, floods, insect infestations or disease infestations. Such activity shall be to done with the intent to minimize the spread of infestations or maintain the public safety and transmission of services.

Glossary

Approved Reforestation Plan: A reforestation plan submitted by a state entity and approved by the NJ Division of Parks and Forestry pursuant to No Net Loss Act, N.J.S.A. 1:13L-14.1 et seq. and any adopted rules and regulations.

Balled & Burlapped: Plants established in the ground, which have been prepared for transplanting by digging so that the soil immediately around the roots remains undisturbed. The ball of earth containing the roots of the plant is then bound up in burlap or similar mesh fabrics.

Bare Root: Harvested plants from which the soil or growing medium has been removed.

Caliper: The diameter of a tree measured at a point 6" above the ground line if the resulting measurement is no more than four inches. If the resulting measurement is more than four inches, the measurement is made at a point 12"above the ground line.

Container Grown: A plant grown and marketed in a container, usually not available in sizes as large as balled and burlapped.

Cultivar: A cultivated variety of a plant which has been asexually reproduced to retain a certain characteristic or trait.

DBH: Diameter of a tree at breast height (4.5' above the ground)

Emerging Forest: Any half-acre area that is predominately young trees having a dbh of 4" or less.

Established Forested: Any half-acre area that is predominately trees with a dbh greater than 4" shall be termed an established forest.

Existing Forest Area: An area scheduled for deforestation that meets the criteria set forth in the guidelines and therefore must be counted for reforestation.

Forest Land Assessment: An evaluation of an area with trees growing on it to determine if the area meets the parameters for existing forested area as set forth in the Guidelines for an Approved Reforestation Plan.

Microclimate: The climate of a small area, differing in temperature and moisture from the general local climate.

Product Size: The size of a tree purchased for reforestation. Depending on the product type, the size can be measured in length or caliper.

Product Type: The way a tree purchased for reforestation is sold or packaged. Examples are seedling, balled and burlapped, bare root whips and container grown.

Reforestation: The reestablishment of trees into an area by direct seeding or planting.

Seedling: An immature tree that is 24" or less in height.

Seedling Forest: Any half-acre area that is predominately a regenerating forest at the seedling stage.

Whip: A young tree without branches usually sold bare root.

Appendix

SAMPLE TREE PLANTING SPECIFICATIONS
for the
No Net Loss Reforestation Program

1. GENERAL

The contractor shall be liable for any damages to property caused by his operations and in the event of damages, he shall at his own expense restore all disturbed or damaged areas to their original condition. All materials, equipment and personnel shall be limited to the work area defined by the project supervisor.

Trees shall be free of damage as the result of handling or transportation.

No substitution of plant material is allowed unless written permission is obtained from the project supervisor prior to the delivery date of the material.

All work shall conform to accepted horticultural practices as ultimately determined by the project supervisor.

2. SCOPE OF WORK

Work shall consist of:

- preparation of areas for planting
- furnishing and planting of specified trees, unless the contract is for planting only
- maintenance of plantings until acceptance by the project supervisor
- clean up and restoration of any disturbed areas to the condition prior to the contractor's operations

3. SCHEDULING OF WORK

The contractor shall submit a proposed work schedule to the project supervisor for approval at least seven (7) days prior to beginning operations. After the schedule is accepted, no modifications will be permitted without written authorization from the project supervisor.

The contractor shall arrange to confine his operations to normal working hours for the industry and no work will be permitted on Sundays or holidays without written authorization from the project supervisor.

4. PERSONNEL

All personnel will be properly supervised in a manner that assures that the property is protected from damage that the safety of all personnel and the public is protected and that all contract work is done in a professional manner and according to accepted horticultural standards.

5. PROTECTION OF UTILITIES

Prior to any excavation or the driving of stakes into the ground, the contractor shall ascertain and have marked out the location of all underground utilities. The contractor shall take proper precautions not to disturb or damage any sub-surface utilities.

In the event that any sub-surface utilities are uncovered or damaged, the contractor shall immediately notify the project supervisor so that the contract work may be relocated or stopped until the damage can be repaired. The contractor shall be financially responsible for any damage to utilities and structures and shall properly maintain the protection of same.

