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Department of Environmental
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Appendix A

Glossary of Terms

APPENDIX A
GLOSSARY OF TERMS

Act (Baltimore County) - the Forest Conservation Act, Bill No. 224-92.

Act (State) - the Forest Conservation Act, Natural Resources Article, 5-1601 et seq., Annotated Code of Maryland.

Afforestation - the 1) establishment of a forest on an area on which forest cover has been absent for a long period of time; 2) planting of open areas which are not presently in forest cover; or 3) establishment of a forest according to afforestation or reforestation procedures in the Baltimore County Forest Conservation Technical Manual.

Agricultural Activity - farming activities including plowing, tillage, cropping, installation of best management practices, seeding, cultivating, and harvesting for the production of food and fiber products (except commercial logging and timber harvesting operations), the grazing and raising of livestock, aquaculture, sod production, orchards, Christmas tree plantations, nursery, and other products cultivated as part of a recognized commercial enterprise and in accordance with a Soil Conservation and Water Quality Plan approved by the Baltimore County Soil Conservation District.

Agricultural and Resource Areas - areas zoned for densities of less than or equal to one dwelling unit per five acres and corresponds to Baltimore County Zoning Classifications RC2, RC4, RC20 and RC50.

Break-even Point - the point at the Forest Conservation requirements can be met solely through forest retention and no reforestation.

Caliper - stem diameter of a woody plant measured at 6 inches above the ground level.

Champion Tree - the largest tree of its species within the United States, the state, county, or municipality as determined by the Maryland Department of Natural Resources.

Codominant Trees - Trees with crowns forming the general level of the crown cover and receiving full sunlight from above but little from the sides; trees with medium sized crowns.

Commercial and Industrial Uses - includes areas zoned for manufacturing operations, office complexes, shopping centers, and other similar uses and their associated storage areas, yarding, and parking areas and corresponds to Baltimore County Zoning Classifications RO, RCC, BL, BM, BR, MR, MLR, ML, MH, SE, BMM and BMB.

Commercial Logging and Timber Harvesting - the cutting and removing of tree stems from a site for commercial purposes, leaving the root mass intact.

Conservation Threshold - the point at which the reforestation requirement changes from a ratio of 1/4 acre planted for every one acre removed above

the threshold to 2 acres planted for every one acre removed below the threshold, as determined by the land use category.

Critical Habitat for Endangered Species - a habitat occupied by an endangered species as determined or listed under Section 4-2A-04 and Section 10-2A-04, Natural Resources Article, Annotated Code of Maryland.

Critical Habitat Area - a critical habitat for endangered species and its surrounding protection area. A critical habitat area shall 1) be likely to contribute to the long-term survival of the species, 2) be likely to be occupied by the species for the foreseeable future, and 3) constitute habitat of the species which is deemed critical under Section 4-2A-06, Section 4-2A-04 and Section 10-2A-06, Natural Resources Article, Annotated Code of Maryland.

Critical Root Zone - a circular region measured outward from a tree trunk representing the essential area of the roots that must be maintained or protected for the tree's survival; for the purpose of this manual critical root zone is one foot of radial distance for every inch of tree diameter (dbh) measured at 4.5 feet from the ground, with a minimum of 8 feet. For specimen trees the formula changes to 1.5 feet for every inch of tree diameter, dbh.

Department - the Baltimore County Department of Environmental Protection and Resource Management.

Development Project - includes redevelopment.

Development Project Completion - means for the purposes of afforestation, reforestation, or payment into a fund: 1) the release of the public works agreement security on residential projects, if required; 2) the release of the use and occupancy permit on non-residential projects; 3) acceptance of the project's streets, utilities, and public services by the County; or 4) designation by the County that a particular stage of a staged development project, including a planned unit development, has been completed.

Dominant Trees - trees with crowns extending above the general level of the crown cover and receiving full sunlight from above and partly from the side; larger than the average trees in the stand.

Enhanced Landscaping Plan - a plan 1) drawn to scale, showing dimensions and details for reforesting an area at least 35 feet wide and covering 2,500 square feet or greater in size; 2) using native or naturalized plants for all reforestation and afforestation plans, when appropriate; and 3) which is made part of an approved Forest Conservation Plan.

Forest - a biological community dominated by trees and other woody plants covering a land area of 10,000 square feet or greater. Forest includes 1) areas that have at least 100 trees per acre with at least 50% of those having a two inch or greater diameter at 4.5 feet above the ground and larger, 2) areas with mature trees that provide a contiguous canopy over unimproved land, and 3) forest areas that have been cut but not cleared. Forest does not include orchards.

Forest Conservation - the retention of existing forest or the creation of new forest at the levels prescribed by the State or Department.

Forest Conservation Fund - a fund into which payments for reforestation and for penalties will be made when an applicant is not in compliance with the Forest Conservation Plan.

Forest Conservation Plan - a plan attached to the site for which approval for a regulated activity has been made. The plan must contain a map drawn to scale which shows 1) areas required for forest conservation, 2) an afforestation plan showing planting areas on or off site, 3) a construction timetable, and 4) management and protective agreements for the conservation areas.

Forest Conservation Program - a program developed under the Forest Conservation Act by any jurisdiction with planning and zoning authority that is consistent with the intent, requirements and standards of the Act, Natural Resources Article, 5-1601 et seq., Annotated Code of Maryland.

Forest Cover - the area of a site meeting the definition of forest.

Forest Management Plan - a plan establishing best conservation and management practices for a landowner in assessment of the resource values of forested property.

Forest Product - any wood fiber product extracted from a forest which can be sold on the commercial market.

Forest Stand - a contiguous group of trees sufficiently uniform in species composition, arrangement of age classes, and condition to be a distinguishable, homogeneous unit.

Forest Stand Delineation - the methodology for evaluating the existing natural features and vegetation on a site proposed for development, taking into account the environmental elements that shape or influence the structure or makeup of a plant community.

Forested Slopes - an area meeting the definition of forest and growing on an area with a slope of 25% or more and covering an area of at least 10,000 square feet.

Forest Structure - is a measure of the vertical and horizontal structural diversity within a stand; is related to stand age and habitat.

Growing Season - the time, from spring to fall, during which consecutive frost-free days occur.

High Density Residential Areas - areas zoned for densities greater than one dwelling unit per acre, including both existing and planned development and their associated infrastructure, such as roads, utilities, and water and sewer service, and corresponds to Baltimore County Zoning Classifications of DR2, DR3.5, DR5.5, DR10.5, DR16 and ROA.

Historic Sites - as defined by local, state or federal Historic Register.

Hydric Soils - are generally defined as soils that are saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions in the upper layer of soil.

Institutional Development Area - includes schools, colleges, universities, military installations, transportation facilities, utility and sewer projects, government offices and facilities, golf courses, recreation areas, parks, and cemeteries.

Intermittent Stream - a stream with an intermittent base flow of ground-water origin as confirmed by field verification.

Maintenance Agreement - a legally binding, three-year agreement to ensure the survivability of all sites afforested, reforested or landscaped.

Medium Density Residential Area - areas zoned for densities greater than one dwelling unit per five acres and less than or equal to one dwelling unit per acre, including both existing and planned development and their associated infrastructure, such as roads, utilities, and water and sewer service, and corresponding to the Baltimore County Zoning Classifications of RC3, RC5 and DR1.

Mixed Use Development - a single, relatively high density development project, usually commercial in nature, which includes two or more types of uses, and corresponds to the Baltimore County Zoning Classifications of OT, O-1, O-2, RAE-1 and RAE-2.

Natural Regeneration - the natural establishment of trees and other vegetation with at least 400 woody, free-to-grow seedlings per acre, which are capable of reaching a height of at least 20 feet at maturity.

Net Tract Area - the total area of a site, including both forested and nonforested areas, to the nearest one-tenth acre, reduced by the area found to be within the boundaries of the 100-year floodplain. In agricultural or resource areas, net tract area must also be reduced by any portion of the tract remaining in agricultural production.

Nontidal Wetland - an area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, as commonly known as hydrophytic vegetation. The determination of whether an area is considered a nontidal wetland shall be made in accordance with the publication known as the "Federal Manual for Identifying and Delineating Jurisdictional Wetlands," published in 1989 and as may be amended and interpreted by the U.S.

Environmental Protection Agency. Nontidal wetlands do not include tidal wetlands regulated under Natural Resources Article, Title 9, Annotated Code of Maryland.

Off-Site - means outside the limits of the area encompassed by the tract area, including any area(s) classified as 100-year floodplain.

One-Hundred Year Floodplain - an area along or adjacent to a stream or body of water, except tidal waters, that is capable of storing or conveying floodwaters during a 100-year frequency storm event. A 100-year flood is a flood which has a 1% chance of being equalled or exceeded in any given year. Except for Class III waters (Natural Trout Streams), a body of water with a watershed less than 400 acres is excluded.

Perennial Stream - a stream with a perennial base flow of groundwater origin, as confirmed by field verification.

Permanent Tree Protection Devices - structural measures, such as retaining walls or aeration devices, that are designed to protect the tree and its root systems throughout its lifetime.

Person - includes the federal government, the state, any county, municipal corporation, or other political subdivision of the state, or any of their units, or an individual, receiver, trustee, guardian, executor, administrator, fiduciary, or representative of any kind, or any partnership, firm, association, public or private corporation, or any of their affiliates, or any other entity.

Planned Unit Development - a development comprised of a combination of land uses or varying intensities of the same land use in accordance with an integrated plan that provides flexibility in land use design approved by the local jurisdiction with at least 20% of the land permanently dedicated to open space, and corresponds to Baltimore County Zoning Classifications of PUDR-1 and PUDR-2.

Prime Agricultural Soils - fertile soils as defined by USDA, Soil Conservation Service.

Priority Retention Areas - a hierarchy of forest stands and stand characteristics, defined in Section that are used to prioritize forested areas to retain.

Reforestation or Reforested - the creation of a biological community dominated by trees and other woody plants containing at least 100 live trees per acre with at least 50% of those trees having the potential of attaining a two inch or greater diameter measured at 4.5 feet above ground, within seven years.

Regulated Activity - means any of the following activities that are not exempt under the Baltimore County Forest Conservation Act, and that occur on

a unit of land which is 40,000 square feet or greater: 1) subdivision; 2) development, including construction; 3) clearing, grubbing and grading; 4) an activity that requires an erosion and sediment control approval; 5) project plan of a County agency; or 6) logging and timber harvesting operations.

Retention - the deliberate holding and protecting of existing trees, shrubs or herbaceous plants on the site according to established standards as set forth in the Baltimore County Forest Conservation Manual.

Seedling - an unbranched woody plant, less than 24 inches in height.

Selective Clearing - the careful and planned removal of trees, shrubs, and herbaceous plants using specific standards and protection measures under an approved Forest Conservation Plan.

Slope Aspect - the orientation of the site with regard to the sun.

Soil Amendments - the modification of soil properties for improvement of soil structure; not to be confused with fertilizers whose purpose is to correct chemical imbalances in soils for silvicultural purposes.

Special Variance - the allowance for deviation from the requirements of the Forest Conservation Act for circumstances where strict adherence to the Act would result in unwarranted hardship. Variance does not mean a zoning variance.

Specimen Tree - trees having a diameter measured at 4.5 feet above the ground of 30 inches or more, or trees having 75% or more of the diameter of the current state or Baltimore County champion tree of that species (see Appendix N).

Stand Structure - the composition of the forest stand with reference to forest association (SAF cover type), dominant and co-dominant species, understory and herbaceous species, ground litter composition and depth, and the stand's structural diversity.

State Program - the State of Maryland's Forest Conservation Program administered by the Department of Natural Resources.

Steep Slopes - areas with slopes greater than 25 percent slope.

Steep Erodible Slopes - areas with slopes greater than 15 percent have soils with K values greater than 0.35.

Stream Buffer - means forest buffer as defined in Title 14 of the Baltimore County Code.

Subdivision - any division of a unit of land into two or more lots or parcels for the purpose, whether immediate or future, of transfer of ownership, sale, lease or development.

Temporary Tree Protection Devices - structural measures, such as fencing or berms, installed prior to construction for the purpose of preventing access to forest retention areas or afforestation areas during construction.

Tree - a large, branched, woody plant having one or several self-supporting stems or trunks that reach a height of at least 20 feet at maturity.

Tree Line - the boundaries of existing forests as determined by the last recent aerial photography and/or field verification.

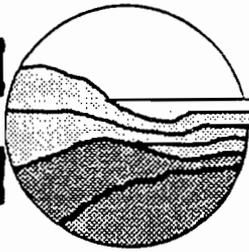
Understory Trees - trees with crowns entirely below the general level of the canopy receiving little or no sunlight from above or the sides.

Watershed - all lands lying within an area described as a subbasin in the water quality regulations adopted by the Maryland Department of the Environment under COMAR 26.08.02.08.

Whip - an unbranched woody plant greater than 24 inches in height.

Appendix B

Application for Certification as a Qualified Professional



Maryland Department of Natural Resources

Public Lands and Forestry
Tawes State Office Building
Annapolis, Maryland 21401

William Donald Schaefer
Governor

Torrey C. Brown, M.D.
Secretary

James W. Dunmyer
Assistant Secretary

APPLICATION FOR QUALIFIED PROFESSIONAL STATUS AS PER THE FOREST CONSERVATION ACT

Please Type or Print Neatly

Submit a Copy of your Transcripts With This Application

PART I - To be completed by all applicants to be eligible to prepare a Forest Stand Delineation and/or Forest Conservation Plan.

Personal Information:

Applicant's Name _____

Mailing Address _____

County _____ Social Security # _____

Home Telephone # _____ Business Tele. # _____

Date Attended (DNR Sponsored) FCA Workshop _____

Licensed Maryland Forester?

Yes No License # _____

Licensed Landscape Architect?

Yes No License # _____

Do Not Write in This Space
Received _____
Status _____

Telephone: _____

DNR TTY for Deaf: 301-974-3683

PART II - To be completed by non-licensed individuals.

A. List Schools Attended Degree and Specific Curriculum That Comply With Requirements in COMAR 08.19.06.01:

1. School Name
& Address: _____

Contact
Person
& Phone #: _____

Degree: _____ Date Conferred: _____

2. School Name
& Address: _____

Contact
Person
& Phone #: _____

Degree: _____ Date Conferred: _____

B. List Specific Courses Completed Which You Believe May Enable You to Comply With the Forest Conservation Act:

1. Course Title _____

Course # _____ Number of Credits _____

School _____

Brief description of subjects covered that apply to the FCA: _____

2. Course Title _____

Course # _____ Number of Credits _____

School _____

Brief description of subjects covered that apply to the FCA: _____

III. To be completed by non-licensed individuals.

Forestry or Landscape Architect Professional Experience

A. Personal Information:

Applicant's Name _____ Social Security # _____

Mailing Address _____

If you have a four year degree in natural resource sciences, natural resource management, landscape planning or environmental planning you must also have either:

(a) 2 years appropriate professional experience in the
aforementioned fields

or

(b) a graduate degree in natural resources
discipline and 1 year of appropriate
professional experience necessary to fulfill
the above requirement according to COMAR
08.19.06.01

B. Experience:

Company or Organization: _____

Address: _____

Position: _____

DNR	Use
-----	-----

Date of Service: From _____ To _____

Description of duties/responsibilities as they apply to your ability to fulfill the requirements of the MD Forest Conservation Act: _____

Name of Supervisor _____ Phone # _____

C. Experience Certification:

I hereby confirm under penalty of perjury that the applicant demonstrated competence in the performance of the duties/responsibilities listed above during the dates indicated.

Signature _____ Date _____

(Please return to applicant named in A above)

DIRECTIONS

To prepare a Forest Stand Delineation (FSD) or a Forest Conservation Plan (FCP) under the Forest Conservation Act you must be professionally qualified. If you are currently a licensed professional forester or a licensed landscape architect in the state of Maryland, you are automatically qualified. You will be placed on a master list of qualified professionals which may be shared with local governments, developers and other interested individuals.

If you are not a licensed forester or landscape architect and wish to be listed as an "other qualified professional" you need to complete Parts I, II and III.

Part I - Complete all pertinent information.

Part II A - List the school(s) you attended for your education in natural resources, landscape planning or environmental planning. Include a contact person (with the ability to speak of the school's curriculum) and phone number where that person can be reached.

Part II B - Where curriculum alone may not be a clear indication of ability to meet the requirements of COMAR 08.19.01.06, list the courses you completed and the subject matter covered that applies to completing FSD's and FCP's. List only the courses pertinent to proving your ability to complete FSD's and FCP's.

You MUST submit a copy of your transcripts with this application.

Part III A - Complete all information.

Part III B - Complete experience information. Pay attention to the dates of service. If you are qualifying with an appropriate masters degree you must account for 1 year of experience. Describe only the duties/responsibilities pertinent to proving your ability to complete FSD's and FCP's. Your dates of service should correspond to the performance of qualifying duties. (For example: You fought fire for 9 years with the U.S. Forest Service then did forest stand exams for two years. List only the two years you did stand exams. Fighting fire does not qualify for completing FSD's and FCP's).

Part III C - Have your supervisor (named in B above) sign and date Part III of your application to certify your experience. Make copies of this form if you need more than one organization or position to obtain the necessary amount of qualifying experience.

If you do not hold a professional forester or a landscape architect license in Maryland, submit Parts I, II and III of this application along with a copy of your transcripts to:

Department of Natural Resources
Forestry Programs - FCA Team
Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401

Appendix C

Baltimore County Soils Data

Soil Erodibility (K) Values

<u>Symbol</u>	<u>Name</u>	<u>K Factor</u>
AdA	Aldino silt loam	0.43
AdB2	Aldino silt loam	0.43
AdC2	Aldino silt loam	0.43
AuB	Aldino-Urban land complex	0.43
AuB	Aldino-Urban land complex	0.10
BaA	Baile silt loam	0.43
BaB	Baile silt loam	0.43
BmA	Baltimore silt loam	0.32
BmB2	Baltimore silt loam	0.32
BmC2	Baltimore silt loam	0.32
BnB	Baltimore-Urban land complex	0.32
BnB	Baltimore-Urban land complex	0.10
Br	Barclay silt loam	0.43
BtA	Beltsville silt loam	0.43
BtB	Beltsville silt loam	0.43
BtC2	Beltsville silt loam	0.43
BuB	Beltsville-Urban land complex	0.43
BuB	Beltsville-Urban land complex	0.10
BuC	Beltsville-Urban land complex	0.43
BuC	Beltsville-Urban land complex	0.10
BwB2	Brandywine loam	0.24
BwC2	Brandywine loam	0.24
ByD2	Brandywine gravelly loam	0.20
ByD3	Brandywine gravelly loam	0.20
ByE	Brandywine gravelly loam	0.20
CaA	Captina silt loam	0.43
CaB2	Captina silt loam	0.43
CcA	Chester silt loam	0.32
CcB2	Chester silt loam	0.32
CcC2	Chester silt loam	0.32
ChB2	Chillum silt loam	0.32
ChC2	Chillum silt loam	0.32
ChC3	Chillum silt loam	0.32
CkB2	Chillum-Neshaminy silt loams	0.32
CkC2	Chillum-Neshaminy silt loams	0.32
CkD2	Chillum-Neshaminy gravelly silt loams	0.28
CIB	Chillum-Urban land complex	0.32
CIB	Chillum-Urban land complex	0.10
CID	Chillum-Urban land complex	0.32
CID	Chillum-Urban land complex	0.10
CmB	Christiana loam	0.43
CmC2	Christiana loam	0.43
CnB2	Chrome silt loam	0.32
Cp	Clay pits	0.28
Ct	Coastal beaches	0.05
Cu	Codorus silt loam	0.49
Cv	Comus silt loam	0.43
CwB2	Conestoga loam	0.32
CwC2	Conestoga loam	0.32

<u>Symbol</u>	<u>Name</u>	<u>K Factor</u>
DcB	Delanco silt loam	0.37
Du	Dunning silt loam	0.37
EgD	Edgemont very stony loam	0.15
EgE	Edgemont very stony loam	0.15
EhB2	Elioak silt loam	0.32
EhC2	Elioak silt loam	0.32
EIC3	Elioak silty clay loam	0.28
En	Elkton silt loam	0.43
Eo	Elkton-Urban land complex	0.43
Eo	Elkton-Urban land complex	0.10
EsB	Elsinboro loam	0.37
EsC2	Elsinboro loam	0.37
Fa	Fallsington sandy loam	0.28
Fs	Fallsington loam	0.28
FtB	Fort Mott loamy sand	0.20
GaB	Galestown loamy sand	0.17
GaC	Galestown loamy sand	0.17
GcB2	Glenelg loam	0.32
GcC2	Glenelg loam	0.32
GcC3	Glenelg loam	0.32
GcD2	Glenelg loam	0.32
GcD3	Glenelg loam	0.32
GgB2	Glenelg channery loam	0.28
GgC2	Glenelg channery loam	0.28
GgD2	Glenelg channery loam	0.28
GgD3	Glenelg channery loam	0.28
GIB	Glenelg-Urban land complex	0.32
GIB	Glenelg-Urban land complex	0.10
GIC	Glenelg-Urban land complex	0.32
GIC	Glenelg-Urban land complex	0.10
GnA	Glenville silt loam	0.32
GnB	Glenville silt loam	0.32
GuB	Glenville-Urban land complex	0.32
GuB	Glenville-Urban land complex	0.10
HaA	Hagerstown silt loam	0.32
HaB2	Hagerstown silt loam	0.32
HaC2	Hagerstown silt loam	0.32
Hb	Hatboro silt loam	0.49
HoB2	Hollinger loam	0.32
HoC2	Hollinger loam	0.32
HrD3	Hollinger and Conestoga loams	0.32
Iu	Iuka silt loam	0.37
JpB	Joppa gravelly sandy loam	0.28
JpC2	Joppa gravelly sandy loam	0.28
JpD2	Joppa gravelly sandy loam	0.28
JuD	Joppa-Urban land complex	0.28
JuD	Joppa-Urban land complex	0.10
KeB2	Kelly silt loam	0.37
KeC2	Kelly silt loam	0.37
KsC	Kelly very stony silt loam	0.24
KuB	Kelly-Urban land complex	0.37
KuB	Kelly-Urban land complex	0.10

<u>Symbol</u>	<u>Name</u>	<u>K Factor</u>
LeB2	Legore silt loam	0.24
LeC2	Legore silt loam	0.24
LeD2	Legore silt loam	0.24
LeE	Legore silt loam	0.24
LfC	Legore very stony silt loam	0.20
LfD	Legore very stony silt loam	0.20
LfE	Legore very stony silt loam	0.20
LgC3	Legore silty clay loam	0.24
LgD3	Legore silty clay loam	0.24
LhB	Legore-Urban land complex	0.24
LhB	Legore-Urban land complex	0.10
LhC	Legore-Urban land complex	0.24
LhC	Legore-Urban land complex	0.10
LIB	Lenoir loam	0.37
LmB	Lenoir silt loam	0.37
LmC2	Lenoir silt loam	0.37
LoB	Lenoir-Urban land complex	0.10
Lr	Leonardtown silt loam	0.43
Ls	Lindside silt loam	0.32
Ma	Made land	0.10
MbB2	Manor loam	0.37
MbC2	Manor loam	0.37
MbC3	Manor loam	0.37
MbD2	Manor loam	0.37
MbD3	Manor loam	0.37
McB2	Manor channery loam	0.32
McC2	Manor channery loam	0.32
McC3	Manor channery loam	0.32
McD2	Manor channery loam	0.32
McD3	Manor channery loam	0.32
MdE	Manor soils	0.37
MeD	Manor-Urban land complex	0.37
MeD	Manor-Urban land complex	0.10
MgC	Manor and Glenelg very stony loams	0.32
MhD	Manor and Brandywine very stony loams	0.32
MhD	Manor and Brandywine very stony loams	0.24
MhE	Manor and Brandywine very stony loams	0.32
MhE	Manor and Brandywine very stony loams	0.24
MkA	Matapeake silt loam	0.37
MkB	Matapeake silt loam	0.37
MkC2	Matapeake silt loam	0.37
MIA	Mattapex silt loam	0.37
MIB	Mattapex silt loam	0.37
MmB	Mattapex-Urban land complex	0.37
MmB	Mattapex-Urban land complex	0.10
Mn	Melvin silt loam	0.43
Mo	Melvin silt loam, local alluvium	0.43
MsB2	Montalto silt loam	0.32
MsC2	Montalto silt loam	0.32
MtB2	Mt. Airy channery loam	0.28
MtC2	Mt. Airy channery loam	0.28
MtD2	Mt. Airy channery loam	0.28