6. MULCH

Mulch shall be uniformly shredded hard wood. All foreign material including twigs, stones, cans, soil, etc. shall be removed prior to spreading.

7. LAYOUT

All trees and shrubs shall be located as shown on the plans supplied by the project supervisor. Should the contractor encounter obstructions of any nature, he shall notify the project supervisor who will arrange adjustments. All adjustments to the plan must be authorized in writing.

The project supervisor or his designee shall stake the exact planting location of each tree in accordance with the plans. The staking and layout work shall be done sufficiently in advance of planting to avoid delays to the contractor.

No planting holes shall be excavated in advance of planting operations. The planting holes must be approved by the project supervisor prior to the start of the planting operation. Each plant shall be planted in an individual hole as specified. All plants shall be set to ultimate finished grade so that they will bear the same relationship to finished grade as they bore to the natural grade before transplanting. See the accompanying planting diagram for details.

8. WATER

Plants shall be thoroughly watered in after planting. The project supervisor will notify the contractor if water suitable for irrigation is available on the site. If water is unavailable on the site, it is the responsibility of the contractor to furnish it at the time of planting.

9. NURSERY STOCK

Plant species shall conform to those indicated on the drawings, plant list, and the publication Hortus Third.

All landscape nursery stock shall conform to the standard specifications of The American Standard for Nursery Stock sponsored by the American Association of Nurserymen, Inc. All plants shall be grown under climatic conditions similar to the job site for a period of not less than two (2) years immediately prior to this project.

No substitutions shall be permitted in either kind or grade without written authorization from the project supervisor.

Any materials and/or work may be rejected, if, in the opinion of the project supervisor, it does not meet the requirements of the specifications. All rejected material shall be promptly removed from the site by the contractor at his own expense.

10. QUALITY

Plants shall have the habit of growth that is normal for the species or cultivar and shall be sound, healthy, vigorous, free from insects, plant diseases and injuries or damage of any nature. All plants shall be of the grades specified, neither larger nor smaller, without written authorization from the project supervisor. All plants specified as single stem shade trees on the landscape drawing key shall have their branching starting between six and seven feet in height. Tree crowns shall be balanced and scaffolding branches shall be adequately spaced and developed in proportion to each other. No plants shall be pruned, clipped or trimmed prior to delivery without written authorization from the project supervisor. All landscape stock must be nursery grown.

All plants shall have been root pruned at the nursery at least once during the three year period immediately preceding transplanting and at least one year prior to transplanting.

All plants must be State Inspected and a copy of the "Certificate of Inspections" issued by the State Department of Agriculture at the point of origin must accompany shipments from each source.

11. SHIPMENT, DELIVERY, INSPECTION AND ACCEPTANCE

The project reserves the right to inspect and select all plant material at its point of origin. Acceptance at the nursery, in which the plant is growing, prior to transplanting, does not preclude rejection at the site for just cause.

The plant material is to be delivered to the site in quantities and on the dates agreed upon by the project supervisor. The contractor shall advise the project supervisor of all deliveries at least 48 hours prior to its arrival at the site, so that all trees may be inspected upon delivery to the site.

All plants shall be tarped, protected from weather and be adequately packed to avoid breakage, sun scald, windburn, desiccation and other damage during loading and shipment. All measures customary in good trade practice shall be taken to keep the plants in good condition.

No plants shall be planted until they have been inspected and approved on the site by the project supervisor.

Legible tags shall be attached to each tree. Trees that fail to meet the specifications set forth in sections 9 and 10 will be rejected. Rejected plants shall be removed from the site immediately and approved replacement stock that meets the specifications set forth in sections 9 and 10 will be planted in the prescribed manner by the contractor at his expense. Final written acceptance of the plants will be given only after they have been planted and after the requirements prescribed herein are met.

12. TIME OF PLANTING

Prior to commencement of planting, the contractor shall contact the project supervisor to establish a schedule of planting dates. Trees will be planted from March 1 through June 30 or September 1 through November 30.

13. PLANTING

Unless otherwise specified within these specifications, all work shall conform to accepted horticultural practices as ultimately determined by the project supervisor.