<u>Symbol</u>	<u>Name</u>	<u>K Factor</u>
MtD3	Mt. Airy channery loam	0.28
NeB2	Neshaminy silt loam	0.32
NeC2	Neshaminy silt loam	0.32
Ot	Othello silt loam	0.37
ReC2	Relay silt loam	0.24
ReD2	Relay silt loam	0.24
ShA	Sassafras sandy loam	0.28
ShB	Sassafras sandy loam	0.28
ShC2	Sassafras sandy loam	0.28
ShC3	Sassafras sandy loam	0.28
ShD2	Sassafras sandy loam	0.28
SIA	Sassafras loam	0.28
SIB	Sassafras loam	0.28
SIC2	Sassafras loam	0.28
SnB	Sassafras-Urban land complex	0.28
SnB	Sassafras-Urban land complex	0.10
SsD3	Sassafras and Joppa soils	0.28
SsE	Sassafras and Joppa soils	0.28
SuB2	Sunnyside fine sandy loam	0.32
WaA	Watchung silt loam	0.43
WaB	Watchung silt loam	0.43
WcB	Watchung very stony silt loam	0.43
WdA	Woodstown sandy loam	0.28
WdB	Woodstown sandy loam	0.28

BALTIMORE COUNTY

MAP SYMBOL	MAPPING UNIT	CAPABILITY UNIT SYMBOL	ACRES	NATURAL SOIL GROUP
AdA	Aldino silt loam, 0 to 3 percent slopes -----	IIw-2	380	E2a
AdB2	Aldino silt loam, 3 to 8 percent slopes, moderately eroded -----	IIe-14	2,170	E2a
AdC2	Aldino silt loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-14	370	E2b
AsC	Aldino very stony silt loam, 0 to 15 percent slopes -----	VIa-3	190	H1b
AuB	Aldino-Urban land complex, 0 to 8 percent slopes -----	----	1,020	E2a
Av	Alluvial land -----	VIw-1	5,170	G2
BaA	Baile silt loam, 0 to 3 percent slopes -----	Vw-1	2,030	F3
BaB	Baile silt loam, 3 to 8 percent slopes -----	VIw-2	1,820	F3
BmA	Baltimore silt loam, 0 to 3 percent slopes -----	I-1	560	B1a
BmB2	Baltimore silt loam, 3 to 8 percent slopes, moderately eroded -----	IIe-1	6,590	B1a
BmC2	Baltimore silt loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-1	1,480	B1b
Bnd	Baltimore-Urban land complex, 0 to 8 percent slopes -----	----	330	B1a
Br	Barclay silt loam -----	IIIw-1	1,680	F2
BtA	Beltsville silt loam, 0 to 2 percent slopes -----	IIw-8	390	E2a
BtB	Beltsville silt loam, 2 to 5 percent slopes -----	IIe-13	3,350	E2a
BtC2	Beltsville silt loam, 5 to 10 percent slopes, moderately eroded -----	IIIe-13	1,150	E2a
BuB	Beltsville-Urban land complex, 0 to 5 percent slopes -----	----	1,670	E2a
BuC	Beltsville-Urban land complex, 5 to 10 percent slopes -----	----	450	E2a
BwB2	Brandywine loam, 3 to 8 percent slopes, moderately eroded -----	IIe-10	790	C1a
BwC2	Brandywine loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-10	1,700	C1b
ByD2	Brandywine gravelly loam, 15 to 25 percent slopes, moderately eroded -----	IVe-10	1,000	C1c
ByD3	Brandywine gravelly loam, 15 to 25 percent slopes, severely eroded -----	VIe-3	690	C1c
ByE	Brandywine gravelly loam, 25 to 45 percent slopes -----	VIe-3	890	C1c
CaA	Captina silt loam, 0 to 3 percent slopes -----	IIw-1	420	E2a
CaB2	Captina silt loam, 3 to 8 percent slopes, moderately eroded -----	IIe-16	620	E2a
CcA	Chester silt loam, 0 to 3 percent slopes -----	I-4	330	B1a
CcB2	Chester silt loam, 3 to 8 percent slopes, moderately eroded -----	IIe-4	18,020	B1a
CcC2	Chester silt loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-4	3,490	B1b
CgB2	Chester gravelly silt loam, 3 to 8 percent slopes, moderately eroded -----	IIe-4	3,160	B1a
CgC2	Chester gravelly silt loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-4	2,720	B1b
ChB2	Chillum silt loam, 2 to 5 percent slopes, moderately eroded -----	IIa-7	1,340	B2a
ChC2	Chillum silt loam, 5 to 10 percent slopes, moderately eroded -----	IIIe-7	610	B2a
ChC3	Chillum silt loam, 5 to 10 percent slopes, severely eroded -----	IVe-7	190	B2a
CkB2	Chillum-Neshaminy silt loams, 2 to 5 percent slopes, moderately eroded -----	IIa-7	690	B2a
CkC2	Chillum-Neshaminy silt loams, 5 to 10 percent slopes, moderately eroded -----	IIIe-7	570	B2a
CkD2	Chillum-Neshaminy silt loams, 10 to 15 percent slopes, moderately eroded -----	IVe-7	250	B2b
C1B	Chillum-Urban land complex, 0 to 5 percent slopes -----	----	1,450	B2a
C1D	Chillum-Urban land complex, 5 to 15 percent slopes -----	----	1,030	B2b

Balt. Co.

MAP SYMBOL	MAPPING UNIT	CAPABILITY UNIT SYMBOL	ACRES	NATURAL SOIL GROUP
CmB	Christiana loam, 2 to 5 percent slopes -----	IIe-42	740	B3
CmC2	Christiana loam, 5 to 10 percent slopes, moderately eroded -----	IIIe-42	480	B3
CnB2	Chrome silt loam, 3 to 8 percent slopes, moderately eroded -----	IIe-10	280	Cl _a
-CoC3	Chrome channery silty clay loam, 3 to 15 percent slopes, severely eroded -----	VI _s -32	1,010	Cl _b
-CoE3	Chrome channery silty clay loam, 15 to 45 percent slopes, severely eroded -----	VII _s -32	610	Cl _c
Cp	Clay pits -----	VIII _s -4	110	---
Ct	Coastal beaches -----	VIII _s -2	60	A2
Cu	Codorus silt loam -----	IIw-7	9,200	G1
Cv	Comus silt loam -----	I-6	810	G1
CwB2	Conestoga loam, 3 to 8 percent slopes, moderately eroded -----	IIIe-24	4,700	B1 _a
CwC2	Conestoga loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-24	2,140	B1 _b
DcB	Delanco silt loam, 3 to 8 percent slopes -----	IIe-16	940	E2 _a
Du	Dunning silt loam -----	IVw-3	630	G2
EdB2	Edgemont gravelly loam, 3 to 8 percent slopes, moderately eroded -----	IIe-4	200	B1 _a
EdC2	Edgemont gravelly loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-4	280	B1 _b
EgD	Edgemont very stony loam, 8 to 25 percent slopes -----	VI _s -3	360	H1 _c
EgE	Edgemont very stony loam, 25 to 45 percent slopes -----	VII _s -3	440	H1 _c
EhB2	Elioak silt loam, 3 to 8 percent slopes, moderately eroded -----	IIe-4	4,180	B1 _a
EhC2	Elioak silt loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-4	510	B1 _b
EKE2	Elioak gravelly silt loam, 3 to 8 percent slopes, moderately eroded -----	IIe-4	450	B1 _a
EkC2	Elioak gravelly silt loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-4	250	B1 _b
-E1C3	Elioak silty clay loam, 8 to 15 percent slopes, severely eroded -----	IVe-3	190	B1 _b
Em	Elkton loam -----	IIIw-9	290	F3
En	Elkton silt loam -----	IIIw-9	640	F3
Eo	Elkton-Urban land complex -----	---	220	F3
EsB	Elsinboro loam, 3 to 8 percent slopes -----	IIe-4	1,270	B1 _a
EsC2	Elsinboro loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-4	450	B1 _b
Fa	Fallsington sandy loam -----	IIIw-6	600	F2
Fs	Fallsington loam -----	IIIw-7	920	F2
FtB	Fort Mott loamy sand, 0 to 5 percent slopes -----	II _s -4	570	A1 _a
GaB	Galestown loamy sand, 0 to 5 percent slopes -----	III _s -1	230	A1 _a
GaC	Galestown loamy sand, 5 to 10 percent slopes -----	IV _s -1	160	A1 _a
GcB2	Glenelg loam, 3 to 8 percent slopes, moderately eroded -----	IIe-4	24,400	B1 _a
GcC2	Glenelg loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-4	17,850	B1 _b
-GcC3	Glenelg loam, 8 to 15 percent slopes, severely eroded -----	IVe-3	2,030	B1 _b
GcD2	Glenelg loam, 15 to 25 percent slopes, moderately eroded -----	IVe-3	1,440	B1 _c
GcD3	Glenelg loam, 15 to 25 percent slopes, severely eroded -----	VIe-3	740	B1 _c
GgB2	Glenelg channery loam, 3 to 8 percent slopes, moderately eroded -----	IIe-4	2,070	B1 _a
GgC2	Glenelg channery loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-4	5,180	B1 _b
GgD2	Glenelg channery loam, 15 to 25 percent slopes, moderately eroded -----	IVe-3	1,740	B1 _c

Balt. Co.

MAP SYMBOL	MAPPING UNIT	CAPABILITY UNIT SYMBOL	ACRES	NATURAL SOIL GROUP
-GgD3	Glenelg channery loam, 15 to 25 percent slopes, severely eroded -----	VIe-3	1,120	B1c
G1B	Gleneig-Urban land complex, 0 to 8 percent slopes -----	----	3,210	B1a
G1C	Gleneig-Urban land complex, 8 to 15 percent slopes -----	----	1,370	B1b
GnA	Glenville silt loam, 0 to 3 percent slopes -----	IIw-1	1,900	E2a
GnB	Glenville silt loam, 3 to 8 percent slopes -----	IIe-16	12,030	E2a
GuB	Glenville-Urban land complex, 0 to 8 percent slopes -----	----	390	E2a
HaA	Hagerstown silt loam, 0 to 3 percent slopes -----	I-1	280	B1a
HaB2	Hagerstown silt loam, 3 to 8 percent slopes, moderately eroded -----	IIe-1	1,410	B1a
HaC2	Hagerstown silt loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-1	430	B1b
Hb	Hatboro silt loam -----	IIIw-7	4,160	G2
HoB2	Hollinger loam, 3 to 8 percent slopes, moderately eroded -----	IIe-25	360	B1a
HoC2	Hollinger loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-25	500	B1b
HrD3	Hollinger and Conestoga loams, 15 to 25 percent slopes, severely eroded -----	VIe-3	360	B1c
HsC	Hollinger and Conestoga very rocky loams, 3 to 15 percent slopes -----	VIIs-2	550	H2b
Iu	Iuka silt loam -----	IIw-7	530	G1
JpB	Joppa gravelly sandy loam, 2 to 5 percent slopes -----	IIIs-4	960	A1a
JpC2	Joppa gravelly sandy loam, 5 to 10 percent slopes, moderately eroded -----	IIIe-33	1,370	A1a
JpD2	Joppa gravelly sandy loam, 10 to 15 percent slopes, moderately eroded -----	IVe-5	490	A1b
JuD	Joppa-Urban land complex, 5 to 15 percent slopes -----	----	1,510	A1b
KeB2	Kelly silt loam, 3 to 8 percent slopes, moderately eroded ----	IVw-3	890	F3
KeC2	Kelly silt loam, 8 to 15 percent slopes, moderately eroded ---	IVw-3	240	F3
KsC	Kelly very stony silt loam, 0 to 15 percent slopes -----	VIIIs-4	240	H1b
KuB	Kelly-Urban land complex, 0 to 8 percent slopes -----	----	300	F3
LeB2	Legore silt loam, 3 to 8 percent slopes, moderately eroded -----	IIe-10	1,170	B1a
LeC2	Legore silt loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-10	1,310	B1b
LeD2	Legore silt loam, 15 to 25 percent slopes, moderately eroded -----	IVe-10	770	B1c
LeE	Legore silt loam, 25 to 45 percent slopes -----	VIe-3	430	B1c
LfC	Legore very stony silt loam, 3 to 15 percent slopes -----	VIIs-3	1,650	H1b
LfD	Legore very stony silt loam, 15 to 25 percent slopes -----	VIIs-33	1,140	H1c
LfE	Legore very stony silt loam, 25 to 45 percent slopes -----	VIIIs-3	1,290	H1c
-LgC3	Legore silty clay loam, 8 to 15 percent slopes, severely eroded -----	IVe-10	750	B1b
-LgD3	Legore silty clay loam, 15 to 25 percent slopes, severely eroded -----	VIe-3	690	B1c
LhB	Legore-Urban land complex, 0 to 8 percent slopes -----	----	3,260	B1a
LhC	Legore-Urban land complex, 8 to 15 percent slopes -----	----	1,800	B1b
L1B	Lenoir loam, 0 to 5 percent slopes -----	IIIw-5	940	F3
LmB	Lenoir silt loam, 0 to 5 percent slopes -----	IIIw-5	2,140	F3
LmC2	Lenoir silt loam, 5 to 12 percent slopes, moderately eroded -----	IIIe-34	270	F3
-LnC3	Lenoir silty clay loam, 5 to 12 percent slopes, severely eroded -----	IVe-9	280	F3
LoB	Lenoir-Urban land complex, 0 to 5 percent -----	----	740	F3
Lr	Leonardtown silt loam -----	IVw-3	560	F3
Ls	Lindside silt loam -----	IIw-7	510	G1
LyB	Loamy and clayey land, 0 to 5 percent slopes -----	IIIe-42	3,460	B3

Balt. Co.

MAP SYMBOL	MAPPING UNIT	CAPABILITY UNIT SYMBOL	ACRES	NATURAL SOIL GROUP
LyD	Loamy and clayey land, 5 to 15 percent slopes -----	VIe-2	6,570	B3
LyE	Loamy and clayey land, 15 to 40 percent slopes -----	VIIe-2	590	B3
Ma	Made land -----		3,600	Ma
MbB2	Manor loam, 3 to 8 percent slopes, moderately eroded -----	IIe-25	8,810	B1a
MbC2	Manor loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-25	20,090	B1b
MbC3	Manor loam, 8 to 15 percent slopes, severely eroded -----	IVe-25	3,360	B1b
MbD2	Manor loam, 15 to 25 percent slopes, moderately eroded -----	IVe-3	6,830	B1c
MbD3	Manor loam, 15 to 25 percent slopes, severely eroded -----	VIe-3	6,830	B1c
McB2	Manor channery loam, 3 to 8 percent slopes, moderately eroded -----	IIe-25	3,140	B1a
McC2	Manor channery loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-25	12,270	B1b
McC3	Manor channery loam, 8 to 15 percent slopes, severely eroded -----	IVe-25	2,010	B1b
McD2	Manor channery loam, 15 to 25 percent slopes, moderately eroded -----	IVe-25	11,700	B1c
McD3	Manor channery loam, 15 to 25 percent slopes, severely eroded -----	VIe-3	8,300	B1c
MdE	Manor soils, 25 to 50 percent slopes -----	VIe-3	16,310	B1c
MeD	Manor-Urban land complex, 15 to 25 percent slopes -----		350	B1c
MgC	Manor and Glenelg very stony loams, 3 to 15 percent slopes -----	VIIs-3	570	H1b
MhD	Manor and Brandywine very stony loams, 15 to 25 percent slopes -----	VIIs-3	1,000	H1c
MhE	Manor and Brandywine very stony loams, 25 to 65 percent slopes -----	VIIIs-3	8,000	H1c
MkA	Matapeake silt loam, 0 to 2 percent slopes -----	I-4	240	B1a
MkB	Matapeake silt loam, 2 to 5 percent slopes -----	IIe-4	670	B1a
MkC2	Matapeake silt loam, 5 to 12 percent slopes, moderately eroded -----	IIIe-4	260	B1a
MIA	Mattapex silt loam, 0 to 2 percent slopes -----	IIw-1	1,940	E3a
MIB	Mattapex silt loam, 2 to 5 percent slopes -----	IIe-16	3,170	E3a
MmB	Mattapex-Urban land complex, 0 to 5 percent slopes -----		3,740	E3a
Mh	Melvin silt loam -----	IIIw-3	330	G2
Mo	Melvin silt loam, local alluvium -----	IIIw-3	1,210	G2
Mr	Mine dumps and quarries -----	VIIIIs-4	120	--
MsB2	Montalto silt loam, 3 to 8 percent slopes, moderately eroded -----	IIe-4	1,690	B2a
MsC2	Montalto silt loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-4	390	B2b
MtB2	Mt. Airy channery loam, 3 to 8 percent slopes, moderately eroded -----	IIIe-10	380	C1a
MtC2	Mt. Airy channery loam, 8 to 15 percent slopes, moderately eroded -----	IVe-10	1,690	C1b
MtD2	Mt. Airy channery loam, 15 to 25 percent slopes, moderately eroded -----	VIe-3	1,440	C1c
MtD3	Mt. Airy channery loam, 15 to 25 percent slopes, severely eroded -----	VIIe-3	1,250	C1c
NeB2	Neshaminy silt loam, 3 to 8 percent slopes, moderately eroded -----	IIe-4	2,730	B1a
NeC2	Neshaminy silt loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-4	950	B1b
Ot	Othello silt loam -----	IIIw-7	820	F3
Po	Pocomoke sandy loam -----	IIIw-6	110	F2
ReC2	Relay silt loam, 8 to 15 percent slopes, moderately eroded -----	IIIe-10	330	C1b
ReD2	Relay silt loam, 15 to 25 percent slopes, moderately eroded -----	IVe-10	150	C1c
RsD	Relay very stony silt loam, 3 to 25 percent slopes -----	VIIs-3	230	H1c

Balt. Co.

MAP SYMBOL	MAPPING UNIT	CAPABILITY UNIT SYMBOL	ACRES	NATURAL SOIL GROUP
RsE	Relay very stony silt loam, 25 to 65 percent slopes -----	VIIIs-3	640	H1c
RyD3	Relay clay loam, 15 to 25 percent slopes, severely eroded -----	VIe-3	310	C1c
Sg	Sand and gravel pits -----	VIIIIs-4	1,240	---
ShA	Sassafras sandy loam, 0 to 2 percent slopes -----	I-5	1,060	B1a
ShB	Sassafras sandy loam, 2 to 5 percent slopes -----	IIe-5	2,970	B1a
ShC2	Sassafras sandy loam, 5 to 10 percent slopes, moderately eroded -----	IIIe-5	610	B1a
6hC3	Sassafras sandy loam, 5 to 10 percent slopes, severely eroded -----	IVe-5	210	B1a
ShD2	Sassafras sandy loam, 10 to 15 percent slopes, moderately eroded -----	IVe-5	310	B1a
SIA	Sassafras loam, 0 to 2 percent slopes -----	I-4	490	B1a
SIB	Sassafras loam, 2 to 5 percent slopes -----	IIe-4	1,020	B1a
SIC2	Sassafras loam, 5 to 10 percent slopes, moderately eroded ----	IIIe-4	350	B1a
SnB	Sassafras-Urban land complex, 0 to 5 percent slopes -----	----	5,170	B1a
SsD3	Sassafras and Joppa soils, 5 to 15 percent slopes, severely eroded -----	VIe-2	640	B1b
SsE	Sassafras and Joppa soils, 15 to 30 percent slopes -----	VIe-2	420	B1c
St	Stony land, steep -----	VIIIIs-1	1,670	H1c
Sub2	Sunnyside fine sandy loam, 0 to 5 percent slopes, moderately eroded -----	IIe-5	250	B1a
Sw	Swamp -----	VIIW-1	180	G3
Tm	Tidal marsh -----	VIIIW-1	2,320	G3
WaA	Watchung silt loam, 0 to 3 percent slopes -----	V-1	750	F3
WaB	Watchung silt loam, 3 to 8 percent slopes -----	VIW-2	700	F3
WcB	Watchung very stony silt loam, 0 to 3 percent slopes -----	VIIIs-4	530	H1a
WdA	Woodstown sandy loam, 0 to 2 percent slopes -----	IIW-5	1,810	E1
WdB	Woodstown sandy loam, 2 to 5 percent slopes -----	IIe-36	1,090	E1
WoA	Woodstown loam, 0 to 2 percent slopes -----	IIW-1	910	E1
WoB	Woodstown loam, 2 to 5 percent slopes -----	IIe-16	650	E1
	Paved Areas -----	----	540	---

Total

Appendix D

**Sample Forest Stand Delineation Data Sheets
and Forest Conservation Worksheets**

BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION
AND RESOURCE MANAGEMENT

FOREST STAND DELINEATION - DOMINANT PLANT SPECIES

Project Name: _____ Date: _____

Location: _____ Investigator(s): _____

Stand: _____ Type: _____ Acreage: _____

Slope: _____ Aspect: _____

Reviewed by: _____ Date: _____

Botanical Names of: Dominant Tree Species	Most Common dbh (in.)	dbh Range	Average Height (ft.)	* Approximate % of Each Dominant Species	
				in Canopy	in Understory
1. _____	_____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____	_____
Common regeneration species: _____					

**Common Shrubs and Vines	Average Height (ft.)	Approx. % Cover	Herbaceous Species	Approx. % Cover
1. _____	_____	_____	1. _____	_____
2. _____	_____	_____	2. _____	_____
3. _____	_____	_____	3. _____	_____
4. _____	_____	_____	4. _____	_____
5. _____	_____	_____	5. _____	_____
6. _____	_____	_____	6. _____	_____
7. _____	_____	_____	7. _____	_____
8. _____	_____	_____	8. _____	_____

Rare, threatened or endangered plant species listed by the +MNHP and/or found:

List specimen-sized trees: (75% of champion size or $\geq 30''$ dbh; except Tuliptree)	Species	dbh (in.)	Condition
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

* Dominant tree species - each column reading down should equal 100%
 ** Shrubs - include young plants that are taxonomically considered tree species but are less than six feet tall.
 % Cover for vines - indicate % distribution between the canopy and understory.
 + Maryland Natural Heritage Program of the Department of Natural Resources
 DATASHT.1A/TXTPHC

EXOTIC PLANT SPECIES MOST LIKELY TO BE FOUND IN FOREST COMMUNITIES

Indicate the occurrence of any of the following species using one symbol from both (a) and (b):

- | | |
|--------------------|------------------------------|
| (a) 0 = occasional | (b) S = scattered throughout |
| C = common | L = localized |
| A = abundant | |

SPECIES	IF OCCURRENCE IS A AND L, RECORD LOCATION IN STAND:
_____ Acer platanoides (Norway Maple)	_____
_____ Ailanthus altissima (Tree of Heaven)	_____
_____ Alliaria officinalis (Garlic Mustard)	_____
_____ Ampelopsis brevipedunculata (Porcelain Berry)	_____
_____ Berberis thunbergii (Japanese Barberry)	_____
_____ Celastrus orbiculatus (Oriental Bittersweet)	_____
_____ Euonymus alatus (Winged Euonymous)	_____
_____ Euonymus fortunei (Climbing Euonymous)	_____
_____ Glecoma hederacea (Ground Ivy)	_____
_____ Hedera helix (English Ivy)	_____
_____ Hemerocallis fulva (Common Daylily)	_____
_____ Lonicera japonica (Japanese Honeysuckle)	_____
_____ Lonicera tatarica (Tatarian Honeysuckle)	_____
_____ Pachysandra terminalis (Japanese Pachysandra)	_____
_____ Paulownia tomentosa (Empress Tree)	_____
_____ Pueraria lobata (Kudzu)	_____
_____ Polygonum perfoliatum (Asian Tearthumb)	_____
_____ Rosa multiflora (Multiflora Rose)	_____
_____ Rubus phoenicolasius (Wineberry)	_____
_____ Vinca minor (Periwinkle)	_____
_____ Wisteria floribunda (Wisteria)	_____
_____ Wisteria sinensis (Chinese Wisteria)	_____

Others:

_____	_____
_____	_____
_____	_____
_____	_____

Estimate total % cover by all exotic species in:

Canopy _____	Shrub Layer _____
Understory _____	Ground Cover _____

BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION
AND RESOURCE MANAGEMENT

FOREST STAND DELINEATION - FOREST STRUCTURE

Project Name: _____ Date: _____

Location: _____

Stand: _____ Type: _____

Acreage: _____ Slope: _____ Aspect: _____

% Canopy Closure: (>80% _____) (50% to 80% _____) (30% to 49 % _____) (<30% _____)

% Shrub Cover: _____ Shrub height range: _____ feet to _____ feet

% Ground Cover (May to October): _____

Number of woody vegetation layers: (<3 _____) (3 _____) (4 _____) (\geq 5 _____)

Litter Depth (inches) to mineral soil (exclusive of fresh leaf fall): _____

Downed woody debris: (>6" dia.) _____ rare _____ common _____ abundant

Tally standing snags (\geq 20" dbh): _____

Stand Narrative:

1) Condition of canopy trees: _____

2) Evidence of significant disease or insect infestation in the stand: _____

3) Patterns of disruption within the stand: _____

4) Evidence of management: _____

5) Recommendations for improving the structural diversity of the stand: _____

DATASHT.2A/TXTPHC

FOREST STRUCTURE ANALYSIS

For each of the following parameters, circle the value that best describes the structural conditions in the stand. Add the numerical score for each parameter to get a total value for the stand.