Plants shall be protected upon arrival to the site by being thoroughly watered and properly maintained until properly planted and watered. Unplanted stock shall be "healed-in" a bed of material approved by the project supervisor upon delivery to the site unless they will be planted within four (4) hours after delivery. At all times workmanlike methods customary in good horticultural practices shall be exercised.

The contractor shall protect all existing features on the site including underground utilities, structures and existing trees.

All trees shall be planted in pits that are a minimum of two (2') feet larger in diameter than their ball of earth or their spread of roots. The depth of the pits shall be equal to the depth of the root ball after proper planting. The tree shall be centered in the hole and then back filled one half the depth of the soil ball with topsoil. The backfill shall be lightly but thoroughly tamped and well watered. The remainder of the hole is then to be backfilled with approved topsoil to a depth that after settling will assure the tree will be at the same level it was previously growing at in the nursery. The tree will be well watered again before mulch is placed over the surface of the root ball.

14. GUYING, STAKING AND WRAPPING

The installation of tree stakes and supporting materials will be done to those trees that the project supervisor deems necessary. Stakes shall be made of wood, of the length and size required to restrict excessive movement by the tree, as ultimately determined by the project supervisor. Tie materials shall be plastic chain lock or flat, woven webbing designed specifically for staking trees.

For details on proper staking, see the planting diagram.

Tree trunks shall not be wrapped.

15. PLANTING PREPARATIONS

Prior to backfilling, balled and burlapped trees shall have burlap and twine removed from around the trunks, stems and tops of the balls. The burlap shall be peeled back off the top of the ball, or if bulky, cut away and removed from the upper three-quarters of the soil ball. No burlap shall be pulled out from underneath the ball.

The entire wire basket shall be removed from the root balls after the trees are set in the planting pit by cutting with any tool that does not destroy the integrity of or injure the tree roots.

Backfilling shall be lightly but thoroughly tamped and well watered as described under planting. Only the prescribed approved topsoil may be used to backfill the holes during planting operations. Unsuitable excavated material, as designated by the project supervisor shall be removed from the site by the contractor at his expense.

16. MULCHING

Shredded hardwood mulch supplied by the contractor shall be free of debris and shall be placed by the contractor around all plantings at the time of planting to a depth of three (3") inches as shown in the planting diagram. Care shall be exercised to keep mulch two (2") inches away from the bases of all plantings. After the mulching operation has been approved by the project supervisor, the mulch shall be thoroughly watered.

17. PRUNING

The contractor shall not prune any plant.