From April through October
A score of:

From November through March, omit #5 & #6
A score of:

22 to 33 <-----indicates priority forest structure-----> 16 to 27
14 to 21 <-----indicates good forest structure-----> 8 to 15
0 to 13 <-----indicates poor forest structure-----> 0 to 7

1. Percent Canopy Closure (2)

> 80%	6
> 50 < 80	4
> 30 < 50	2
< 30	0

2. Size Class of Dominant Trees (1)

> 20" dbh	6
12 - < 20	4
6 - < 12	2
< 6	0

3. Number of Native Tree Species
(≥ 6" dbh) (1)

> 6	6
4 - 6	4
2 - 3	2
1	0

4. Number of Woody Vegetation Layers (2)

≥ 5	6
4	4
3	2
< 3	0

5. Number of Native Shrub Species (1)
(April through October)

> 6	3
4 - 6	2
2 - 3	1
1	0

6. Number of Common Native Herbaceous
Species (1) (April through October)

> 12	3
8 - 12	2
3 - 7	1
> 1	0

7. Average Litter Depth* (in.) (2)

> 6	3
4 - 6	2
1 - 3	1
< 1	0

Total Value = _____

- (1) From Data Sheet 1A
(2) From Data Sheet 2A

* exclusive of fresh leaf fall in the autumn

HABITAT POTENTIAL FOR FOREST INTERIOR BIRD (FIB) SPECIES

If the forested area is ≥ 25 acres, or if the forested area and any adjacent forest combined is ≥ 25 acres, indicate Breeding Bird Atlas Survey documentation for FIB species within the nearest sixth block of the appropriate USGS topographical quadrangle: _____

DATASHT.2B/TXTPHC

FOREST CONSERVATION WORKSHEET FOR BALTIMORE COUNTY

PROJECT NAME/PROPERTY OWNER: _____ DATE: _____

LOCATION: _____ REVISION: _____

REVIEWED BY: _____ APPROVAL DATE: _____

I. BASIC SITE DATA

ACRES
(0.1 acre)

GROSS SITE AREA _____
AREA WITHIN 100 YEAR FLOODPLAIN _____
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL (if applicable) _____
AREA IN OVERHEAD TRANSMISSION LINE EASEMENTS (if applicable) _____
NET TRACT AREA _____
LAND USE CATEGORY (see p.31 of Manual or Baltimore County Code,
Section 14-410B) _____

II. INFORMATION FOR CALCULATIONS

A. NET TRACT AREA _____
B. FOREST CONSERVATION THRESHOLD (% x A) _____
C. AFFORESTATION THRESHOLD (% x A) _____
D. EXISTING FOREST ON NET TRACT AREA _____
E. EXISTING FOREST ABOVE FOREST CONSERVATION THRESHOLD _____
F. BREAK-EVEN POINT (the amount of forest to be retained for no
mitigation) {(E x 0.2) + B} _____
G. FOREST TO BE CLEARED _____
H. FOREST TO BE RETAINED _____

III. APPLICABILITY OF AFFORESTATION AND REFORESTATION TO SITE

1. Afforestation Only

If existing forest areas are below the Afforestation Threshold (if D is less than C), and no forest clearing is proposed, afforestation requirements apply.

GO TO SECTION IV

2. Combined Afforestation and Reforestation

If existing forest areas are below the Afforestation Threshold (if D is less than C) AND clearing of forest is proposed, both afforestation and reforestation are required.

GO TO SECTION IV

3. Reforestation Only

- a) If existing forest areas are at or above the Afforestation Threshold (if D is equal to or greater than C) and no clearing of existing forest resources is proposed, no reforestation is required. STOP. No further calculations are needed.
- b) If existing forest areas are retained at or above the breakeven point (if H is equal to or greater than F), STOP. No further calculations are needed and no mitigation is required.
- c) If existing forest areas are at or above the Afforestation Threshold (if D is equal to or greater than C), and clearing of forest areas is proposed, reforestation requirements may apply.

GO TO SECTION V

IV. AFFORESTATION CALCULATIONS

ACRES
(0.1 acre)

- A. NET TRACT AREA
- C. AFFORESTATION THRESHOLD (_____ % x A)
- D. EXISTING FOREST ON NET TRACT AREA
- G. FOREST AREAS TO BE CLEARED
- H. FOREST AREAS TO BE RETAINED

Select the alternative that applies:

1. No clearing:

If existing forest areas are below the Afforestation Threshold (if D is less than C) and no clearing is proposed, the following calculations apply:

TOTAL AFFORESTATION REQUIRED C - D

Afforestation must make the forest area equal to the minimum required by the Afforestation Threshold.

2. Clearing:

If existing forest areas are below the Afforestation Threshold (if D is less than C) and clearing is proposed, the following calculations apply:

AFFORESTATION FOR UNFORESTED AREAS BELOW AFFORESTATION THRESHOLD C - D

REFORESTATION FOR CLEARING BELOW AFFORESTATION THRESHOLD G x 2

TOTAL PLANTING REQUIRED (C - D) + (G x 2)

The afforestation planting brings the site up to the minimum forest required (the Afforestation Threshold). The reforestation component compensates for clearing.

STOP

V. REFORESTATION CALCULATIONS

ACRES
(0.1 acre)

- A. NET TRACT AREA _____
- B. FOREST CONSERVATION THRESHOLD (_____ % X A) _____
- D. EXISTING FOREST ON NET TRACT AREA _____
- E. EXISTING FOREST ABOVE FOREST CONSERVATION THRESHOLD _____
- G. FOREST AREAS TO BE CLEARED _____
- H. FOREST AREAS TO BE RETAINED _____
- I. FOREST AREAS CLEARED ABOVE FOREST CONSERVATION THRESHOLD
(If H equals or is greater than B, Alternate 1. If H is less than B, Alternate 2.) _____
- J. FOREST AREAS CLEARED BELOW FOREST CONSERVATION THRESHOLD
(B-H, if applicable) _____
- K. FOREST AREAS RETAINED ABOVE FOREST CONSERVATION THRESHOLD
(H-B, Retention Credit, if applicable) _____

Select the alternative that applies:

1. Clearing Above the Forest Conservation Threshold Only

If forest areas to be retained are at or above the Forest Conservation Threshold (if H is equal to or greater than B), the following calculations apply:

- REFORESTATION FOR CLEARING ABOVE THRESHOLD $I \times \frac{1}{4}$ _____
- CREDIT FOR FOREST AREAS RETAINED ABOVE THRESHOLD _____
- K = Retention Credit _____
- TOTAL REFORESTATION REQUIRED $(I \times \frac{1}{4}) - K$ _____

If the total reforestation requirement is equal to or less than 0, no reforestation is required.

2. Clearing Below the Forest Conservation Threshold

If forest areas to be retained are below the Forest Conservation Threshold (if H is less than B), the following calculations apply:

- REFORESTATION FOR CLEARING ABOVE THRESHOLD $I \times \frac{1}{4}$ _____
- REFORESTATION FOR CLEARING BELOW THRESHOLD $J \times 2$ _____
- TOTAL REFORESTATION REQUIRED $(I \times \frac{1}{4}) + (J \times 2)$ _____

STOP

Appendix E

Rare Species of Concern to the Maryland
Natural Heritage Program

RARE AND ENDANGERED PLANT SPECIES
RECORDED FOR BALTIMORE COUNTY

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>
ADLUMIA FUNGOSA	CLIMBING FUMITORY
AGALINIS ACUTA	SANDPLAIN GERARDIA
AGALINIS DECEMLOBA	BLUE RIDGE FALSE-FOXGLOVE
AGALINIS FASCICULATA	
AGALINIS SETACEA	THREAD-LEAVED GERARDIA
AGASTACHE SCROPHULARIIFOLIA	PURPLE GIANT HYSSOP
AMMANNIA LATIFOLIA	KOEHNE'S AMMANNIA
ARABIS MISSOURIENSIS	MISSOURI ROCKCRESS
ARNICA ACAULIS	LEOPARD'S-BANE
ARUNDINARIA GIGANTEA	GIANT CANE
ASCLEPIAS RUBRA	RED MILKWEED
ASPLENIUM BRADLEYI	BRADLEY'S SPLEENWORT
ASPLENIUM PINNATIFIDUM	LOBED SPLEENWORT
ASTER CONCOLOR	SILVERY ASTER
ASTER DEPAUPERATUS	SERPENTINE ASTER
ATHYRIUM PYCNOCARPON	GLADE FERN
BETULA POPULIFOLIA	GRAY BIRCH
BIDENS BIDENTOIDES	MARYLAND BUR-MARIGOLD
BIDENS CORONATA	TICKSEED SUNFLOWER
BOUTELOUA CURTIPENDULA	SIDE-OATS GRAMA
BROMUS LATIGLUMIS	BROAD-GLUMED BROME
BROMUS NOTTOWAYANUS	NOTTOWAY'S BROME GRASS
CACALIA MUHLENBERGII	GREAT INDIAN-PLANTAIN
CALOPOGON TUBEROSUS	GRASS-PINK
CAREX AGGREGATA	GLOMERATE SEDGE
CAREX BREVIOR	A SEDGE
CAREX BROMOIDES	BROME-LIKE SEDGE
CAREX BULLATA	BUTTON SEDGE
CAREX HYSTRICINA	PORCUPINE SEDGE
CAREX LANUGINOSA	WOOLLY SEDGE
CAREX LEAVENWORTHII	LEAVENWORTH'S SEDGE
CAREX MESOCHOREA	MIDLAND SEDGE
CAREX STRIATULA	LINED SEDGE
CAREX TENERA	SLENDER SEDGE
CAREX TRICHOCARPA	HAIRY-FRUITED SEDGE
CAREX VESTITA	VELVETY SEDGE
CAREX WOODII	WOOD'S SEDGE
CHENOPODIUM STANDLEYANUM	STANDLEY'S GOOSEFOOT
COELOGLOSSUM VIRIDE	LONG-BRACTED ORCHIS
CORALLORHIZA WISTERIANA	WISTER'S CORALROOT
DESCHAMPSIA CESPITOSA	TUFTED HAIRGRASS
DESMODIUM LAEVIGATUM	SMOOTH TICK-TREFOIL
DESMODIUM LINEATUM	LINEAR-LEAVED TICK-TREFOIL
DESMODIUM RIGIDUM	RIGID TICK-TREFOIL
DESMODIUM SESSILIFOLIUM	SESSILE-LEAVED TICK-TREFOIL
DESMODIUM STRICTUM	STIFF TICK-TREFOIL
DIRCA PALUSTRIS	LEATHERWOOD
DRYOPTERIS CELSA	LOG FERN

ELEOCHARIS INTERMEDIA	MATTED SPIKERUSH
ELEOCHARIS TORTILIS	TWISTED SPIKERUSH
EQUISETUM SYLVATICUM	WOOD HORSETAIL
ERIOCAULON PARKERI	PARKER'S PIPEWORT
EUPATORIUM LEUCOLEPIS	WHITE-BRACTED BONESET
EUPATORIUM MACULATUM	SPOTTED JOE-PYE-WEED
EUPHORBIA PURPUREA	DARLINGTON'S SPURGE
FESTUCA PARADOXA	CLUSTER FESCUE
FILIPENDULA RUBRA	QUEEN-OF-THE-PRAIRIE
GENTIANA ANDREWSII	FRINGE-TIP CLOSED GENTIAN
GENTIANA VILLOSA	STRIPED GENTIAN
GENTIANOPSIS CRINITA	FRINGED GENTIAN
GERANIUM ROBERTIANUM	HERB-ROBERT
GYMNOCLADUS DIOICUS	KENTUCKY COFFEE-TREE
HELIANTHEMUM BICKNELLII	HOARY FROSTWEED
HIEROCHLOE ODORATA	HOLY GRASS
HYDRASTIS CANADENSIS	GOLDENSEAL
HYPERICUM DENTICULATUM	COPPERY ST. JOHN'S-WORT
JUNCUS TORREYI	TORREY'S RUSH
LACTUCA HIRSUTA	HAIRY LETTUCE
LIMOSELLA SUBULATA	MUDWORT
LINUM SULCATUM	GROOVED YELLOW FLAX
LYCOPODIUM INUNDATUM	BOG CLUBMOSS
LYGODIUM PALMATUM	CLIMBING FERN
MATELEA OBLIQUA	ANGELPOD
MATTEUCCIA STRUTHIOPTERIS	OSTRICH FERN
MELANTHIUM LATIFOLIUM	BROAD-LEAVED BUNCHFLOWER
MONOTROPSIS ODORATA	SWEET PINESAP
NAJAS GRACILLIMA	THREAD-LIKE NAIAD
PANICUM FLEXILE	WIRY WITCH-GRASS
PANICUM OLIGOSANTHES	FEW-FLOWERED PANICGRASS
PEDICULARIS LANCEOLATA	SWAMP LOUSEWORT
PHALARIS CAROLINIANA	MAY GRASS
PILEA FONTANA	COOLWORT
PLATANThERA FLAVA	PALE GREEN ORCHIS
PLATANThERA PERAMOENA	PURPLE FRINGELESS ORCHIS
PLATANThERA PSYCODES	SMALL PURPLE-FRINGED ORCHIS
POA LANGUIDA	WEAK SPEARGRASS
POA PALUSTRIS	FOWL BLUEGRASS
POLEMONIUM VAN-BRUNTIAE	JACOB'S-LADDER
POTAMOGETON PERFOLIATUS	CLASPING-LEAVED PONDWEED
POTAMOGETON SPIRILLUS	SPIRAL PONDWEED
POTENTILLA ARGUTA	TALL CINQUEFOIL
PYCNANTHEMUM TORREI	TORREY'S MOUNTAIN-MINT
PYCNANTHEMUM VIRGINIANUM	VIRGINIA MOUNTAIN-MINT
QUERCUS MACROCARPA	MOSSY-CUP OAK
RANUNCULUS PENNSYLVANICUS	BRISTLY CROWFOOT
RHYNCHOSPORA CEPHALANTHA	CAPITATE BEAKRUSH
ROSA SETIGERA	PRAIRIE ROSE
RODALA RAMOSIOR	TOOTH-CUP
SAGITTARIA TERES	SLENDER ARROWHEAD
SALIX BEBBIANA	BEBB'S WILLOW
SCIRPUS SMITHII	SMITH'S CLUBRUSH
SCLERIA RETICULARIS	RETICULATED NUTRUSH

SCUTELLARIA LEONARDII
SENECIO ANONYMUS
SILENE NIVEA
SOLIDAGO HISPIDA
SOLIDAGO SPECIOSA
SPOROBOLUS ASPER
STACHYS HYSSOPIFOLIA
STACHYS LATIDENS
TALINUM TERETIFOLIUM
THASPIUM TRIFOLIATUM
TOFIELDIA RACEMOSA
TRIOSTEUM ANGUSTIFOLIUM
VITIS CINEREA
VITIS RUPESTRIS

LEONARD'S SKULLCAP
SMALL'S RAGWORT
SNOWY CAMPION
HAIRY GOLDENROD
SHOWY GOLDENROD
LONG-LEAVED RUSHGRASS
HYSSOP-LEAVED HEDGE-NETTLE

FAMEFLOWER
PURPLE MEADOW-PARSNIP
COASTAL FALSE ASPHODEL
NARROW-LEAVED HORSE-GENTIAN
GRAYBARK
SAND GRAPE

RARE AND ENDANGERED ANIMAL SPECIES
RECORDED FOR BALTIMORE COUNTY

SCIENTIFIC NAME

COMMON NAME

BARTRAMIA LONGICAUDA
BOTHAURUS LENTIGINOSUS
CIRCUS CYANEUS
EMPIDONAX ALNORUM
LATERALLUS JAMAICENSIS
STERNA ANTILLARUM

UPLAND SANDPIPER
AMERICAN BITTERN
NORTHERN HARRIER
ALDER FLYCATCHER
BLACK RAIL
LEAST TERN

RARE SPECIES OF CONCERN TO THE MARYLAND NATURAL HERITAGE PROGRAM

ANIMALS

Planarians

Phagocata virilis	A planarian
Planaria dactyligera	A planarian
Sphalloplana sp 1	A planarian

Molluscs

Alasmidonta undulata	Triangle floater
Alasmidonta varicosa	Brook floater
Anguispira clarki	Clark's beehive snail
Lampsilis cariosa	Yellow lampmussel

Crustaceans

Ankylocythere tridentata	An entocytherid ostracod
Attheyella spinipes	A harpacticoid copepod
Caecidotea sp 1	An isopod
Caecidotea sp 2	An isopod
Caecidotea sp 3	An isopod
Dactylocythere scotos	An entocytherid ostracod
Diacyclops palustris	A cyclopoid copepod
Eulimnadia francesae	A conchostracan phyllopod
Eulimnadia ventricosa	A conchostracan phyllopod
Stygobromus pizzinii	Pizzini's cave amphipod
Stygobromus sp 5	Crabtree cave amphipod
Stygobromus sp 6	An undescribed amphipod

Spiders

Atypus bicolor	American purse-web spider
Oreonetides sp 1	Snivelys cave spider
Porrhomma cavernicolum	Appalachian cave spider

Insects

Amblyscirtes hegon	Pepper-and-salt skipper
Apamea apamiformis	A noctuid moth
Apamea plutonia	A noctuid moth
Arrhopalites sp 1	Crabtree cave springtail
Capis curvata	A noctuid moth
Catocala marmorata	Marbled underwing
Catocala pretiosa	Precious underwing
Chlorotettix sp 1	A cicadellid leafhopper
Cicindela lepida	Little white tiger beetle
Cicindela patruela	A tiger beetle
Colias interior	Pink-edged sulphur
Cyclophora nanaria	A geometrid moth
Cyllopsis gemma	Gemmed satyr
Dasychira atrivenosa	A lymantriid moth
Ectoedemia castaneae	American chestnut nepticulid moth
Ectoedemia phleophaga	Phleophagan chestnut nepticulid moth
Elaphria georgei	A noctuid moth
Erynnis persius	Persius duskywing
Euchloe olympia	Olympia marble
Euphyes pilatka	Saw-grass skipper
Hadena ectypa	A noctuid moth

Hemileuca maia ssp 4
Hesperia attalus
Hesperia sassacus
Hoperius planatus
Hydrochara occulta
Hydrochus sp 1
Isoparce cupressi
Laccophilus schwarzi
Limotettix sp 1
Lucanus elephas
Meropleon titan
Mitoura hesseli
Nicrophorus americanus
Papaipema duovata
Papaipema marginidens
Papaipema polymniae
Papilio cresphontes
Papilio palamedes
Potamanthus walkeri
Satyrium acadica
Satyrium kingi
Schinia parmeliana
Scymnus gordonii
Sperchopsis tessellatus
Speyeria diana
Sphinx franckii
Stylurus notatus
Synanthedon castaneae
Tachopteryx thoreyi
Xestia bollii

Fishes

Acantharchus pomotis
Acipenser oxyrinchus
Centrarchus macropterus
Clinostomus elongatus
Enneacanthus chaetodon
Fundulus luciae
Noturus flavus
Percina caprodes

Amphibians

Plethodon wehrlei
Pseudacris brachyphona
Rana virgatipes

Reptiles

Apalone spinifera
Graptemys geographica
Pituophis melanoleucus

Birds (breeding only)

Accipiter striatus
Aegolius acadicus
Ammodramus henslowii

Woodland buckmoth
Dotted skipper
Indian skipper
A hydrophyllid beetle
A hydrophyllid beetle
Seth forest water scavenger beetle
Cypress sphinx moth
Schwarz' diving beetle
Eastern sedge barrens planthopper
Giant stag beetle
A noctuid moth
Hessel's hairstreak
American burying beetle
A noctuid moth
A noctuid moth
Polymnia stalk borer
Giant swallowtail
Palamedes swallowtail
Walker's tusked sprawler
Acadian hairstreak
King's hairstreak
A noctuid moth
A coccinellid beetle
A hydrophyllid beetle
Diana
Franck's sphinx
Elusive clubtail dragonfly
Chestnut clearwing moth
Thorey's grayback damselfly
A noctuid moth

Mud sunfish
Atlantic sturgeon
Flier
Redside dace
Blackbanded sunfish
Spotfin killifish
Stonecat
Logperch

Wehrle's salamander
Mountain chorus frog
Carpenter frog

Eastern spiny softshell
Map turtle
Northern pine snake

Sharp-shinned hawk
Northern saw-whet owl
Henslow's sparrow

Asio flammeus
Asio otus
Botaurus lentiginosus
Catharus ustulatus
Circus cyaneus
Cistothorus platensis
Dendroica coronata
Egretta caerulea
Empidonax alnorum
Gallinula chloropus
Ixobrychus exilis
Junco hyemalis
Laterallus jamaicensis
Limnothlypis swainsonii
Lophodytes cucullatus
Podilymbus podiceps
Porzana carolina
Regulus satrapa
Sitta canadensis
Sphyrapicus varius
Sterna antillarum
Sterna sandvicensis
Troglodytes troglodytes
Vermivora ruficapilla

Mammals

Condylura cristata parva
Erethizon dorsatum
Mustela nivalis
Myotis leibii
Neotoma floridana magister
Sorex dispar
Sorex hoyi winnemana
Sorex longirostris
Spilogale putorius
Sylvilagus transitionalis
Ursus americanus

PLANTS

Abies balsamea
Agalinis decemloba
Agalinis linifolia
Agalinis skinneriana
Alnus maritima
Alopecurus aequalis
Alopecurus carolinianus
Ammannia coccinea
Ammannia latifolia
Ampelopsis arborea
Ampelopsis cordata
Amsonia tabernaemontana
Anemone riparia
Arabis glabra
Arabis hirsuta
Aristida curtissii

Short-eared owl
Long-eared owl
American bittern
Swainson's thrush
Northern harrier
Sedge wren
Yellow-rumped warbler
Little blue heron
Alder flycatcher
Common moorhen
Least bittern
Dark-eyed junco
Black rail
Swainson's warbler
Hooded merganser
Pied-billed grebe
Sora
Golden-crowned kinglet
Red-breasted nuthatch
Yellow-bellied sapsucker
Least tern
Sandwich tern
Winter wren
Nashville warbler

Southeastern star-nosed mole
Porcupine
Least weasel
Eastern small-footed bat
Eastern woodrat
Long-tailed shrew
Southern pygmy shrew
Southeastern shrew
Eastern spotted skunk
New england cottontail
Black bear

Balsam fir

Seaside alder
Short-awned foxtail
Carolina foxtail

Koehne's ammannia
Pepper-vine

Blue dogbane
Large white anemone
Tower mustard
Hairy rockcress
Curtiss' three-awn

Aristida tuberculosa	Sea-beach three-awn
Aster nemoralis	Bog aster
Aster praealtus	Willow aster
Aster sagittifolius	Arrow-leaved aster
Azolla caroliniana	Mosquito fern
Bacopa monnieri	
Betula populifolia	Gray birch
Blephilia hirsuta	Hairy woodmint
Bouteloua curtipendula	Side-oats grama
Calystegia spithamea	Low bindweed
Campanula rotundifolia	Harebell
Cardamine pratensis	Cuckooflower
Carex arenaria	Sand sedge
Carex brevior	
Carex cephaloidea	Thin-leaved sedge
Carex echinata	Little prickly sedge
Carex emoryi	Emory's sedge
Carex meadii	Mead's sedge
Carex projecta	Necklace sedge
Carex retrorsa	
Carex richardsonii	Richardson's sedge
Carex rostrata	Beaked sedge
Carex rugosperma	
Carex tonsa	Shaved sedge
Carex trichocarpa	Hairy-fruited sedge
Carex typhina	Cat-tail sedge
Celtis laevigata	Sugarberry
Centrosema virginianum	Spurred butterfly-pea
Chaerophyllum tainturieri	
Chamaesyce vermiculata	Hairy spurge
Chenopodium leptophyllum	Narrow-leaved goosefoot
Cimicifuga americana	American bugbane
Clintonia alleghaniensis	Harned's swamp clintonia
Corydalis aurea	Golden corydalis
Croton capitatus	Hogwort
Croton monanthogynus	Prairie-tea
Cuscuta indecora	
Cyperus houghtonii	
Cyperus refractus	Reflexed cyperus
Cyperus retrofractus	Rough cyperus
Cystopteris tennesseensis	Tennessee bladder-fern
Desmodium viridiflorum	
Dioscorea hirticaulis	Wild yam
Eleocharis flavescens	Pale spikerush
Eleocharis geniculata	Capitate spikerush
Eleocharis tortilis	Twisted spikerush
Epilobium leptophyllum	Linear-leaved willowherb
Eragrostis hirsuta	
Erianthus alopecuroides	Woolly beardgrass
Erigeron pulchellus	Lucy Braun's robin plantain
var brauntiae	
Eriocaulon compressum	Flattened pipewort
Eriocaulon decangulare	Ten-angled pipewort
Euphorbia zinniiflora	Flowering spurge
Fimbristylis puberula	Hairy fimbristylis

Galax aphylla
Galium palustre
Gymnocladus dioicus
Helianthus hirsutus
Houstonia tenuifolia
Juncus articulatus
Juncus brevicaudatus
Juncus polycephalus
Liatris spicata
Limonium nashii
Ludwigia brevipes
Ludwigia decurrens
Lycopodium inundatum
Lycopodium sabinifolium
Manfreda virginica
Matteuccia struthiopteris
Muhlenbergia glabriflora
Muhlenbergia glomerata
Myriophyllum heterophyllum
Nemophila aphylla
Nymphaea tuberosa
Oldenlandia uniflora
Panicum aciculare
Panicum aculeatum
Panicum angustifolium
Panicum commonsianum
Panicum laxiflorum
Panicum leucothrix
Panicum tuckermanii
Panicum yadkinense
Passiflora incarnata
Pilea fontana
Poa alsodes
Poa languida
Poa palustris
Polygonum amphibium
Polygonum careyi
Polygonum glaucum
Polygonum opelousanum
Polygonum setaceum
Populus balsamifera
Potamogeton illinoensis
Potamogeton natans
Potamogeton perfoliatus
Potamogeton pusillus
Potamogeton spirillus
Potentilla arguta
Prunus pumila
Psoralea psoralioides
Pycnanthemum virginianum
Quercus laurifolia
Quercus macrocarpa
Quercus shumardii
Ranunculus laxicaulis
Rhododendron calendulaceum

Galax
Marsh bedstraw
Kentucky coffee-tree
Hirsute sunflower
Slender-leaved bluets
Jointed rush
Narrow-panicled rush

Spiked blazing-star
Nash's sea lavender
Creeping ludwigia

Bog clubmoss
Ground-fir
False aloe
Ostrich fern

Broadleaf water-milfoil

Tuberous white water lily
Clustered bluets
Bristling panicgrass
Tall rough panicgrass
Narrow-leaved panicgrass
Commons' panicgrass

Roughish panicgrass
Tuckerman's panicgrass

Purple passionflower
Coolwort
Grove meadow-grass
Weak spargrass
Fowl bluegrass
Water smartweed
Carey's knotweed
Seaside knotweed
Opelousas smartweed
Bristly smartweed
Balsam poplar
Illinois pondweed
Floating pondweed
Clasping-leaved pondweed
Slender pondweed
Spiral pondweed
Tall cinquefoil
Eastern dwarf cherry

Virginia mountain-mint
Laurel-leaved oak
Mossy-cup oak
Shumard's red oak

Flame azalea

Rhododendron canescens	Skunk currant
Ribes glandulosum	Low wild gooseberry
Ribes hirtellum	Prairie rose
Rosa setigera	Engelmann's dock
Rumex hastatulus	Long-beaked arrowhead
Sagittaria longirostra	Pussy willow
Salix discolor	Dwarf prairie willow
Salix tristis	Salt-marsh bulrush
Scirpus cylindricus	River bulrush
Scirpus fluviatilis	
Scirpus verecundus	
Scleria reticularis	Reticulated nutrush
Scleria triglomerata	Tall nutrush
Scutellaria galericulata	Common skullcap
Sesuvium maritimum	Sea-purslane
Sibara virginica	Virginia cress
Smilax ecirrhata	Upright smilax
Solidago stricta	Wandlike goldenrod
Spiranthes laciniata	Lace-lip ladys' tresses
Spiranthes praecox	Grass-leaved ladys' tresses
Sporobolus asper	Long-leaved rushgrass
Stachys clingmanii	Clingman's hedge-nettle
Stachys cordata	Nuttall's hedge-nettle
Stachys hyssopifolia	Hyssop-leaved hedge-nettle
Stachys latidens	
Streptopus amplexifolius	White mandarin
Stylophorum diphyllum	
Symplocos tinctoria	Sweetleaf
Thalictrum dasycarpum	Purple meadowrue
Thalictrum macrostylum	
Thalictrum subtrotundum	
Thelypteris phegopteris	Northern beech fern
Tillandsia usneoides	Spanish moss
Tofieldia glutinosa	False asphodel
Triadenum tubulosum	
Trichostema setaceum	Narrow-leaved bluecurls
Triglochin maritimum	Seaside arrow-grass
Utricularia cornuta	Horned bladderwort
Uvularia grandiflora	Large-flowered bellwort
Verbesina virginica	
Vernonia gigantea	Giant ironweed
Viburnum lentago	Nannyberry
Viola appalachiensis	Appalachian blue violet
Viola incognita	Large-leaved white violet
Viola septentrionalis	Northern blue violet
Vitis cinerea	Graybark
Vitis rupestris	Sand grape
Wolffia papulifera	
Wolffia punctata	Water-meal
Xyris difformis	Variable yelloweyed-grass
Zephyranthes atamasca	Atamasco lily

7/23/91

Appendix F

Protective Agreements for
Forest Conservation Areas

Protective Agreements
for
Forest Conservation Areas

Deed restrictions are a means of protecting or restricting the use of certain land areas. The restrictions are binding and are recorded with the land records for that property. For the purposes of this Act, any areas set aside for preservation shall be protected by deed restrictions. These areas include but are not limited to:

1. Trees, shrubs and plants located in sensitive areas including 100 year floodplain, intermittent and perennial streams and their buffers, steep slopes and critical habitats.
2. Contiguous forest that connects the largest undeveloped or most vegetated tracts of land within and adjacent to the site.
3. Trees, shrubs or plants identified on the list of rare, threatened and endangered species.
4. Trees that are part of a historic site or associated with a historic structure, or trees designated by the Department or local authority as a national, state or local champion trees.
5. Trees having a diameter measured at 4.5 feet above ground of:
 - a. 30 inches or more; or
 - b. 75% or more of the diameter, measured at 4.5 feet above ground, of the current state champion tree of that species.
6. Existing or established forested buffers adjacent to intermittent and perennial streams.
7. Existing or established forested buffers adjacent to critical habitat.
8. All land retained on site as forest whether it was forested, afforested, or reforested.

The restrictions shall limit the uses of forest to those activities that are consistent with forest conservation, such as recreational activities, forest management, and wildlife management. Covenants and conservation easements are the primary method used to accomplish this. Covenants are deed restrictions that tell what may and may not occur on the property. Covenants may include statements that allow for the removal of dead or dying trees, limit clearing of the forest understory, provide for removal of noxious plants or weeds allow for the development of passive recreational uses such as hiking or nature study, allow forest and wildlife management activities to take place, or prevent the dumping of trash or other material within the protected areas.

Conservation easements are another protective device for land. The easement is usually held by a non-profit organization such as Maryland Environmental Trust or Chesapeake Bay Foundation. These easements may be negotiated to allow the owner certain uses of the property while prohibiting future development. A more detailed explanation of easement is attached.

Forest management practices are allowed within all land retained on site as forest whether it is forested, afforested or reforested, and that is not included in items 1 through 7 above. The property owner may place forest in the Forest Conservation and Management Program or under a forest management plan. Additional information about the Forest Conservation and Management Program is attached. In either case, a forest management plan written by a professional forester, licensed by the State of Maryland, shall be required prior to commencement of any forest practice. The forest management plan shall conform to the format shown here. Reforestation shall be required when a final regeneration harvest is complete or if determined to be necessary due to the lack of adequate natural regeneration.

For information concerning the development of a forest management plan, please contact the Department of Natural Resources project forester for Baltimore County at:

9405 Old Harford Road
Baltimore, Maryland 21234
Telephone: 665-5820

Conservation Easements

Any land which demonstrates a definite conservation purpose can be protected by an easement. This includes forestland, farmland, wetlands, meadows, endangered species habitat, beaches, scenic areas, natural areas, wild and scenic rivers, historic sites, and any other type of land which is basically undeveloped. An easement is an effective way for property owners to control the future appearance and character of their land. There are no negative impacts on neighboring property values.

The major benefits of easements are:

1. Permanent protection of open space, farmland, forestland and historic sites.
2. Flexible easement provisions tailored to the needs of the owner.
3. Long term monitoring with future owners.
4. Federal and state income tax benefits.
5. Lower estate and inheritance taxes due to the reduced development potential of the property.
6. Fifteen year property tax credit on the unimproved portions of the property.

Easements are generally perpetual. The landowner who gives an easement gives up the right to develop the land, both now and in the future. The terms of the easement therefore apply to all present and future owners of the land. Easements are executed in the form of a deed and are recorded with the land records of the county.

The easement allows for additions and modifications to existing structures construction of accessory and farm structures, logging in accordance with accepted forestry practices, and normal agricultural practices. The easement prohibits commercial, industrial and residential development, the dumping of waste materials, the erection of billboards, and excavation, dredging and mining activities, with some exemptions.

Because the easement restricts the economic and development uses of the property, the fair market value of the land is often reduced. Also, if the terms of the easement are breached, restoration of the property to its prior condition is required.

Forest Conservation and Management Program

A Forest Conservation and Management Agreement is a binding contract between a landowner and the Maryland Department of Natural Resources which provides for the freezing of the assessment of forested areas if the property is managed according to sound forest conservation principles. A forest resource management plan, written by a professional forester licensed by the State of Maryland, is required and must be approved by the Department. A tax savings results from the freezing of the property taxes at an agricultural rate at the time the contract is let.

Any owner of 5 or more contiguous acres of forest land may enter the Forest Conservation and Management Program. Open land that was recently planted to forest tree seedlings can be included. So can land that is used to grow Christmas trees if they will be cut at harvest. The agreement does not apply to the assessment on house sites, other structures, crop land, mining sites and other non-forested open space.

Forest Management is often considered the art and science of matching the owners objectives with biological requirements of the forest. Good forest management results in a healthy forest which will produce quality timber, increase income of the owner, reduce soil erosion and flooding, and provide open space for recreation and aesthetic enjoyment. Tree species, soils, topography, tree age, property location and other factors will have to be evaluated as well as the owners desires and the requirement of the law. The plan must contain a detailed schedule of practices to be accomplished and their completion date.

The contract must cover a minimum of 15 years. A memorandum of the contract and any subsequent changes are recorded at the county courthouse. The contract can be renewed indefinitely if forest conservation practices are approved and are accomplished. The contract can be assigned and transferred to a new owner of the property if the buyer agrees to assume the obligation for the agreement. The property will be re-assessed if the agreement ends, the agreement is terminated or the property changes hands. A nominal administrative fee is charged to the owner upon entering the program, when changes to the agreement must be made and for each five year inspection.

FOREST MANAGEMENT PLAN

for

(Landowner's Name)

(Address)

(Property Location)

(Maryland Grid Coordinates)

In

_____ County

on

_____ Acres

Prepared By:

Date

- A. Landowner's Objectives

- B. Soil Types: List the primary soil types on the property with a general narrative of their capabilities and productivity.

- C. Topography: A brief description of the aspect and slopes, and the limitations it might impose on the proposed management.

- D. Forest Stand Delineation: This section is to be used by the forester to describe the results of forest data collection. This section shall also include all relevant data about the site collected through any previous field inventories and/or environmental reviews.

- E. Management Recommendations:
 - 1. Forestland

 - 2. Open Land

 - 3. Wetlands

- F. Management Practice Schedule

G. Map shall include the following features:

1. North arrow
2. Acreage
3. Scale
4. Date of preparation
5. Critical habitat areas
6. Stream buffers
7. Locality or distinguishing landmarks
8. Specimen trees
9. Public and private roads
10. Property boundary
11. Slopes greater than 25%
12. Perennial and Intermittent streams
13. Non-tidal wetlands

Preparation of Forest Management Plans

Forest Management Plans shall be prepared by professional foresters, licensed by the State of Maryland.

Sample Forest Management Objectives

1. Provide passive recreation opportunities (such as nature trails, nature observation, photography, etc.).
2. Provide for wildlife habitat.
3. Protect habitat for endangered or special plant/wildlife communities.
4. Improve hunting opportunities.
5. Provide for income through timber resource development and harvesting.
6. Provide firewood and timber products for the landowners use.

Timber Harvest Plan

for

Landowner:

Address:

Phone Number:

County:

Location:

Stand:

Acres:

Description:

Timber Harvest Plan

Landowner:

Acreage:

Owner's Management Goal(s):

Dominant Tree Species In Stand:

Dominant Understory Species In Stand:

Dominant Soil Series:

Slope Range:

Type of Harvest (Clearcut, Shelterwood, Deferred Rotation, Seedtree, Thinning, Selection, etc.)

Current Basal Area:

Post Harvest Basal Area:

DBH of Dominant Timber Size Class:

Proposed Site Preparation Method (if necessary):

Proposed Regeneration Method and Desired Stocking:

Other Laws and Ordinances that may apply to the Harvest Site (Seed Tree, FCMA, Forest Conservation Act, Sediment Control, etc.)

A Sediment and Erosion Control Plan for Forest Harvest Operations has been/will be (circle one) prepared for submittal to the county Soil Conservation District for its review and approval. All work will be done in compliance with the approved plan.

Describe measures that will be taken to provide for wildlife corridors and continuity of habitat.

Critical Habitat and Protection Areas

Note If harvesting is to occur in or adjacent to any of the following (yes or no):

- A. 50 foot buffer along perennial or intermittent streams
- B. Non-tidal wetlands
- C. Habitat for threatened and endangered species, and their protection areas
- D. Natural Heritage Areas

For each positive response to C or D, include an attachment with the following information:

1. Delineation of the critical habitat and protection area within the stand.
2. How the harvest will be modified to conform with the critical habitat protection requirements in the local program.
3. Attach the appropriate survey information and/or Natural Heritage Program recommendations.

Appendix G

1. **Typical Forest Cover Types in Baltimore County**
2. **Plant Species for Reforestation/Afforestation Projects**
3. **Comments on Reforestation/Afforestation Plantings**

TYPICAL FOREST COVER TYPES IN BALTIMORE COUNTY
(Society of American Foresters Designations)

PIEDMONT SECTION

White Oak - Black Oak - Northern Red Oak (52)

Natural Occurrence: Widespread at upland sites.

Key Species Distribution:

White Oak - Common from moist to dry conditions

Black Oak - Abundant on drier south and west aspects, upper slopes and ridges.

Northern Red Oak - Common in moist sites on lower and middle slopes, on north and east aspects.

Common Understory Associates:

Flowering dogwood

Sassafras

Serviceberry species

Eastern redbud

American hornbeam

Eastern hophornbeam

Witch-hazel

American hazelnut

Mountain laurel

Pinxter azalea

Spicebush

Vaccinium species

Viburnum species

Note: After severe disruptions, e.g., clearcutting, wildfire or serious windstorms, tuliptree (tulip-poplar) and white ash tend to increase on the sites, and may hold dominance for decades.

PIEDMONT SECTION

Tuliptree - White Oak - Northern Red Oak (59)

This is a variant of the northern red oak association and is frequently found on sites that have undergone heavy cutting, wildfire or blowdowns in tuliptree (tulip poplar) or mixed hardwood communities.

Natural Occurrence: Moist north and east facing slopes, and on well-drained flats.

Common Understory Associates:

Lower elevations

Black locust

White ash

Black walnut

Sweet birch

Butternut

Eastern hemlock

Higher elevations

Black cherry

Cucumbertree

Buckeye

White ash

American beech

White pine

Yellow birch

Sugar maple

Red maple

Also common throughout:

Oak species

Hickory species

PIEDMONT SECTION

Chestnut Oak (44)

Natural Occurrence: usually dry, upland sites on thin-soiled, rocky outcrops, and on xeric slopes and ridges, warm aspects.

Key Canopy Species:

In Baltimore County, chestnut oak can be found almost pure after logging for other oaks. Its key canopy associates are black oak and scarlet oak, with white oak and northern red oak occurring at the moister end of xeric conditions.

Common Understory Associates:

Pignut hickory	Mountain laurel
Red Maple	Maple-leaved viburnum
Mockernut hickory	Vaccinium species
Flowering dogwood	Gaylussacia species
White ash	Witch-hazel
Sassafras	

PIEDMONT SECTION

Sycamore - Green Ash - Box Elder - Silver Maple
(Not a true SAF type)

Occurrence: Floodplains, stream banks.

Canopy associates may be:

White oak	Mockernut hickory
Northern red oak	Pignut hickory
Tuliptree	
White ash	

Common Understory Associates

Red Maple	Spicebush
Flowering dogwood	Southern arrowwood
Black cherry	Virginia creeper
Black gum	Grape species
Ironwood	Greenbriers
Black Oak	

COASTAL PLAIN SECTION

Sweetgum - Tuliptree (yellow-poplar) (87)

Occurrence: Bottomlands with soils of coarse texture and good aeration; often found on abandoned farmland or other land that has undergone severe disturbance to the vegetation.

Canopy Associates may be:

Red maple	Ash species
Box elder	Willow Oak
Sycamore	Blackgum
American elm	

Common Understory Associates include:

American elm	American hophornbeam (ironwood)
Ash species	Flowering dogwood
Red maple	Red mulberry
Oak species	Viburnum species
Hickory species	Greenbrier
American holly	Virginia creeper
Inkberry	Trumpet creeper
Winterberry	

COASTAL PLAIN SECTION

Mixed Oak - Pine
(Not a true SAF type)

Occurrence: These stands represent a transitional stage towards a mixed oak forest. They occur on abandoned farmland or areas that were heavily logged and planted with pine species.