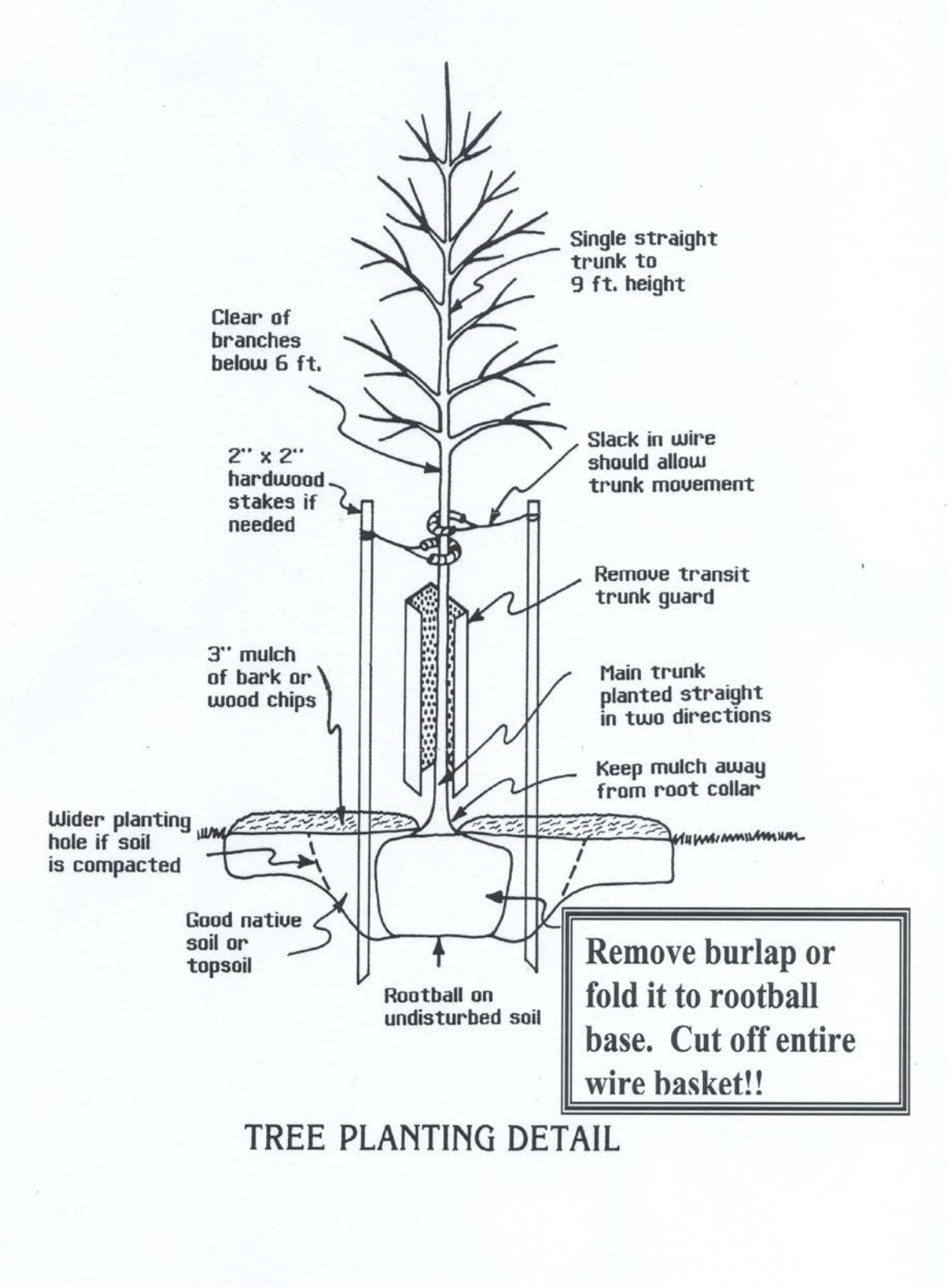
18. CLEAN-UP

During the course of operations, the Contractor shall remove from the property at his expense all excess and waste materials.
Any damaged lawn areas or planting areas will be restored to their original condition by the contractor at his expense, if such damage is the result of the contractor's operations.

19. INSPECTION FOR ACCEPTANCE

Inspection: The contractor shall notify the project supervisor when planting is completed and shall request an inspection in order to determine whether or not the project meets the specifications contained herein. If the work is acceptable, a written notice shall be provided stating so. If deficiencies are found in the work, a list of items requiring attention shall be furnished to the contractor by the project supervisor. The contractor shall correct the deficiencies within ten (10) days and a re-inspection shall be made. This procedure will continue until the work is found acceptable.

Acceptance: After inspection, the contractor will be notified in writing by the project supervisor of the acceptance of all work.



TREE PLANTING DETAIL

SAMPLE TREE MAINTENANCE SPECIFICATIONS
for the
No Net Loss Reforestation Program

1. GENERAL

Maintenance procedures will be carried out to promote the establishment of the trees and ensure that they are in a healthy and viable condition two years after planting.

2. SCOPE OF WORK

Work shall consist of:
- Inspections
- Watering
- Mulching
- Weeding
- Securing stakes and guys
- Resetting trees to plumb
- Insect and disease control
- Fertilization
- Pruning

INSPECTIONS
Inspections shall consist of regular visits to the planting site/s by a qualified professional to determine the health and needs of the trees. Inspection times and dates are the responsibility of the contractor but a minimum of four inspections shall be done during the year, with one scheduled during each of the months of April, May, June and November.