Canopy Associates may be:

Spanish oak
Willow oak
Pin oak
Scarlet oak
Virginia pine
Pitch pine
Sweet gum

Common Understory Associates include:

Post oak
Blackjack oak
Blueberry species

On lower, moist sites, common canopy associates include:

White oak	Spanish oak
Pin oak	Sweet gum
Scarlet oak	

Common Understory Associates:

American elm	American hophornbeam (ironwood)
Ash species	Flowering dogwood
Red maple	Red mulberry
Oak species	Viburnum species
Hickory species	Greenbrier
American holly	Virginia creeper
Inkberry	Trumpet creeper
Winterberry	

On poorly drained bottomlands, canopy associates may be:

Swamp white oak	White oak (occasionally)
Pin oak	Sweet gum
Willow oak	American holly

Common Understory associates:

Black gum	Inkberry
Red maple	Sweet pepperbush
Sweet bay	Fetter-bush
Male-berry	Tassel-white
Stagger bush	

PLANT SPECIES FOR REFORESTATION/AFFORESTATION PROJECTS

SCIENTIFIC NAME	COMMON NAME	SHADE TOLERANCE	MOISTURE REGIME
CONIFEROUS TREES			
* <i>Chamaecyparis thyoides</i>	Atlantic White Cedar	MT	M-W
<i>Juniperus virginiana</i>	Red Cedar	VI-I	D-M
<i>Pinus echinata</i>	Short Leaf Pine	I	D
<i>P. rigida</i>	Pitch Pine	I	D-M
<i>P. strobus</i>	White Pine	MT	D-M
<i>P. virginiana</i>	Virginia Pine	I	D-M
<i>Tsuga canadensis</i>	Eastern Hemlock	VT	M-W
BROAD-LEAVED EVERGREEN TREES AND SHRUBS			
* <i>Ilex opaca</i>	American Holly	VT	M
<i>Kalmia angustifolia</i>	Sheep Laurel	I	D
<i>K. latifolia</i>	Mountain Laurel	VT	D-M
DECIDUOUS TREES AND SHRUBS			
<i>Acer negundo</i>	Box Elder	T	M-W
<i>A. rubrum</i>	Red Maple	I-VT	D-W
<i>A. saccharinum</i>	Silver Maple	MT-VT	M-W
<i>A. saccharum</i>	Sugar Maple	VT	M
<i>Alnus serrulata</i>	Smooth Alder	I	M-W
<i>Amelanchier canadensis</i>	Shadbush, Serviceberry	T	M-W
<i>Aralia spinosa</i>	Hercules Club	I	M
<i>Asimina triloba</i>	Paw Paw	T	M-W
<i>Betula lenta</i>	Black, Sweet Birch	I	M-W
<i>B. nigra</i>	River Birch	I	W
<i>Carpinus caroliniana</i>	Blue Beech, Musclewood	VT	M
* <i>Carya cordiformis</i>	Bitternut Hickory	I	D-M
<i>C. glabra</i>	Pignut Hickory	MT	D-M
<i>C. laciniosa</i>	Big Shellbark Hickory	VT	M
<i>C. ovata</i>	Shagbark Hickory	T	D-M
<i>C. tomentosa</i>	Mockernut Hickory	I-T	D-M
<i>Castanea pumila</i>	Chinquapin	T	D-M
<i>Celtis occidentalis</i>	Hackberry	I-MT	D-M
<i>Cephalanthus occidentalis</i>	Button Bush	T	W
<i>Cercis canadensis</i>	Eastern Red Bud	T	M
<i>Chionanthus virginicus</i>	Fringe Tree	MT	D-W
* <i>Clethra alnifolia</i>	Sweet Pepperbush	T	M-W
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood	MT	M
<i>C. amomum</i>	Silky Dogwood	MT	W
<i>C. florida</i>	Flowering Dogwood	VT	D-M
<i>Diospyros virginiana</i>	Persimmon	VT	M-W
<i>Euonymus atropurpureus</i>	Eastern Wahoo	T	M
<i>Fagus grandifolia</i>	American Beech	VT	M
<i>Fraxinus americana</i>	White Ash	I-MT	M-W

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DECIDUOUS TREES AND SHRUBS (continued)

<i>F. nigra</i>	Black Ash	I	W
<i>F. pennsylvanica</i>	Green Ash	I-MT	M-W
<i>Gaylussacia baccata</i>	Black Huckleberry	T	D
* <i>G. dumosa</i>	Dwarf Huckleberry	I-T	D-M
* <i>G. frondosa</i>	Dangleberry, Blue Tangle	I-T	D-M
<i>Hamamelis virginiana</i>	Witch Hazel	T	M-W
<i>Hydrangea arborescens</i>	Wild Hydrangea	T	M
* <i>Ilex glabra</i>	Inkberry	I-T	M
* <i>I. laevigata</i>	Winterberry	I-T	M
<i>I. verticillata</i>	Winterberry	T	M-W
* <i>Itea virginica</i>	Tassel-white	T	M-W
<i>Juglans cinerea</i>	Butternut	I	M-W
<i>J. nigra</i>	Black Walnut	I	M
* <i>Leucothoe racemosa</i>	Fetterbush	T	M-W
<i>Lindera benzoin</i>	Spicebush	T	M
<i>Liquidambar styraciflua</i>	Sweet Gum	I	M-W
<i>Liriodendron tulipifera</i>	Tuliptree, Tulip Poplar	I	M
* <i>Lyonia ligustrina</i>	Male-berry	T	M-W
* <i>L. mariana</i>	Stagger bush	T	M-W
<i>Magnolia tripetala</i>	Umbrella Magnolia	I-MT	M
* <i>M. virginiana</i>	Sweet Bay, Swamp Magnolia	MT	M-MW
<i>Morus rubra</i>	Red Mulberry	T	M
<i>Nyssa sylvatica</i>	Black Gum	T	M-W
<i>Ostrya virginiana</i>	Hop Hornbeam	T	M
<i>Platanus occidentalis</i>	American Sycamore	MT	M-W
<i>Populus deltoides</i>	Cottonwood	VI	M
<i>P. grandidentata</i>	Big Toothed Aspen	VI	M
<i>Prunus americana</i>	Wild Plum	I	M
<i>P. serotina</i>	Wild Black Cherry	I	M
<i>P. virginiana</i>	Choke Cherry	I	D-M
<i>Quercus alba</i>	White Oak	MT	D-M
<i>Q. bicolor</i>	Swamp White Oak	MT	M-W
<i>Q. coccinea</i>	Scarlet Oak	VI	D-M
* <i>Q. falcata</i>	Southern Red Oak	I-MT	D
<i>Q. ilicifolia</i>	Barren, Scrub Oak	I	D
<i>Q. imbricaria</i>	Shingle Oak	MT	D-M
<i>Q. marilandica</i>	Black Jack Oak	I	D
* <i>Q. michauxii</i>	Swamp Chestnut Oak	I	M-W
<i>Q. palustris</i>	Pin Oak	I	M-W
<i>Q. phellos</i>	Willow Oak	I	M-W
<i>Q. prinus</i>	Chestnut Oak	MT	D
<i>Q. rubra</i>	Northern Red Oak	MT	M
<i>Q. stellata</i>	Post Oak	I	D
<i>Q. velutina</i>	Black Oak	MT	D-M
<i>Rhododendron nudiflorum</i>	Pinxter Azalea	T	D-M
<i>R. viscosum</i>	Swamp Azalea	I-T	M
<i>Rhus copallina</i>	Dwarf or Shining Sumac	I	D
<i>R. glabra</i>	Smooth Sumac	I	M
<i>R. typhina</i>	Staghorn Sumac	I	M
<i>Robinia pseudoacacia</i>	Black Locust	VI	D-M
<i>Salix nigra</i>	Black Willow	VI	M-W

DECIDUOUS TREES AND SHRUBS (continued)

Sambucus canadensis	Elderberry	I-T	M
Sassafras albidum	Sassafras	I	D-M
Staphylea trifolia	American Bladdernut	T	M-W
Ulmus americana	American Elm	MT	M
U. rubra	Slippery Elm	T	M
Vaccinium angustifolium	Low Sweet Blueberry	I-T	D
V. atrococcum	Black Highbush Blueberry	MT	M-W
V. corymbosum	Highbush Blueberry	MT	M-W
V. stamineum	Tall Deerberry	T	D
V. vacillans	Early Low Blueberry	T	D
Viburnum acerifolium	Maple-leaved Viburnum	T	D-M
V. dentatum	Southern Arrowwood	T	M
V. recognitum	Smooth Arrowwood	T	M
V. prunifolium	Black Haw	T	M

* - Coastal Plain species

Degrees of shade tolerances: VI- Very intolerant; I- Intolerant; MT- Moderately tolerant; T- Tolerant; VT- Very tolerant.

Moisture Regimes: D- Dry, rocky, or well-drained; M- Moist- the greatest range of soil and drainage conditions; usually rich, deep soils; W- Wet; seasonally saturated but not flooded for most species listed.

The typical seral stage(s) for these species is indirectly indicated by their tolerance to shade. Some species can do well under several light regimes but usually the following conditions apply:

Category VI to I - pioneer species
 Category MT - early to mid-seral stages
 Category T- VT - late seral species

The information in this list serves only as a general guide. Some tree species exhibit varying degrees of shade tolerance throughout their life spans from the seedling to the adult stage. In addition, the moisture regimes depend upon topography, aspect and soil types. In preparing a planting plan, more specific information about best growing conditions should be sought from the references cited below.

Sources:

Maryland Geological Survey, Baltimore County, 1929.

Miller, Howard A., H.E. Jaques, How to Know the Trees, 3rd Edit., William C. Brown Co., Iowa, 1980.

U.S.D.A. Forest Service, Silvics of North America, Vol.I. Conifers, Vol.2, Hardwoods, Ag Handbook 654, December, 1990.

INTRODUCED TREES NOT ALLOWED FOR FOREST PLANTINGS

SCIENTIFIC NAME	COMMON NAME	ORIGIN	DEGREE OF ESCAPE
<i>Acer platinoides</i>	Norway Maple	Europe	1
<i>Ailanthus altissima</i>	Ailanthus	China	2
<i>Catalpa speciosa</i>	Hardy Catalpa	Mississippi Valley	3
<i>Gleditsia triacanthos</i>	Honey Locust	East Central U.S.	1
<i>Maclura pomifera</i>	Osage Orange	South Eastern U.S.	2
<i>Paulownia tomentosa</i>	Empress Tree	Eastern Asia	1
<i>Populus alba</i>	White Poplar	Eurasia	1

The species listed above show varying tendencies towards escaping from cultivation into forest fragments. They should not be used in reforestation projects for either urban or rural plantings.

Degree of escape: 1- freely spreading or widely established;
 2- occasionally escaped;
 3- rarely escaped.

Source:

Gleason, Henry A., The New Britton and Brown Illustrated Flora of the Northeastern United States and Adjacent Canada, 1952.

The above listed species have become problems in naturally-occurring forests in Baltimore County because in the past, they were planted without considering their potential impact on the native vegetation. To avoid similar problems in the future, non-native species of horticultural value are not to be used for any reforestation projects without the consent of the Department of Environmental Protection and Resource Management.

COMMENTS ON LARGE-SCALE REFORESTATION/AFFORESTATION PLANTINGS

The composition of forest communities at any time depends upon the types and degrees of disturbances that have occurred within forest stands (Oliver, 1990, Pickett, 1985). On a regional scale, Baltimore County forests belong to the Chestnut/Oak forest cover type (Braun, 1950). However, the apparent demise of the American Chestnut due to the introduction of the chestnut blight pathogen early in this century has released oak species from the chestnut's dominance. Perhaps the single greatest perturbation in the recent history of the eastern forests, this disturbance is still being expressed in the now mixed oak forests of the region.

Forest communities in the altered chestnut/oak association differ from the oak/hickory cover type in the species composition of the understory, shrub and ground layer plants which remain characteristically similar to the defined chestnut/oak association. Hickory species remain a minor component of the altered forests.

Eastern and central Maryland may also have been influenced by the migration of more northerly and southern plant species since the last Ice Age. Between these two major disturbance regimes, much of the County's forests were removed for other land uses or clearcut many times. The resulting forest composition is a confusing mixture of types and ages due to the multiple disturbances of varying severity. In general, the forests contain young second or third growth stands with invasive exotic plant species competing with the native vegetation in the fragmented forest patches. Large tracts of mature forests (which would still experience disturbances from climatic and other environmental sources) are rare in Baltimore County. More commonly, patches of mature or maturing forest communities or forest trees are found in older urban or suburban neighborhoods.

The mitigation of forest loss due to regulated activities should include forest planting plans prepared by foresters or other professionals experienced in forest ecology and forest stand dynamics. Naturally occurring forests can take a century or more to develop to ecological maturity from initial stand development. Carefully prepared forest management plans with specific goals can accelerate the successional processes in forest development anticipating the effects of minor disturbances based upon the history of the site and the surrounding forests. Species selection, proper planting techniques and site management for an extended time are crucial to the successful attainment of the planting goals.

Over half of the land in Baltimore County is classified as slightly acid, well-drained, moist mesic. These sites typically support red oak/white oak/black oak associations in maturing forest stands. Drier sites (xeric) tend to support chestnut oak communities while wetland sites support sycamore/green ash associations in the Piedmont province of the County and oak/pine associations on the Coastal Plain. Across the County, temporary dominance by tuliptree/red maple or other pioneer species stands usually indicates recent severe disruptions including the removal of the oak canopy.

Forest planting plans should imitate the composition of the nearest mature forest community for the same soil composition and topographical features including aspect and drainage patterns. It will not be possible to copy the species composition of a chosen forest community because many of the species are not available for planting.

Transplantation from existing forest sites should be attempted with great caution because success depends upon each species' ability to withstand the stresses of moving. Instead, the proper planting and care of a few key species in a community may increase the chances of recruitment of other forest associates from the surrounding areas by establishing a favorable habitat. Matching the key species to the site conditions is essential to avoid mortality due to excessive competition from other better-adapted plants.

Because most of the mature forest tree species in this region are shade tolerant, planting them out in open, unprotected areas may decrease their survival rate. Species listed as intolerant are typically fast-growing pioneers that colonize newly disturbed sites. When planted as a cover crop, these species can be used to create favorable light conditions for interplanted shade tolerant species while suppressing grasses and weedy plant species that would favorably compete with the young trees. If the site conditions are not suitable for forest trees in general because of soil compaction or nitrogen deficiency, a cover crop of the leguminous black locust may be used to enrich the soil while creating quick shade for the forest's development.

This manual has provided guidance regarding planting densities, plant size mixes, and the desired distribution of species of different seral stages for planting projects because the goal of the reforestation or afforestation is to establish a degree of variation that can reasonably be expected to lead to the structural complexity that characterizes a maturing forest ecosystem.

The species composition of individual planting projects must be carefully tailored to site conditions. There are many theories about the processes at work in forest succession but no confirmed rules. The developmental direction of a forest community appears to depend upon the competitive abilities and interactions among individuals of tree species as well as a series of environmental and human-made disturbances. The results of reforestation projects in the County made in 1993 will not be fully evident for decades. The purpose of the reforestations should be to maintain the County's forest resource base in a manner that does not encourage further degradation from exotic plants, erosion or soil loss.

Appendix H

Exotic and Invasive Species

EXOTIC OR INVASIVE PLANTS

These species are of concern because they may displace native vegetation.

HERBACEOUS PLANTS

Common Name	Scientific Name	Common Name	Scientific Name
+Garlic Mustard	<u>Alliaria officinalis</u>	+Day-lily	<u>Hemerocallis fulva</u>
Musk (nodding) thistle	<u>Arthraxon hispidus</u>	Purple Loosestrife	<u>Lythrum alatum</u>
Plumeless thistle	<u>Carduus nutans</u>	Moneywort	<u>Lysimachia nummularia</u>
Spotted knapweed	<u>Carduus acanthoides</u>	Wild reed	<u>Myoston aquaticum</u>
Bull thistle	<u>Centuria maculosa</u>	Japanese knotweed	<u>Phragmites australis</u>
Canada thistle	<u>Cirsium vulgare</u>	+Asian tearthumb	<u>Polygonum cuspidatum</u>
Crown vetch	<u>Cirsium arvense</u>	Russian thistle	<u>Polygonum perfoliatum</u>
Beefsteak Mint	<u>Coronilla varia</u>	Johnson grass	<u>Salsola iberica</u>
+Ground Ivy	<u>Eulalia vimineus</u>	Cocklebur	<u>Sorqum halepense</u>
	<u>Glecoma hederacea</u>		<u>Xanthium spp.</u>

VINES

+Porcelain Berry	<u>Ampelopsis brevipedunculata</u>
+Oriental Bittersweet	<u>Celastrus orbiculatus</u>
Climbing Eyonymus	<u>Euonymus fortunei</u>
+Wintercreeper	
+English Ivy	<u>Hedera helix</u>
+Japanese Honeysuckle	<u>Lonicera japonica</u>
+Kudzu	<u>Pueraria lobata</u>
+Periwinkle	<u>Vinca minor</u>
+Wisteria	<u>Wisteria floribunda, W. sinensis</u>

SHRUBS

+Japanese Barberry	<u>Berberis thunbergii</u>	Common Buckthorn	<u>Rhamnus Cathartica</u>
Russian Olive	<u>Eleagnus angustifolium</u>	European Buckthorn	<u>Rhamnus franqula</u>
Autumn Olive	<u>Eleagnus umbellata</u>	+Multiflora Rose	<u>Rosa multiflora</u>
Winged Euonymus,	<u>Euonymus alatus</u>	Strawberry-raspberry,	<u>Rubus illecebrosus</u>
+Winged Wahoo		Balloonberry	
+Privet	<u>Liqustrum sp.</u>	+Wineberry	<u>Rubus phoenicolasius</u>
Bush Honeysuckles,			
including	<u>Lonicera sp.</u>	Japanese Spiraea	<u>Spiraea japonica</u>
Belle Honeysuckle	<u>Lonicera x bella</u>	Coralberry	<u>Symphoricarpos orbiculatus</u>
Amur Honeysuckle	<u>Lonicera maackii</u>		
Morrow's Honeysuckle	<u>Lonicera morrowii</u>		
+Tartarian Honeysuckle	<u>Lonicera tatarica</u>		

TREES

+Norway Maple	<u>Acer platanoides</u>
+Tree of Heaven	<u>Ailanthus altissima</u>
(Catalpa	<u>Catalpa sp.) *</u>
Russian Olive	<u>Eleagnus angustifolia</u>
(White Mulberry	<u>Morus alba) *</u>
+Empress Tree	<u>Paulownia tomentosa</u>
(White Spruce	<u>Picea glauca) *</u>
Sweet Cherry, birdcherry	<u>Prunus avium</u>

* Species in parentheses are minor problems (Maryland Natural Heritage Program, July 25, 199_).

+ Most likely to be found in forest ecosystems.

Appendix I

Forest as Wildlife Habitat

FOREST AS WILDLIFE HABITAT

The habitat value of a forest depends upon many variables: the size and shape of the forest, its proximity to other forested areas, the degree of structural complexity, the degree of significant disruptions, e.g., open areas within the forest, and the species composition of the plants in the vegetation layers that comprise the entire forest community. All these factors are important in determining relative habitat value because the term "wildlife" encompasses a complex community of animal species that have a range of different habitat requirements for their survival.

The term "wildlife" has often been used to describe game species for which a great deal of information about habitat requirements is known because hunting fees have funded research into their life histories. Game species, however, represent only a fraction of the animal species that use forest as essential habitat.

Most forest game species are edge-adapted. They forage and bear their young in open, patchy forests or in border areas between forests and fields. Less is known about the requirements of the forest's non-game wildlife species except for a group of long-distance migratory birds that make up over 85% of the breeding bird population in the eastern deciduous forests. Their habitat needs are the subject of intensifying research since these animals have begun to show a decline in our forests.

The philosophy that increasing edge habitat benefits wildlife derives from a management objective to keep game species abundant and may be appropriate for large, contiguous blocks of unfragmented forest. However, Baltimore County, because of land use practices of the past, suffers from an overabundance of edge conditions and fragmented forested areas. As growth has led to the conversion of increasing amounts of forested land to other uses, the proportion of edge to interior habitat has soared, making current forest conditions a significant factor in the proliferation of at least one game species, the deer, to pest proportions.

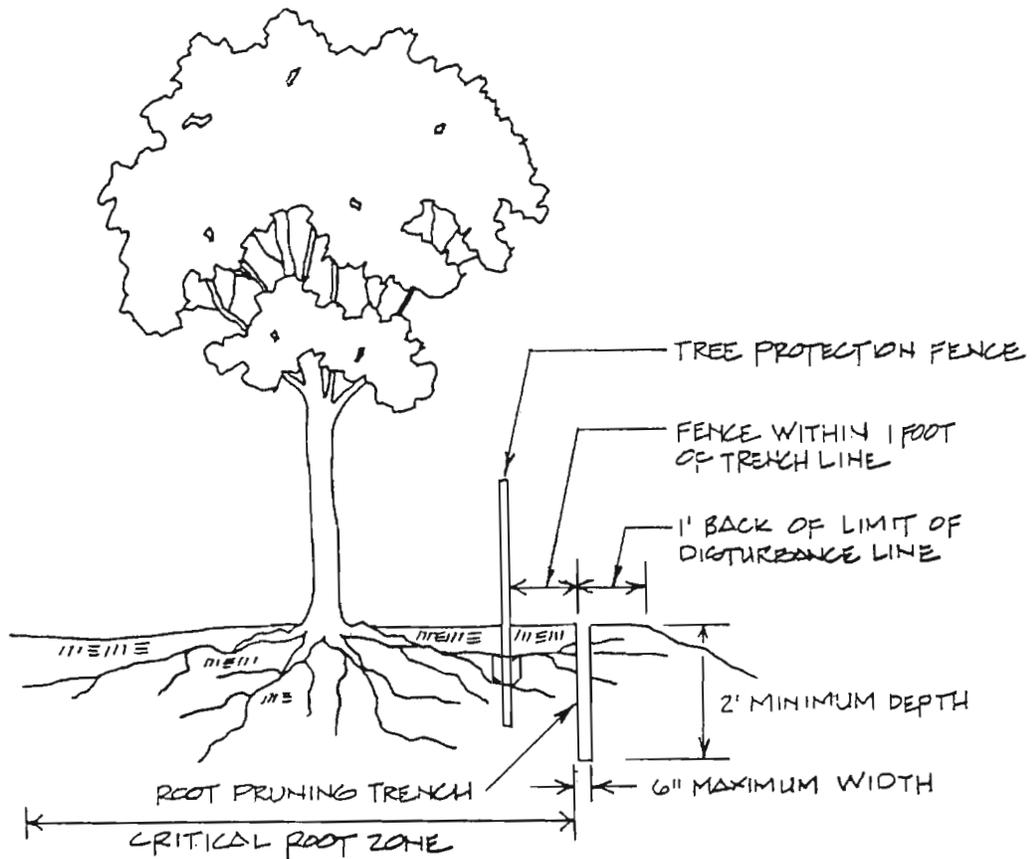
DEPRM has recommended that reforestation and afforestation efforts be directed to the borders of already existing forested areas or to connect isolated forest patches. Any required mitigation for the removal of forest during development should focus on reversing the trend towards forest fragmentation. Whenever possible, mature and maturing forested areas should be conserved for the range of habitat values that they provide for the entire community of forest wildlife.

Appendix J

Forest and Specimen Tree Specifications

Figure J-1

Root Pruning



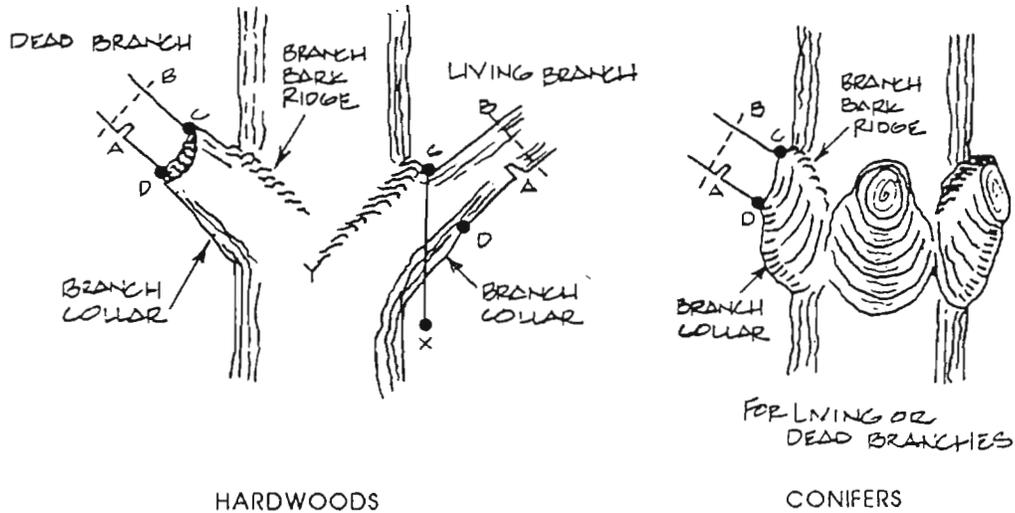
Notes:

1. Retention Areas will be set as part of the review process
2. Boundaries of Retention Areas should be staked flagged prior to trenching
3. Exact location of trench should be identified
4. Trench should be immediately backfilled with soil removed or other high organic soil
5. Roots should be cleanly cut using vibratory knife or other acceptable equipment

Source: City of Galthersburg, Maryland: City Tree Manual

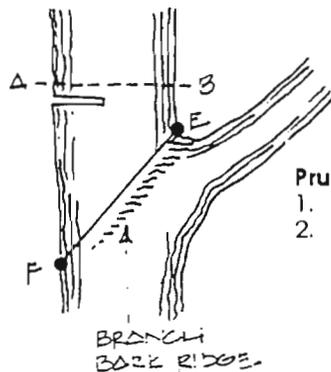
Figure J-2

Crown Reduction



Pruning a Branch

1. Remove branch weight by undercutting at A and remove limb by cutting through at B.
2. Remove stub at CD (line between branch bark ridge and outer edge of branch collar).
3. If D is difficult to find on hardwoods, drop vertical from C (line CX). Angle $\angle XCY = \angle XCD$.