WATERING
Watering is the most crucial maintenance procedure to ensure plant establishment and survivability. When seasonal rainfall is inadequate to provide sufficient soil moisture for good tree establishment, watering shall be done. A thorough watering every five to seven days shall be considered ample when rainfall is insufficient to maintain soil moisture content. Four gallons per 2" – 2 ½" caliper tree shall be considered adequate during rainless periods provided that the water is not applied faster than the ground can absorb it. The use of water-holding containers with small drain holes or products such as Treegator or the equivalent shall be the preferred method of watering. The project supervisor will notify the contractor if water suitable for irrigation is available on the site. If water is unavailable on the site, it is the responsibility of the contractor to furnish.

MULCHING
Shredded hardwood mulch shall be the preferred type of mulch but other organic mulches may be used if approved by the project manager. The mulch supplied by the contractor shall be free of debris and shall be maintained by the contractor around all plantings to a depth of three (3") inches as shown in the planting diagram for the entire maintenance period. Care shall be exercised to keep mulch two (2") inches away from the base of all plantings. The mulch ring shall be maintained at a size of 36" in diameter.

WEEDING
The mulch rings of caliper size trees shall be kept free of weeds by using either chemical controls and/or hand weeding. Tall growing weeds that can hinder the establishment of seedlings and smaller trees shall be controlled in a large enough area around the plant to ensure competition from the weeds does not adversely effect the trees' survival. Any pre-emergent or post emergent weed control applications shall be applied in a manner consistent with the label and only target the undesirable plants.

SECURING STAKES AND GUYS
Tree stakes and supporting materials shall be maintained according to the planting specifications or replaced as necessary during the first maintenance year. For details on proper staking, see the planting diagram. All staking materials and guys shall be removed and disposed of by the contractor at the end of the first year unless otherwise directed by the project manager.

RESETTING TREES TO PLUMB
Any tree that deviates from a vertical position shall be adjusted so that the main trunk is plumb in two directions that are ninety degrees from each other. All care shall be taken not to harm the root ball or root system of the tree during resetting operations.

INSECT & DISEASE CONTROL
Trees shall be kept free of insect or disease infestations that can affect their health or establishment. Integrated pest management techniques shall be employed by the contractor to minimize or alleviate the undesirable condition. If the timing is incorrect to administer a control, contractor shall monitor the insect or disease the next season and apply the appropriate controls at that time, if necessary. All insect or disease problems are to be diagnosed and treated individually. No broadcast spraying of pesticides shall be done.

FERTILIZATION
A balanced, slow release fertilizer shall be applied at the recommended rate at the end of the first growing season in late fall. The fertilizer shall be formulated for trees and approved by the project manager prior to application. The application may be made by either soil injection along the outside of the mulch ring or by applying a granular form to the mulch ring area.

PRUNING
Pruning shall be done only to dead, broken, diseased or infested branches during the maintenance period and according to the New Jersey Board of Tree Experts' *Pruning Standards for Shade Trees.*

3. MAINTENANCE SCHEDULE

The contractor shall arrange to confine his operations to normal working hours for the industry and no work will be permitted on Sundays or holidays without written authorization from the project supervisor.

4. PERSONNEL

All personnel will be properly supervised in a manner that assures that the property is protected from damage, that the safety of all personnel and the public is protected and that all contract work is done in a professional manner and according to accepted arboricultural standards.

5. CLEAN-UP

During the course of operations, the contractor shall remove from the property at his expense all excess and waste materials. The contractor, at his expense, will restore any damaged lawn areas or planting areas to their original condition if such damage is the result of the contractor's operations.

6. OTHER

Unless otherwise specified within these specifications, all work shall conform to accepted arboricultural practices as ultimately determined by the project supervisor.

Memorandum of Agreement

Concerning Reimbursement of the New Jersey Department of Environmental Protection, Division of Parks and Forestry for Its Review and/or Implementation of Reforestation Plans Under the No Net Loss Reforestation Act, N.J.S.A. 13:1L-14.1 et seq.

This Memorandum of Agreement (MOA) is between the New Jersey Department of Environmental Protection (NJDEP), Division of Parks and Forestry (NJP&F) and the NJ STATE ENTITY () in accordance with the requirements of the New Jersey No Net Loss Reforestation Act, N.J.S.A. 13:1D-14.1 et seq.