Pruning a Leader or To Reduce Size

1. Remove top weight by cutting at A&E.
2. Remove stub at EF parallel to the Branch Bark Ridge.

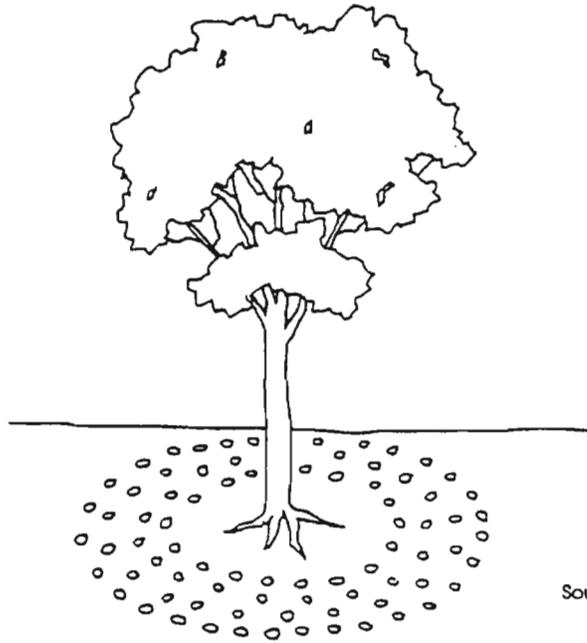
Source: Fairfax County, Virginia
Vegetation Preservation & Planting

Notes:

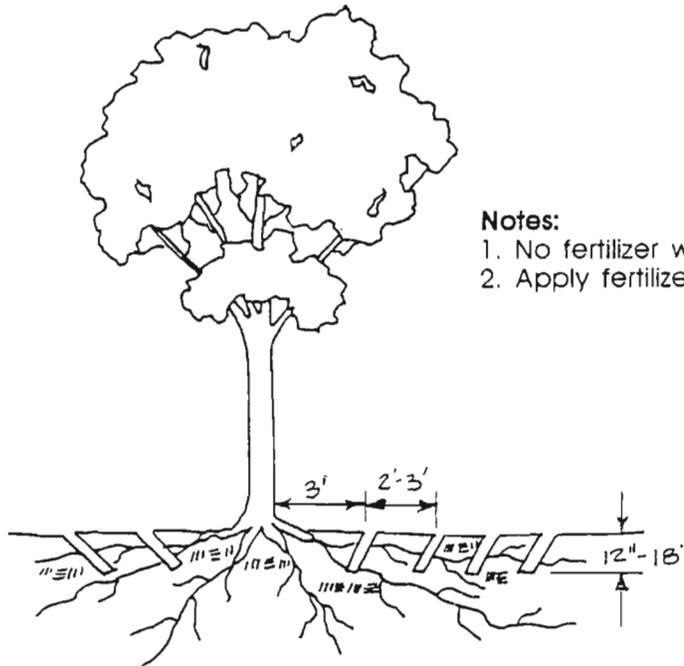
1. Only prune at specified times
2. No more than 30% of crown to be removed at one time.

Figure J-3

Application of Fertilizers by Injection



Source: Pirone, 1978

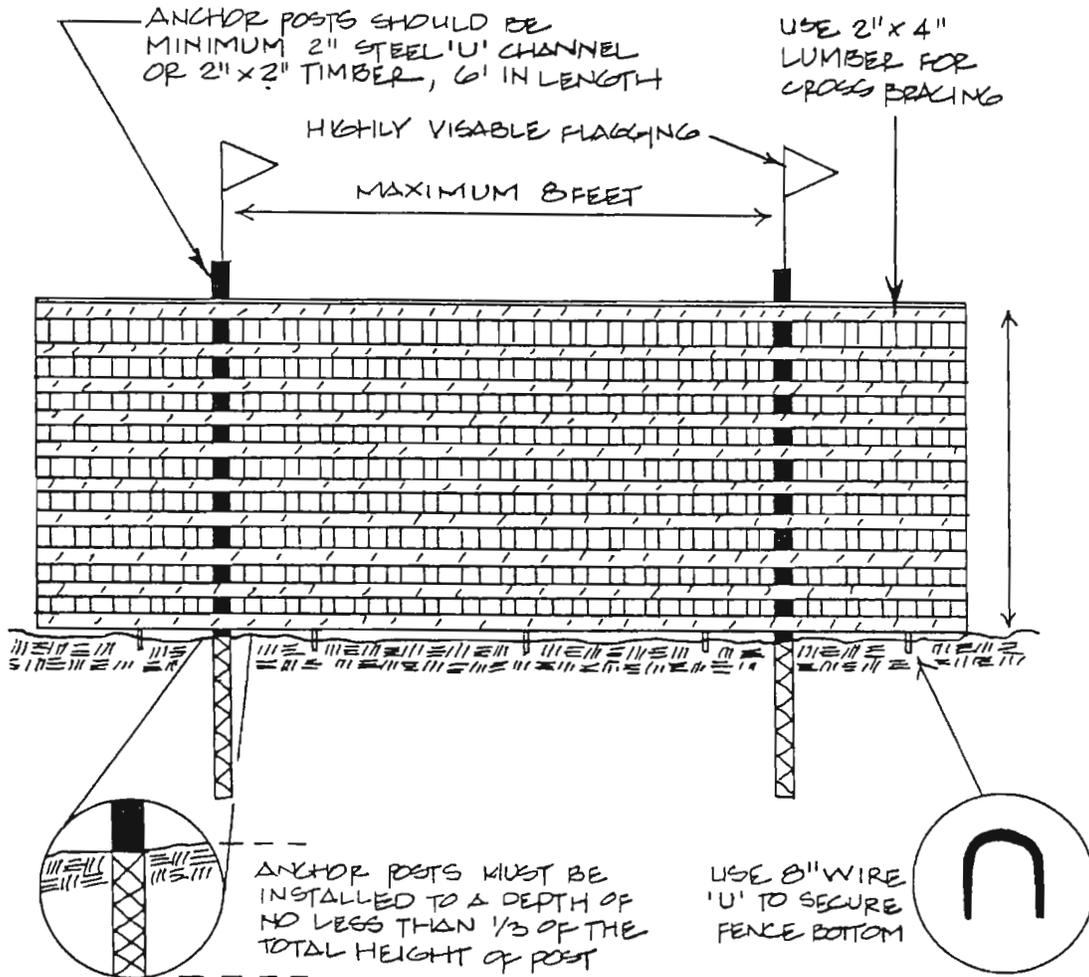


Notes:

1. No fertilizer within 3 feet of trunk
2. Apply fertilizer to entire critical root zone

Figure J-4

Blaze Orange Plastic Mesh



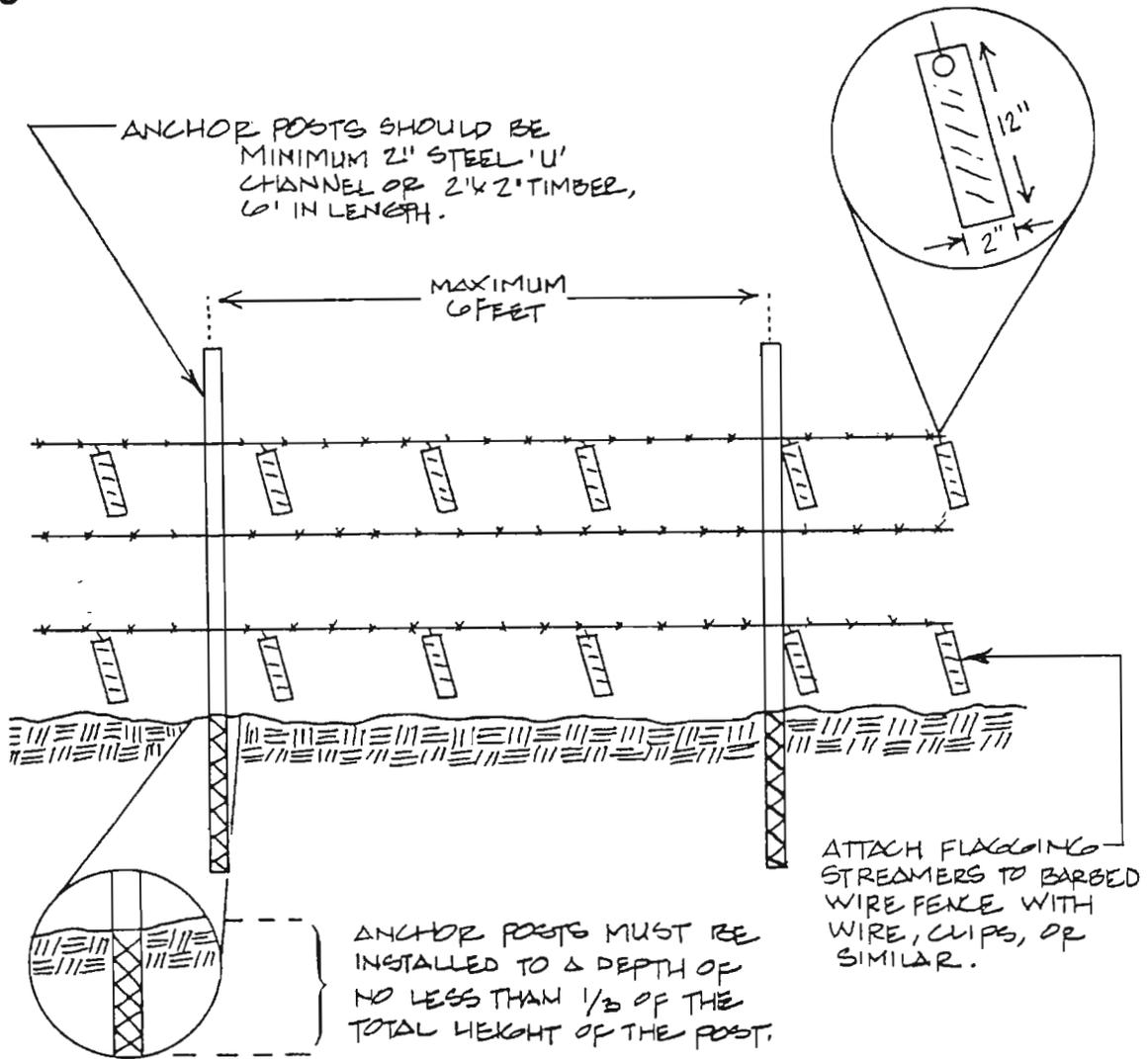
Notes

1. Forest protection device only.
2. Retention Area will be set as part of the review process.
3. Boundaries of Retention Area should be staked and flagged prior to installing device.
4. Root damage should be avoided.
5. Protective signage may also be used.
6. Device should be maintained throughout construction.

Source: Prince George's County, Maryland: Woodland Conservation Manual

Figure J-5

Three Strand Barbed Wire



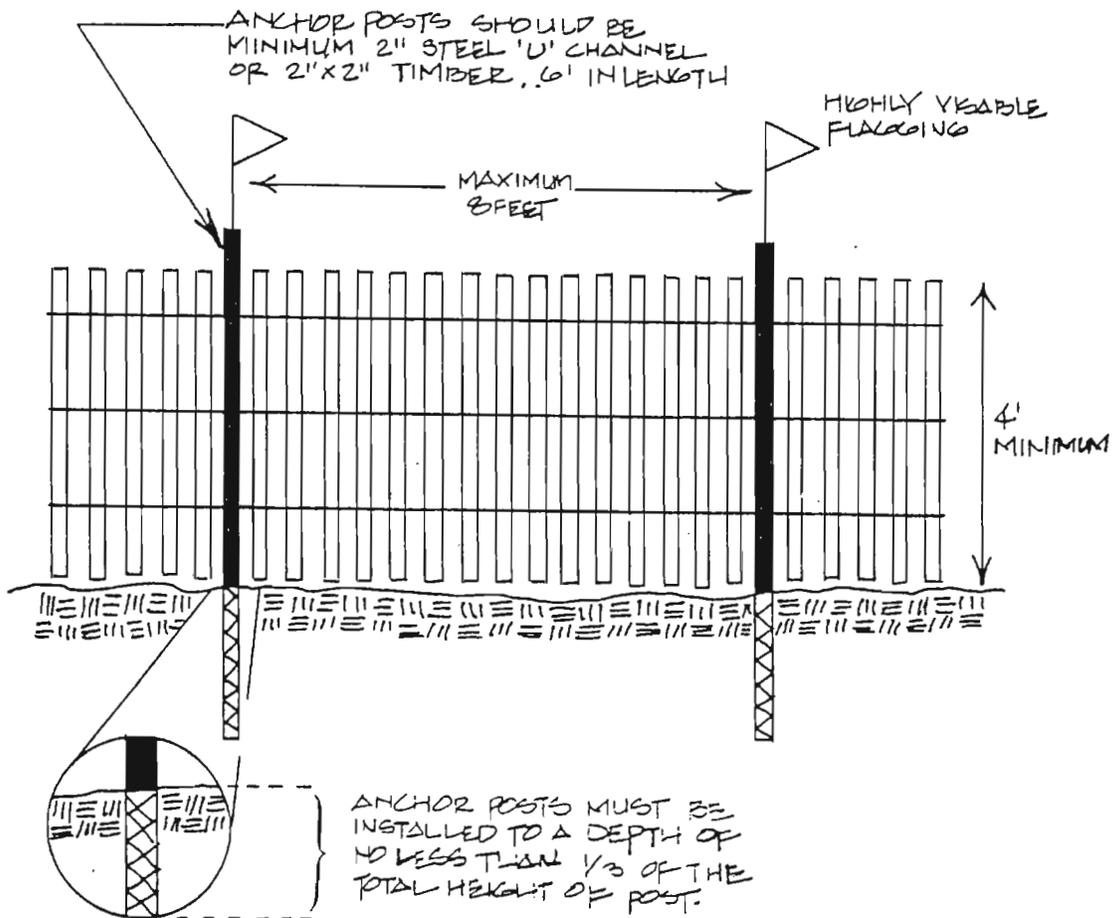
Notes

1. Forest protection device only
2. Retention Area will be set as part of the review process.
3. Boundaries of Retention Area should be staked and flagged prior to installing device.
4. Avoid root damage when placing anchor posts.
5. Barbed wire should be securely attached to posts.
6. Device should be properly maintained during construction.
7. Protective signage is also recommended.

Source: Prince George's County, Maryland: Woodland Conservation Manual

Figure J-6

Snow Fence



Notes:

1. Forest protection device only
2. Retention area will be set as part of the review process
3. Boundaries of Retention Area should be staked prior to installing protective device
4. Avoid root damage when placing anchor posts
5. Device should be properly maintained during construction
6. Protective signage is also recommended

Source: Prince George's County, Maryland: Woodland Conservation Manual

Figure J-7

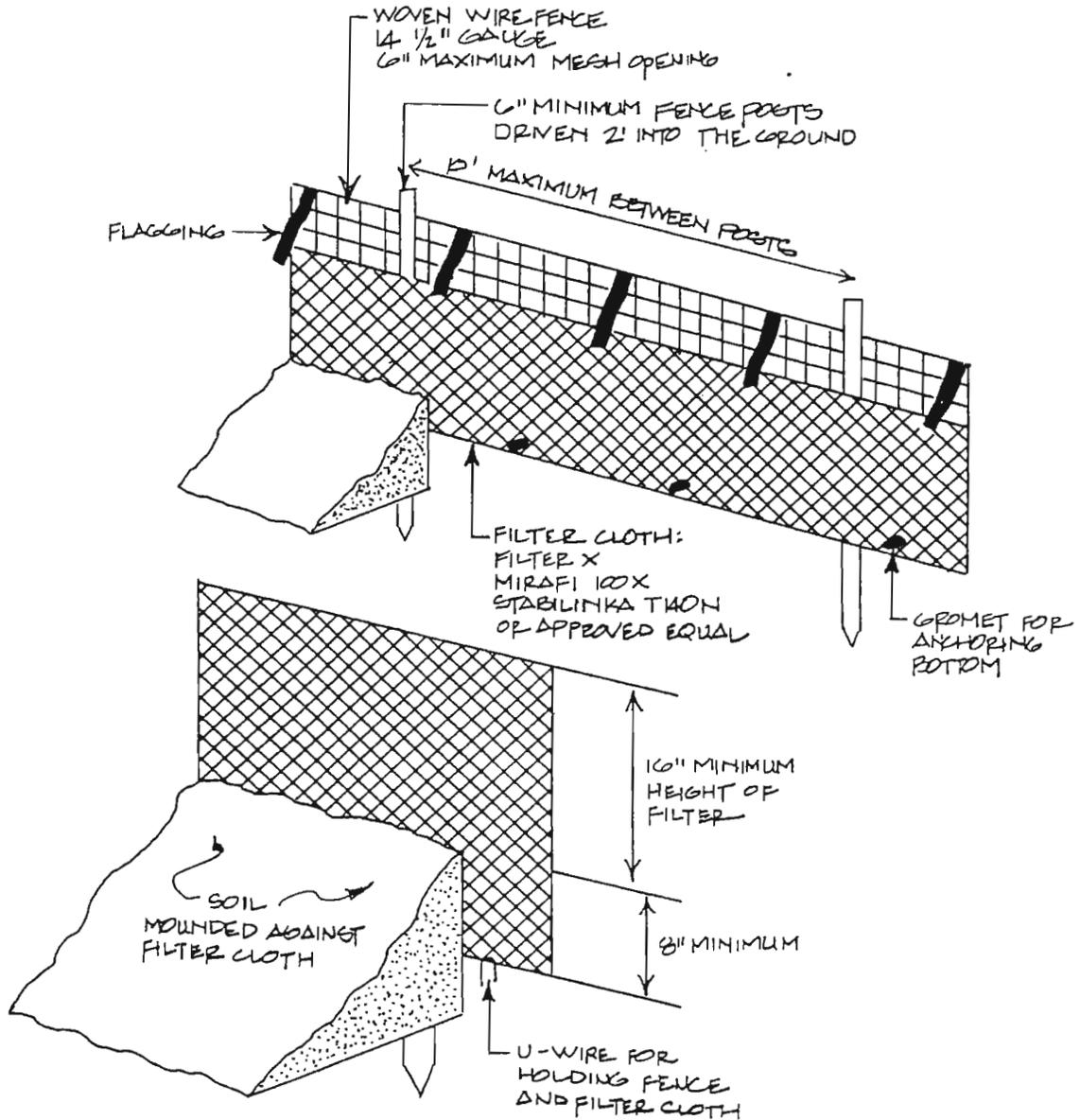
Signage



This detail is for flagging pattern only.

Figure J-8

Filter Cloth on Wire Mesh



Source: Prince George's County, Maryland:
Woodland Conservation Manual

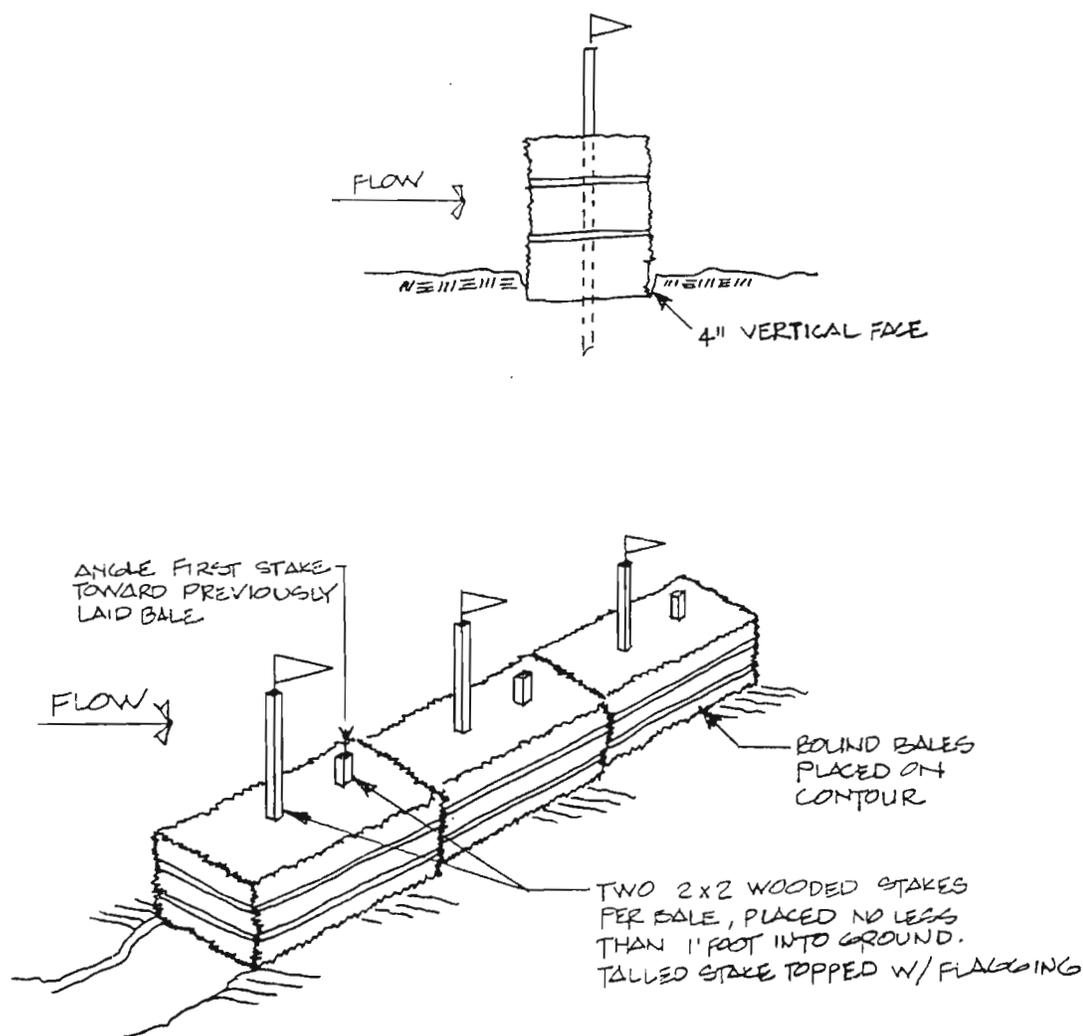
Notes:

1. Combination sediment control and protective device
2. Retention area will be set as part of the review process
3. Boundaries of Retention Area should be staked prior to installing protective device
4. Root damage should be avoided
5. Mound soil only within the limits of disturbance
6. Protective signage is also recommended
7. All standard maintenance for sediment control devices apply to these details

This detail is for flagging pattern only.

Figure J- 9

Staked Straw Bale Dike



Source: Prince George's County, Maryland:
Woodland Conservation Manual

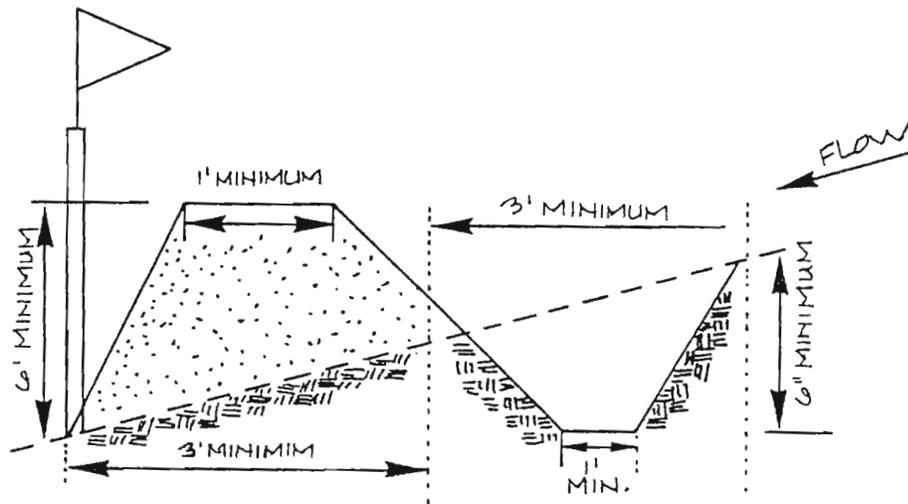
Notes:

1. Combination sediment control and protective device
2. Retention area will be set as part of the review process
3. Boundaries of Retention Area should be staked prior to installing protective device
4. Root damage should be avoided
5. This device should only be placed within the limit of disturbance
6. Protective signage is also recommended
7. All standard maintenance for sediment control devices apply to these details

This detail is for flagging pattern only.