TERMS OF THIS AGREEMENT

1. STATE ENTITY shall submit a reforestation plan as required by the No Net Loss Reforestation Act, N.J.S.A. 13:1D-14.1 et seq., to NJDEP-NJP&F for each deforestation project subject to the Act, in accordance with the provisions set forth in N.J.S.A.13:1D-14.2(a) & (b).

2. NJP&F will complete reviews and/or implementations of a STATE ENTITY reforestation plan in accordance with the provisions set forth in N.J.S.A.13:1D-14.2.

3. NJP&F agrees to make its staff available to participate in early project planning in order to enhance consideration of reforestation in the early stages of the project development process and to facilitate and maintain project schedules.

4. NJDEP-NJP&F will notify the STATE ENTITY, within thirty (30) days of receipt of a STATE ENTITY reforestation plan, of any deficiencies in such plan.

5. NJP&F will review and make a determination regarding a STATE ENTITY reforestation plan within 90 days, if feasible. For all deforestation projects subject to the Act, a STATE ENTITY completed reforestation plan shall be mailed or delivered to the Program Coordinator, No Net Loss Reforestation Program at NJP&F. For the purposes of tracking the plan, the time period for review will commence on the date that the reforestation plan is physically received and time stamped at NJP&F offices. For the purposes of determining the date whereby the NJP&F has completed its review and made its determination, such date shall be the date indicated on the response letter.

6. If the compensatory reforestation as required by N.J.S.A.13:1D-14.2(b)4-9 cannot be accomplished on the site of the deforestation project, STATE ENTITY shall perform reforestation according to the following hierarchy: within the municipality in which the deforestation has occurred, within five miles of the site of deforestation, or off-site (herein referred to as "off-site location"). If STATE ENTITY elects not to perform its remaining reforestation obligation on an off-site location, STATE ENTITY shall make monetary compensation to NJP&F in lieu of performing such off site reforestation. In the event that STATE ENTITY elects the option of monetary payment in lieu of performing any or all of the necessary off-site reforestation, the monetary compensation shall be an amount calculated using the number of installed trees required by the Tree Replacement Factor multiplied by current market costs mutually agreed upon by both parties. The monetary payment shall be deposited in the “Shade Tree and Community Forest Preservation License Plate Fund” established pursuant to N.J.S.A.39:3-27.81.

7. NJP&F will provide quarterly invoices to the STATE ENTITY’S (project manager) according to the following schedule:

Work Period January 1 – March 31	Invoice by April 30
Work Period April 1 – June 30	Invoice by August 31
Work Period July 1 – September 30	Invoice by October 31
Work Period October 1 – December 31	Invoice by January 31

REIMBURSEMENT:

STATE ENTITY agrees to reimburse the NJDEP-NJP&F for the actual labor hours that the NJDEP-NJP&F expends in the review and/or implementation of the reforestation plan submitted by STATE ENTITY. Pursuant to paragraph 7 above, NJP&F will submit quarterly invoices to STATE ENTITY documenting the actual hours attributable to a STATE ENTITY specific reforestation plan. Actual labor hours shall include each employee's hourly salary rate, a salary additive rate and the fringe benefit rate attributable to the review and/or implementation of a STATE ENTITY reforestation plan. The invoice will set forth the actual hours worked by each employee, each employee's current hourly salary rate, the salary additive rate, and the fringe benefit rate. Payment shall be made by STATE ENTITY to NJDEP-NJP&F within 45 days of an invoice and by certificate of Debit/Credit. All payments and documentation are subject to post-audit by the State Auditor

EXTENSION/MODIFICATION OF AGREEMENT:

This agreement will remain in effect from the date of execution through the end of State Fiscal Year 2008 (July 1, 2003 to June 30, 2013). The agreement may be extended to cover additional fiscal years and/or be modified upon written consent of both signatories.

SIGNATURES:

_____	_____
Name	Bob Martin
Title	Commissioner
State Entity	Dept. of Environmental Protection
Date_____	Date_____
Attest:_____	Attest:_____
Name	Name
Title:	Title:
State Entity	Dept. of Environmental Protection