Figure J-10

Earthen Dike and Swale



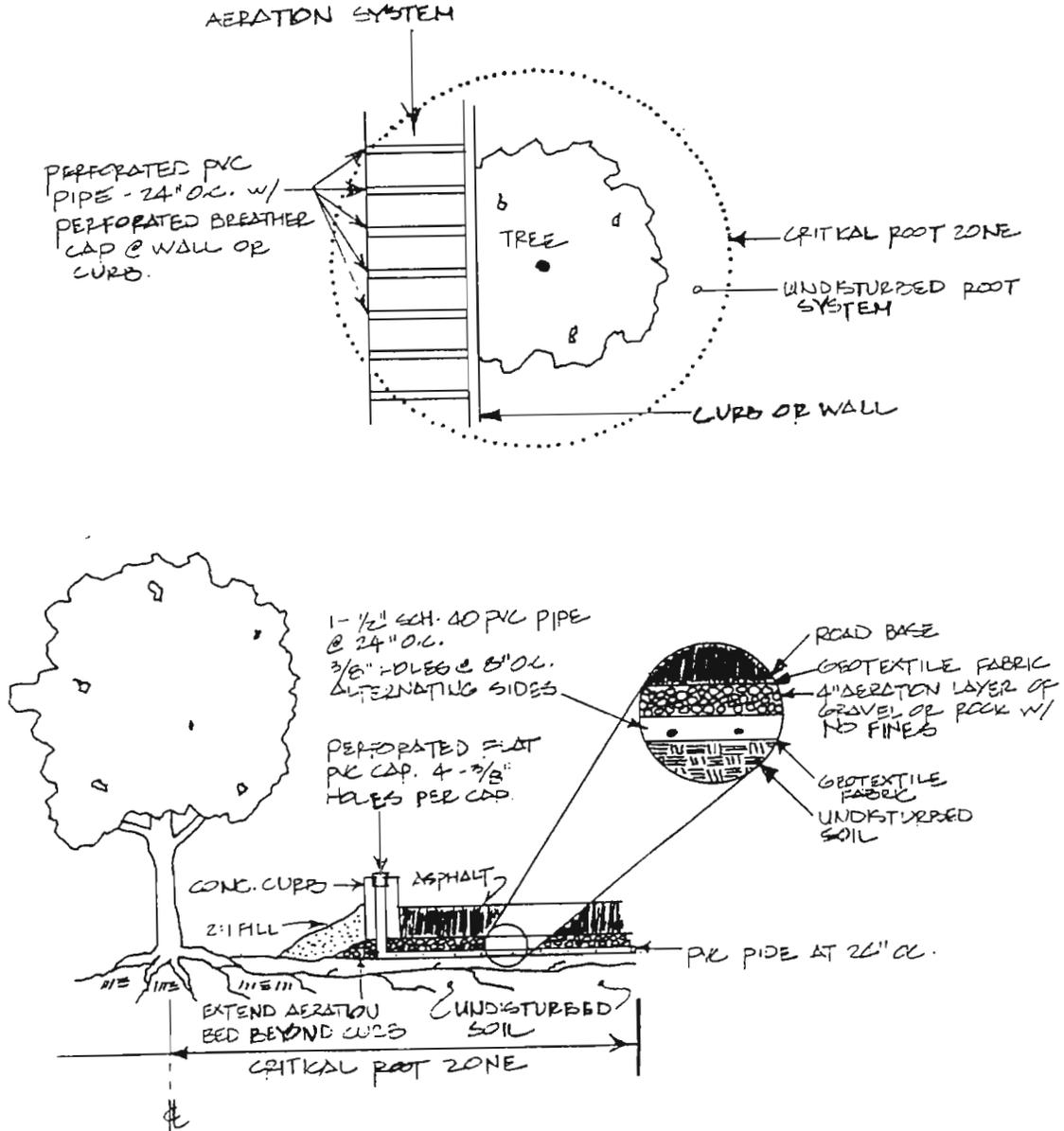
Notes:

1. Combination sediment control and protective device
2. Retention area will be set as part of the review process
3. Boundaries of Retention Area should be staked prior to installing protective device
4. Root damage should be avoided
5. The top or toe of slope should be within the limit of disturbance
6. Equipment is prohibited within critical root zone of retention area; place dike accordingly
7. All standard maintenance for earthen dikes and swales apply to these details
8. All standard reclamation practices for earthen dikes and swales shall apply to these details

Source: Prince George's County, Maryland: Woodland Conservation Manual

Figure J- 11

Aeration System



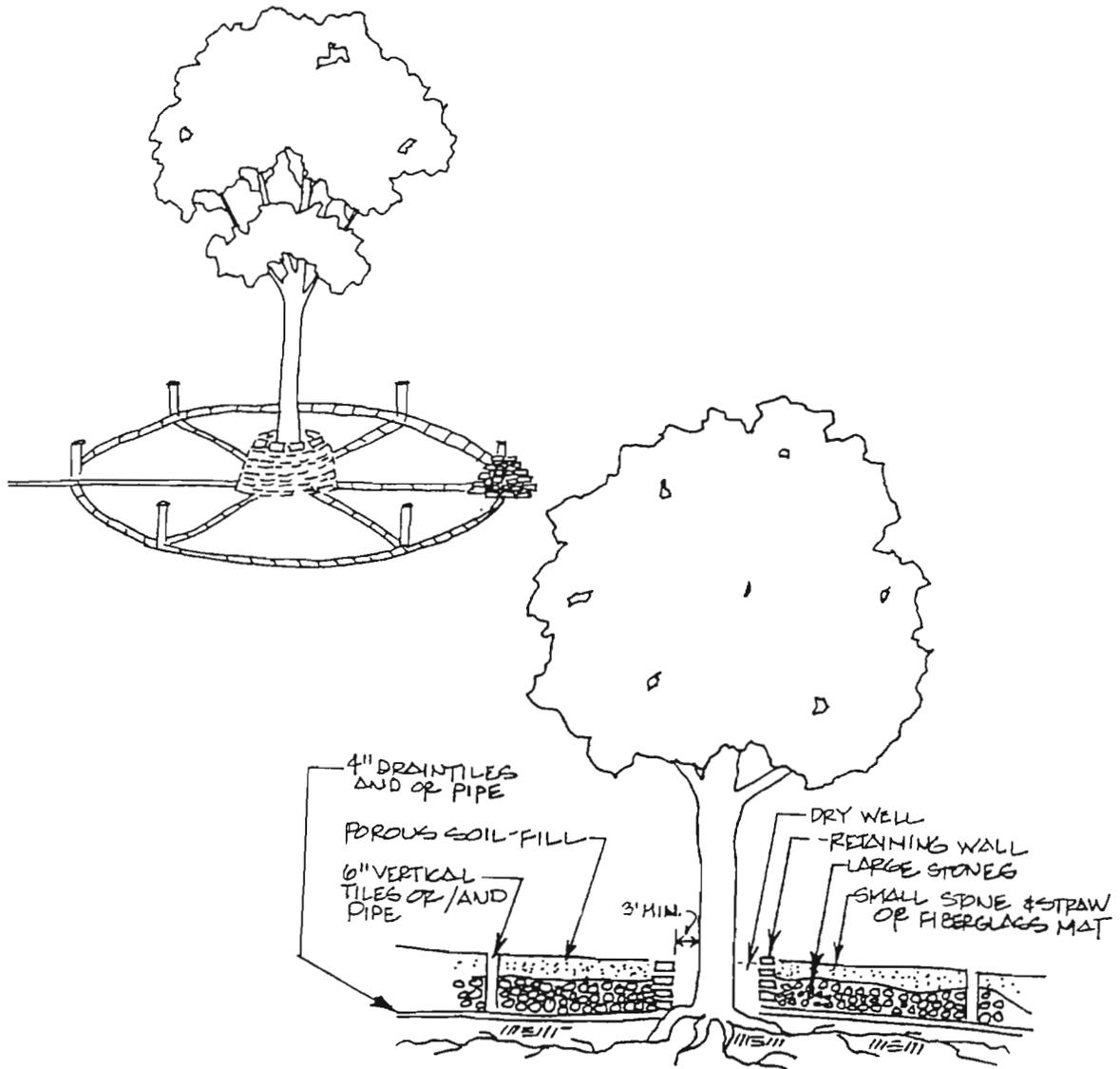
Notes:

1. Bed preparation should not exceed two inches.
2. Vertical pipe should be capped with a perforated cap with 4-3/8 inch holes per cap.
3. Gravel or rock should contain no fines.
4. Can also be used when critical root zone is covered by fill instead of asphalt.

Source: Steve Clark & Associates

Figure J -12

Tree Well



Notes:

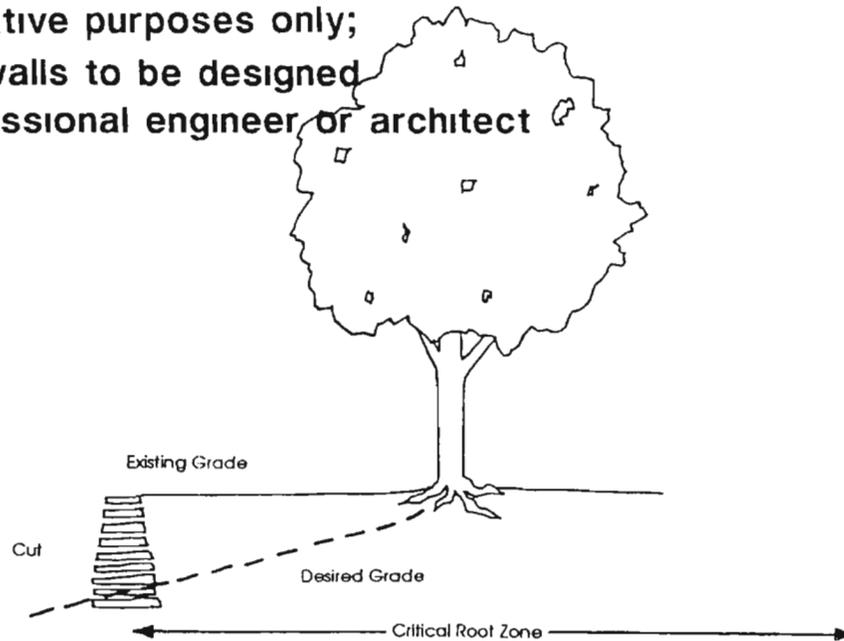
1. Well wall should be no closer than 3 feet from tree trunk or more for smaller trees.
2. Drainage pipe layout should extend beyond the critical root zone
3. Vertical pipes shall be capped with a perforated flat cap with 4-3/8 inch holes per cap
4. Radiating spokes should be on 3 foot centers at the well wall

Source: Fairfax County, Virginia: Vegetation Preservation & Planting

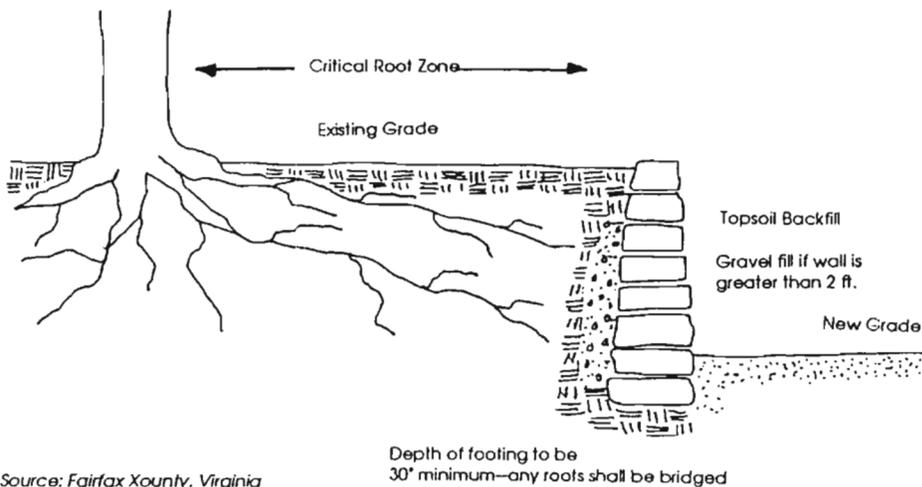
Figure J- 13

Retaining Walls

For illustrative purposes only;
retaining walls to be designed
by a professional engineer or architect



Source: Fulton County, Georgia
Tree Preservation Ordinance



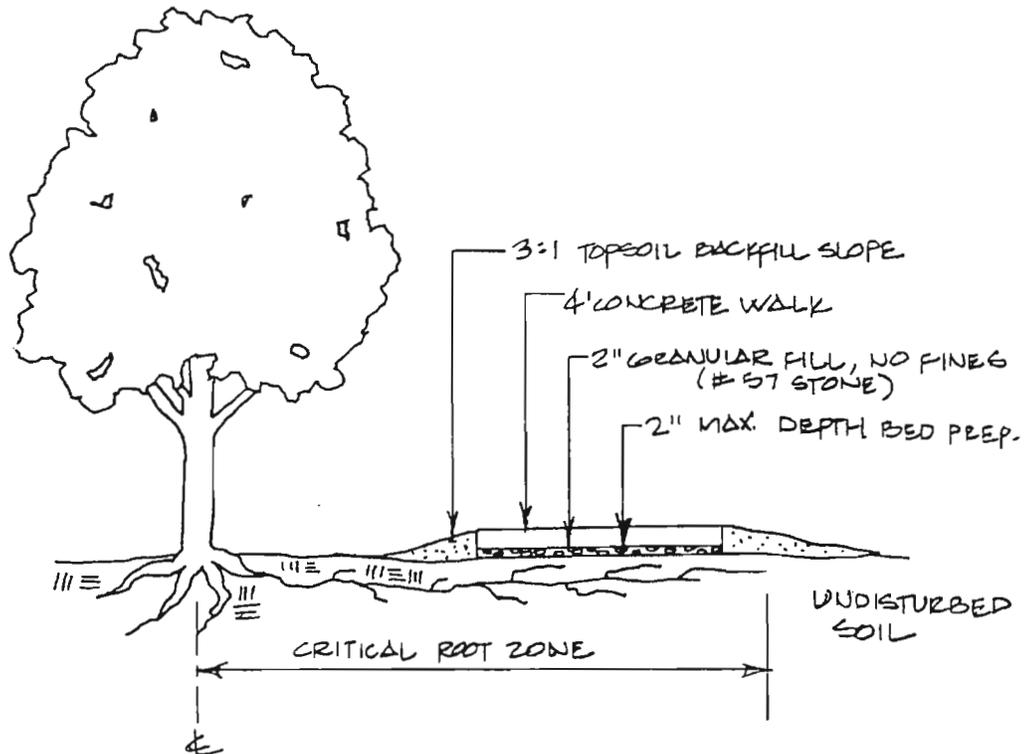
Source: Fairfax County, Virginia
Vegetation Preservation & Planting

Note:

1. Wall should be constructed outside the critical root zone.

Figure J-14

Raised Sidewalk



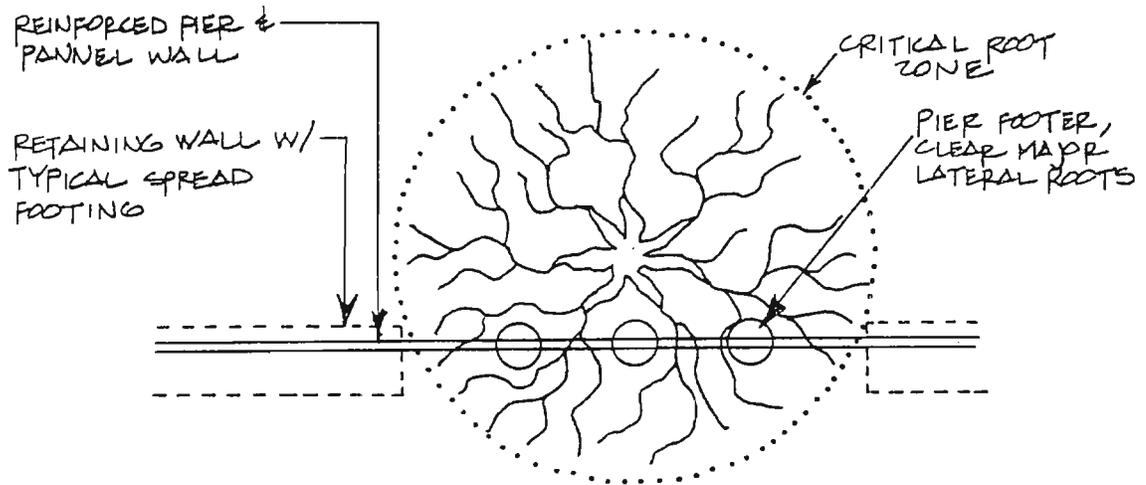
Notes:

1. Bed preparation should not exceed 2 inches
2. Granular fill should contain no fines
3. Minimize width of sidewalk; should be no wider than 4 feet

Source: City of Gaithersburg, Maryland: City Tree Manual

Figure J-15

Reinforced Pier and Panel Wall



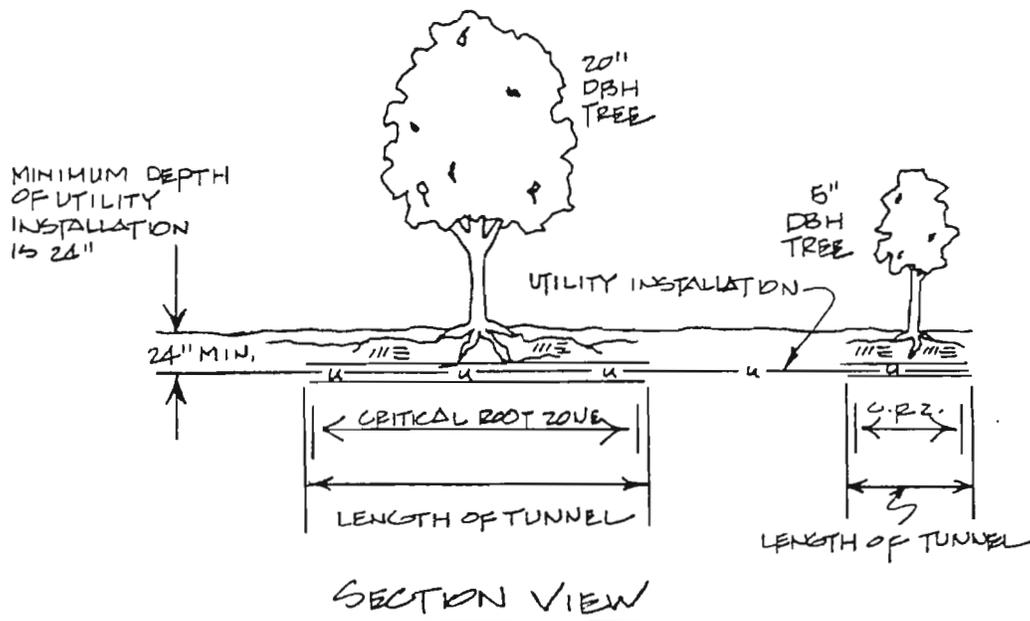
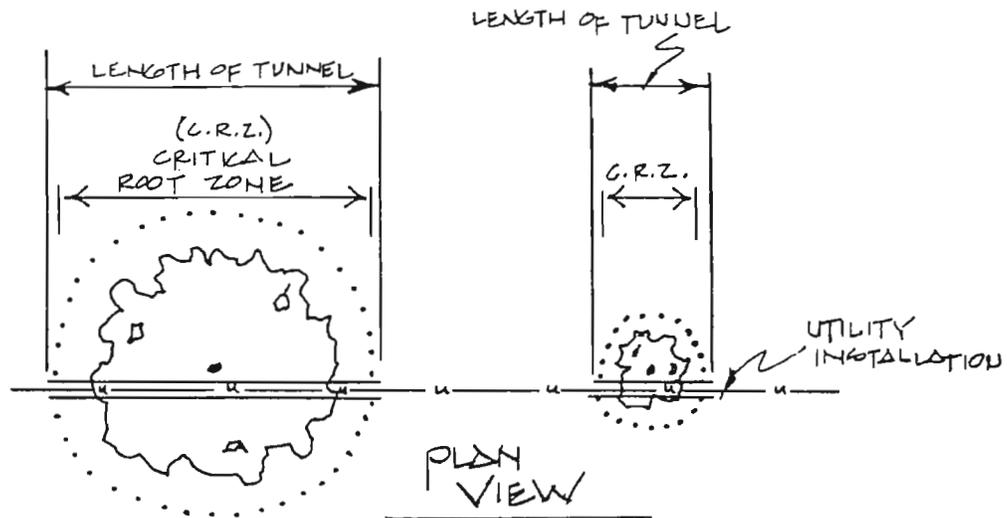
Notes:

1. Area of disturbance should be minimized
2. Care should be taken to avoid major lateral roots
3. Roots should be cleanly cut using a vibratory knife or other similar equipment

Source: Steve Clark & Associates

FigureJ- 16

Tunnelling



Notes:

- 1. Tunnel under critical root zone
- 2. Tunnel should be 24 inches deep at a minimum
- 3. When tunnelling, aim for the trunk of the tree
- 4. When trenching, tunnel through the critical root zone

Adapted from: Fairfax County, Virginia: Vegetation Preservation & Planting

Appendix K

Residual Forest Stabilization and Improvement Evaluation Criteria

Residual Forest Stabilization and Improvement

Evaluation Criteria

Selective Clearing and Supplemental Planting

Depending on the extent of the disturbance, the residual forest may need specialized treatments to enable it to withstand the changes imposed on it. Selective clearing and supplemental planting is a method of restabilizing these altered forest stands.

Description: the management of residual tracts of forest through selective thinning and supplemental plantings in an effort to stabilize the smaller forest tract created during development.

**Evaluation
Criteria:¹**

Does the stand include dominant trees that are taller than the smallest lateral dimension of the stand?

Is the acreage of the stand less than 1/2 acre?

Has there been significant grade changes or soil compaction adjacent to sensitive species (such as tulip poplar) (See Table 3.4.1)

Does the stand include a strong regenerative population that would respond to release? (see Stand Summary Sheet data)

Design Guidance:

Trees whose height is greater than the width of the narrowest lateral dimension of the stand should be removed if a healthy understory exists.

Tulip poplars or other grade sensitive species may need to be removed if subjected to significant grade changes within their critical root zone.

If sun-sensitive species are abundant on stand margin, supplemental planting of tolerant plant materials is recommended, or these species may be removed. (See

¹If the responses to any of the evaluation criteria is affirmative, then this may be an appropriate use of selective clearing.

Appendix G)

If species prone to wind-throw (ex. Virginia pine) are within 1 tree height of structures, these species may be removed.

Snags 6-8 feet in length may be left for the benefit of wildlife, with consideration of safety.

Requirements:

Applicant must show selective clearing is the best alternative for the site.

Selective clearing objectives must be clearly defined in the reforestation plan. Selective clearing is not acceptable for purely aesthetic reasons.

Specific trees targeted in the selective clearing must be noted on plans.

Selective clearing must be done in such a manner that remaining trees and understory are not disturbed in the process.

Stumps should not be removed under any circumstance.

Selectively cleared areas must be planted with supplemental plant materials as described in Appendix I.

Transplant of Local Plant Materials

The use of transplanted materials is generally encouraged due to the hardiness and adaptability of local plant materials to local conditions. The risks associated with this practice are related to the methods used for transplanting, storing and planting transplanted materials.

Description: the use of on-site or locally obtained² plant materials which are transplanted for use on-site.

Evaluation

Criteria: Is the material to be transplanted amenable to disturbance? (See Table K-1)

Is the plant material suited for planting site (sunlight, soils, moisture regime)?

Design Guidance:

Climax species in general, are less tolerant than pioneer or early successional species (See Table K-1).

Larger trees (>6" dbh) need specialized care and equipment. Investigative root diggings are recommended for larger trees.

Best times for transfer is late fall (after leaf fall)/early winter.

Transplants are not recommended in spring after the buds start to grow.

Soft rooted species not recommended for transplant with frozen root ball. (See Table K-2)

Open grown trees grown in heavy or clay soils are preferred for transplant. Their rooting patterns are typically denser than forest grown trees.

Requirements:

Transplant of local materials must be shown to be the best alternative for the site.

² Within 100 mile radius of site.

Soils must be prepared in a field pit fashion, with proper amendments.

Root balls must meet or exceed standard nurserymen specifications.

Species stocking requirements described in section 3.6 must be met.

If tree banks are used, the location, treatment and schedule for banking and transplant must be described.

Nursery Stock

The use of nursery stock is also an option for reforestation. Of primary concern is the hardiness of the nursery stock for the climate and conditions of the planting site. For this reason, there is a preference for the preservation of local genetic stock.

Description: The use of plant material transported from local (within a 100 mile radius) nurseries for reforestation or afforestation.

Evaluation Criteria:

Species must be adapted to conditions of planting site.

Requirements:

Species native to Maryland shall be used unless shown to be unavailable. Local native genetic stock are recommended for better survivability.

Stock must meet standard nurserymen specifications.

Soils must be stabilized with an appropriate cover material (non-turf building).

Table K-1 General Transplant Tolerance

High Transplant Tolerance

Malus spp. (apple)
Fraxinus spp. (ash)
Ulmus spp. (elm)
Celtis occidentalis (hackberry)
Tilia spp. (linden)
Plantanus occidentalis (sycamore)
Populus spp. (poplar)
Salix spp. (willow)
Gleditsia triacanthos (honey locust)
Quercus palustris (pin oak)

Low Transplant Tolerance

Carya spp. (hickory)

Juglans spp. (walnut)
Juglans cinerea (butternut)
Sassafras albidum (sassafrass)
Nyssa sylvatica (tupelo)
Quercus alba (white oak)

Table K-2 Transplanting Tolerance -- Frozen Root ball

High Transplant Tolerance

Malus spp. (apple)
Ulmus spp. (elm)
Gleditsia triacanthos (honey locust)
Tilia spp. (linden)
Acer spp. (maple)
Pinus resinosa (red pine)
Pinus strobus (white pine)
Pinus sylvestris (Scotch pine)

Low Transplant Tolerance

Betula spp. (birch)
Cornus spp. (dogwood)
Tsuga spp. (hemlock)
Magnolia spp. (magnolia)
Quercus spp. (oak)
Liquidambar (sweet gum)
Liriodendron tulipifera
(tulip tree)

Appendix L

Soil Treatment Guidance

SOIL TREATMENT GUIDANCE

PROBLEMATIC RANGE^{1,2}

Soil Characteristics	Low	Medium	High	Corrective Measures for Consideration
<u>Chemical</u>				
ph ³				
Acid Soils	<7-6	<6.0	<4.0	Add lime, select low pH-adapted species
Alkaline Soils	7-<7.5	>7.5	>8.5	Add OM, sulfur, and acidifying fertilizers; select high pH-adapted species
Cation Exchange Capacity ³ (CEO) meg/100g	>10	>5	<3	Add OM and soil amendments with high CEC; fertilize regularly
Fertility ³		variable		Test N, P, and K levels and micro-nutrients commonly deficient or toxic; add OM and encourage micro-organism growth; adjust the pH; use low demand, adapted plants; if deficient, DO NOT over water; leach if toxic levels occur.
Chemically Polluted ² Soils	numerous chemicals & concentrations			Identify the polluting chemicals; detoxify, leach, remove or abandon site; train personal to prevent; stockpile construction materials and chemicals off site; void spilling pollutants; monitor storage tanks for leaks, repair immediately

1. Approximately determinations, subject to site parameters and subjective judgement
 2. Adapted from: USDA Forest Service, Urban and Community Forestry, p. 181-184, 1990.
 3. Requires determination in a soil testing laboratory

PROBLEMATIC RANGE¹

Soil Characteristics	Low	Medium	High	Corrective Measures for Consideration
<u>Physical</u>				
Soil Textures				
Sand	<50%	>75%	>90%	Add OM, irrigate frequently
Clay, Kaolinitic ²	<25%	>50%	>65%	Add OM, DO NOT over irrigate, reduce traffic and compaction
Clay, Expandable ²	none	any	>10%	Reclaim with gypsum and leaching, DO NOT plant perennials until reclaimed
Clay & Silt	<30%	>50%	>75%	Add OM, irrigate correctly, deep till, aerate and reduce compaction and traffic
Structure,		variable		Eliminate compaction, traffic, add OM; manage beneficial micro-organism and root growth; reduce sodium concentrations; DO NOT over roto till, especially at high RPMs
Bulk Density ² , Mg/m ³ Clay	<1.1	<1.4	>1.5	Add OM; deep till
Loam	<1.2	>1.5	>1.7	Same as above
Soil Crusting		variable		DO NOT leave bare soil; add OM and mulch; grow groundcovers; eliminate traffic reduce droplet size of irrigation spray
Aeration Porosity ² , % large	>5	<2	<1	Add OM; deep till, eliminate traffic and pore volume compaction; increase earthworm population
Soil Permeability, Infiltration and Percolation Rates, in/hr.	>0.50	<0.25	<0.20	Add OM; deep till, aerate; use mulches, adjust irrigation rates accordingly
Debris and Litter		variable		Remove from soil surface and profile where possible

PROBLEMATIC RANGE¹

Soil Characteristics	Low	Medium	High	Corrective Measures for Consideration
Depth to bedrock	>10'	<4'	<2'	Add top soil
Seasonal Water Depth	>10'	<4'	<2'	Remove source, improve surface drainage install subsoil drains, Select tree tolerant of short-term standing water
Apparent Water Table Depth	>10'	<6'	<4'	Same as above
Restrictive Horizons	>10'	<6'	<4'	Deep till to break up or same as above o both
Impermeable layers	>10'	<6'	<4'	Deep till break up or same as above o both
Disturbed and Mixed Horizons and Profiles		variable		Add organic matter (OM) and mix well, D NOT bring subsoil to surface
Cuts, Remaining Top Soil Depth	>4'	<2'	<1'	Replace top soil (blend into top o subsoil), DO NOT remove topsoil t subsoil
Fill Soil		variable		Match new teture and structure with an blend into existing soil; deep uniform till is best
Wet, Putrid Soils	Brown	Tan	Gray, Black	Remove source of stagnant water; install surface and subsoil drainage the incorporate coarse OM
Soil Strucutre Massive, Platy		present vs. absent		Provide drainage, incorporate coarse OM deep till

Appendix M

Planting Plan and Inspection Form

PLANTING PLAN (Example)

SITE NAME: _____

COUNTY: _____ DATE: _____

PREPARED BY: _____ PHONE#: _____

CONTACT PERSON: _____ PHONE#: _____

SITE LOCATION: _____

ACREAGE OF PLANTING: _____

SITE ASSESSMENT: _____

TYPE OF SITE PREP NEEDED: _____

<u>SPECIES</u>	<u># SEEDLINGS</u>		<u>B&B</u>	<u>*SOURCE</u>
	w/tree shelters	w/o tree shelters		
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

- (1) Draw a map of the planting site on the back of this form indicating planting pattern.
- (2) Include planting specifications.

Planting Inspection Form (Example)

SITE NAME: _____

INSPECTED BY: _____

COUNTY: _____

INSPECTION DATE: _____

SITE LOCATION: _____

ACERAGE OF PLANTING: _____ **% SURVIVAL:** _____

IS REINFORCEMENT PLANTING NEEDED?: **YES** **NO**

CAUSE OF MORTALITY: _____

COMMENTS: _____

Appendix N

Maryland State Champion Trees 1990

STATE & BALTIMORE COUNTY CHAMPION TREES

Scientific Name	Common Name	dbh (in.)	0.75 dbh
* <i>Abies balsamea</i>	Balsam fir	32.2	24.2
<i>A. concolor</i>	White fir	23.2	17.4
<i>A. fraseri</i>	Fraser fir	22.0	16.5
<i>A. nordmanniana</i>	Nordman fir	35.0	26.2
<i>Acer negundo</i>	Boxelder	54.1	40.6
* <i>A. ornatum dentatum</i>	Cutleaf maple	4.5	3.4
<i>A. palmatum</i>	Japanese maple	45.9	34.4
<i>A. palmatum ornatum dentatum</i>	Japanese cutleaf weeping maple	7.0	5.2
<i>A. platanoides</i>	Norway maple	61.5	46.1
+ <i>A. platanoides</i>	Norway maple	47.4	35.6
<i>A. pseudoplatanus</i>	Sycamore maple	32.5	24.3
<i>A. rubrum</i>	Red maple	58.0	43.5
<i>A. saccharinum</i>	Silver maple	97.1	72.8
+ <i>A. saccharinum</i>	Silver maple	63.4	47.5
<i>A. saccharum</i>	Sugar maple	85.7	64.2
<i>Aesculus glabra</i>	Ohio buckeye	54.1	40.6
<i>A. hippocastanum</i>	Horse chestnut	55.4	41.6
* <i>A. octandra</i>	Yellow buckeye	47.8	35.9
<i>Ailanthus altissima</i>	Ailanthus	45.5	34.1
<i>Albizia julibrissin</i>	Mimosa	27.4	20.6
<i>Alnus serrulata</i>	Hazel (Common) alder	3.2	2.4
<i>Amelanchier arborea</i>	Serviceberry	38.5	28.9
<i>Aralia spinosa</i>	Hercules club	4.8	3.6
<i>Asimina triloba</i>	Paw paw	8.9	6.7
<i>Betula nigra</i>	River birch	36.9	27.6
* <i>B. populifolia</i>	Grey birch	32.8	24.6
<i>Broussonetia papyrifera</i>	Paper mulberry	22.6	17.0
<i>Buxus sempervirens</i>	Boxwood	9.6	7.2
<i>Carpinus caroliniana</i>	Musclewood, Hornbeam	10.8	8.1
* <i>Carya cordiformis</i>	Bitternut hickory	50.0	37.5
<i>C. glabra</i>	Pignut hickory	28.3	21.2
* <i>C. illinoensis</i>	Pecan	58.6	44.0
<i>C. laciniosa</i>	Shellbark hickory	40.1	30.1
<i>C. ovalis</i>	Red hickory	29.3	22.0
<i>C. ovata</i>	Shagbark hickory	56.4	42.3
<i>C. pallida</i>	Pale-leaved hickory	29.9	22.4
<i>Castanea crenata</i>	Japanese chestnut	43.0	32.3
<i>C. dentata</i>	American chestnut	18.2	13.7
<i>C. mollissima</i>	Chinese chestnut	57.0	42.8
+ <i>C. mollissima</i>	Chinese chestnut	24.8	18.6
* <i>Catalpa bignonioides</i>	Southern Catalpa	65.6	49.2
<i>C. speciosa</i>	Northern catalpa	62.4	46.8
<i>Cedrus atlantica</i>	Blue atlas cedar	36.6	27.5
* <i>C. deodara</i>	Deodar cedar	32.2	24.2
+ <i>C. deodara</i>	Deodar cedar	33.8	25.3
* <i>C. libani</i>	Lebanon cedar	43.3	32.5
+ <i>C. libani</i>	Lebanon cedar	36.9	27.7
<i>Celtis occidentalis</i>	Hackberry	61.1	45.8
<i>Chamaecyparis lawsoniana</i>	Port orford cedar	14.3	10.7
<i>C. thyoides</i>	Atlantic white cedar	33.1	24.8
<i>Chionanthus virginicus</i>	Fringe tree	7.5	5.6

Cladrastis lutea	Yellow wood	42.7	32.0
Cornus florida	Flowering dogwood	32.2	24.2
C. kousa	Kousa dogwood	8.0	6.0
Cotinus americanus	Smoke tree	5.4	4.1
Cryptomeria japonica	Cryptomeria	15.0	11.3
*C. j. lobbii	Cryptomeria	22.9	17.2
Diospyros virginiana	Persimmon	21.0	15.8
*Fagus grandifolia	American beech	67.5	50.6
F. sylvatica	Copper beech	73.2	54.9
*F. s. atropunicea	Purple beech	49.0	36.8
+F. s. atropunicea	Purple beech	56.1	42.0
*F. s. heterophylla	Cutleaf beech	38.2	28.7
F. s. pendula	Weeping beech	54.1	40.6
F. s. purpurea	Purple beech	43.3	32.5
Fraxinus americana	White ash	65.3	49.0
+F. americana	White ash	58.6	43.9
F. excelsior	European ash	55.1	41.3
F. pennsylvanica	Green ash	36.0	27.0
Ginkgo biloba	Ginkgo	65.9	49.4
+G. biloba	Ginkgo	63.7	47.8
Gleditsia triacanthos	Honey locust	45.9	34.4
Gymnocladus dioicus	Kentucky coffeetree	43.3	32.5
+G. dioicus	Kentucky coffeetree	49.7	37.3
Hibiscus syriacus	Rose-of-Sharon	1.9	1.4
Hovenia dulcis	Japanese raisin tree	15.9	11.9
Ilex opaca	American holly	38.5	28.9
Juglans cinerea	Butternut	43.7	26.0
J. nigra	Black walnut	79.9	59.9
+J. nigra	Black walnut	56.1	42.0
J. regia	English walnut	41.7	32.1
Juniperus virginiana	Easter red cedar	49.4	37.1
Kalmia latifolia	Mountain laurel	2.9	2.2
Lagerstroemia indica	Crepemyrtle	9.2	6.9
Larix decidua	European larch	33.1	24.8
*L. laricina	Eastern larch	43.3	32.5
Libocedrus decurrens	Incense cedar	52.2	39.2
Lindera benzoin	Spicebush	34.4	25.8
Liquidambar styraciflua	Sweetgum	67.2	50.4
*Liriodendron tulipifera	Tuliptree	95.5	71.6
Maclura pomifera	Osage Orange	67.8	50.9
Magnolia acuminata	Cucumber magnolia	79.6	59.7
+M. acuminata	Cucumber magnolia	47.5	35.6
M. fraseri	Fraser magnolia	22.6	17.0
M. grandiflora	Southern magnolia	36.3	27.2
+M. grandiflora	Southern magnolia	24.2	18.2
M. macrophylla	Bigleaf magnolia	29.0	21.8
*M. soulangeana	Saucer magnolia	29.9	22.4
M. virginiana	Sweetbay magnolia	5.1	3.8
Malus angustifolia	Crabapple	30.6	23.0
Metasequoia glyptostroboides	Dawn redwood	29.9	22.4
Morus alba	White mulberry	44.9	33.7
+M. alba	White mulberry	37.6	28.2
M. nigra	Black mulberry	79.0	59.3
M. rubra	Red mulberry	47.8	35.9
*Nyssa sylvatica	Black gum	103.2	77.4

*Paulownia tomentosa	Paulownia	55.7	41.8
Picea abies	Norway spruce	53.2	39.9
+P. abies	Norway spruce	45.5	34.2
P. pungens	Blue spruce	24.5	18.4
+P. pungens	Blue spruce	22.9	17.2
P. rubens	Red spruce	34.7	26.0
Pinus echinata	Shortleaf pine	21.7	16.3
P. wallichiana	Himalayan white pine	40.8	30.6
+P. wallichiana	Himalayan white pine	37.6	28.2
P. nigra	Austrian pine	41.4	31.1
+P. nigra	Austrian pine	34.4	25.8
P. palustris	Longleaf pine	17.8	13.4
P. rigida	Pitch pine	27.1	20.3
*P. strobus	White pine	42.7	32.0
P. taeda	Loblolly pine	51.0	38.3
P. virginiana	Virginia pine	30.3	22.7
Platanus occidentalis	Sycamore	97.1	72.8
+P. occidentalis	Sycamore	86.3	64.7
Populus alba	White poplar	37.3	28.0
P. deltoides	Eastern cottonwood	71.3	53.5
P. grandidentata	Bigtooth aspen	22.6	17.0
Prunus avium	Sweet cherry	31.5	23.6
+P. avium	Sweet cherry	19.7	14.8
P. redoensis	Japanese yoshino cherry	45.9	34.4
P. serotina	Black cherry	86.0	64.5
+P. serotina	Black cherry	32.2	24.1
P. sub-hirtella pendula	Weeping cherry	19.1	14.3
Pterocarya fraxinifolia	Caucasian wing nut	36.6	27.5
Pyrus calleryana "Bradford"	Bradford pear	17.8	13.4
P. communis	Pear	43.6	32.7
P. malus	Common apple	27.1	20.3
Quercus acutissima	Sawtooth oak	24.5	18.4
Q. alba	White oak	119.1	89.3
+Q. alba	White oak	66.9	50.2
Q. bicolor	Swamp white oak	61.8	46.4
Q. coccinea	Scarlet oak	61.5	46.1
Q. falcata	Southern red oak	105.4	79.1
Q. falcata v. pagodifolia	Cherrybark oak	45.9	34.4
*Q. laevis	Turkey oak	60.8	45.6
Q. lyrata	Overcup oak	86.9	65.2
*Q. macrocarpa	Bur oak	58.9	44.2
Q. marilandica	Blackjack oak	31.8	23.9
Q. michauxii	Swamp chestnut oak	85.0	63.8
Q. muehlenbergii	Chinquapin oak	51.6	38.7
Q. nigra	Water oak	43.0	32.3
Q. palustris	Pin oak	65.3	49.0
Q. phellos	Willow oak	88.9	66.7
Q. prinus	Chestnut oak	79.3	59.5
+Q. prinus	Chestnut oak	53.5	40.1
Q. rubra	Northern red oak	70.4	52.8
+Q. rubra	Northern red oak	67.2	50.4
Q. stellata	Post oak	47.1	35.3
Q. velutina	Black oak	66.9	50.2
+Q. velutina	Black oak	62.7	47.1
Rhus vernix	Poison sumac	7.3	5.5
Robinia pseudoacacia	Black locust	70.1	52.6

+R. pseudoacacia	Black locust	63.4	47.5
Salix babylonica	Weeping willow	68.5	51.4
Sassafras albidum	Sassafras	50.3	37.7
+S. albidum	Sassafras	34.4	25.8
Taxodium distichum	Baldcypress	65.9	49.4
Taxus baccata	English yew	58.3	43.7
+T. baccata	English yew	13.4	10.0
T. b. stricta	Irish yew	49.0	36.8
+T. b. stricta	Irish yew	49.0	36.8
*Thuja occidentalis	Arborvitae	24.2	18.2
Tilia americana	American basswood	59.6	44.7
T. cordata	Littleleaf linden	58.3	43.7
+T. cordata	Littleleaf linden	38.2	28.7
T. europaea	European linden	47.1	35.3
T. heterophylla	White basswood	56.1	42.1
T. platyphyllos	Big leaf linden	53.2	39.9
Tsuga canadensis	Eastern hemlock	46.8	35.1
+T. canadensis	Eastern hemlock	44.9	33.7
T. caroliniana	Carolina hemlock	13.4	10.1
Ulmus americana	American elm	76.4	57.3
+U. americana	American elm	36.9	27.7
U. procera	English elm	68.2	51.2
U. carpinifolia pendula	Smooth leaved elm	44.3	33.2
U. parvifolia	Chinese elm	42.0	31.5
U. rubra	Slippery elm	32.2	24.2
Viburnum prunifolium	Black haw	6.7	5.0

* State and County Champions

+ Baltimore County Champions

PHC:ju
CHAMPS/TXTPHC

Appendix O

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Appendix P

State Forest Stand Delineation Procedures

GUIDELINES TO COMPLETE A FOREST STAND SUMMARY SHEET

FOREST CONSERVATION MANUAL
APPENDIX D

PROPERTY NAME:
PREPARED BY:
DATE:

FOREST ASSOCIATION : Appendix G of State Forest Conservation Manual

SIZE CLASS OF DOMINANT TREES: This is the size class with the highest frequency of dominant trees. Dominant trees are identified in the field by crown class (position in the canopy).

NUMBER OF TREES/ACRE:

$$\frac{\text{Add \# of live trees on all plots in the stand} \times (\text{1/plot size})^*}{\text{number of plots in stand}}$$

* note: $1/\text{plot size} = 1/(1/10\text{acre}) = 10$

NUMBER OF TREE SPECIES: Look at the tree species noted on each of the plot data sheets for that stand. Count the number of different species of trees with diameters ≥ 2 inches.

BASAL AREA/ACRE: Data taken with a prism:

$$\frac{\text{Add \# "in" trees on all plots for the stand} \times \text{prism factor}}{\text{number of plots in stand}}$$

With a 10 factor prism, each "in" tree represents 10 sq.ft. BA/acre.

NUMBER OF (STANDING) DEAD TREES/ACRE:

$$\frac{\text{Add \# dead trees on all plots for the stand} \times \text{1/plot size}}{\text{number of plots in stand}}$$

LIST OF COMMON UNDERSTORY SPECIES: This information is taken from the plot sheet (LIST OF UNDERSTORY SPECIES) and the forest structure sheet (SHRUB AND SEEDLING COUNT 1/1000 ACRE PLOT). List the frequently occurring understory species.

The categories on the lower portion of the Forest Stand Summary Sheet correspond directly to the Forest Structure Data Sheet if only one forest structure plot taken per stand. If more than one structure plot taken then average the data for the summary sheet.

NUMBER OF SHRUBS 1/10 ACRE PLOT BY SPECIES

For the following categories find the average percent over the five sample points on the field data sheet for each category. Each "yes" response represents 20% of cover. The "% yes" column of the data sheet is the information that goes on the stand summary sheet:

- % CANOPY COVERAGE
- % HERBACEOUS COVER
- % DOWNED WOODY MATERIAL
- % EXOTIC OR INVASIVE SPECIES

FOREST STRUCTURE VALUE: This information is obtained by using the rating system found on page 8 in Appendix D of the manual.

COMMENTS: This may include other noteworthy information such as evidence of past management practices or other cultural/historical features, specimen trees, wildlife notes or threatened and endangered species occurrence.

* These instructions to complete a forest stand summary sheet are based on the data sheets in the state technical manual, with some modifications. Copies of the modified sheets are attached for your future use. These modified data sheets were used at the Forest Conservation Act training workshops held at Oregon Ridge.

Table D-1: Field Sampling Data Sheet

Property Name:
Stand #

Plot #

Prepared by:
Date:

Basal Area _____	Size Class of Trees Within the Sample Plot $\frac{1}{10}$				
Tree Species (note dominant and co-dominant species)	Number of Trees 2-5.9" dbh	Number of Trees 6-9.9" dbh	Number of Trees 10-17.9" dbh	Number of Trees 18-29.9" dbh	Number of Trees >30" dbh
Number of Trees per size class					
List of underslory species					
Comments (to include): HISTORICAL/CULTURAL FEATURES THREATENED/ENDANGERED SPECIES SPECIMEN TREES					

12/17/92

Table D-3: Forest Structure Data Sheet

Property :
Stand #:

Plot #:

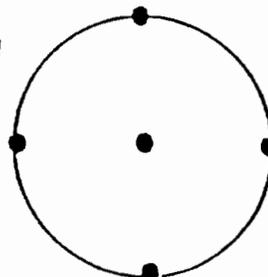
Prepared by:
Date:

Forest Structure Variable

Number of Dead Trees	sample point 1	sample point 2	sample point 3	sample point 4	sample point 5	% yes
Canopy coverage						
herbaceous ground cover						
downed woody debris						
Invasive plant cover						
number of shrubs (1/10 acre)						
Comments						

Forest Structure Sampling Method:

1/10 acre plot,
5 sample points



Forest Stand Summary Sheet

Property Name:

Prepared by:
Date:

Stand Variable	Stand # Acreage
Forest Association	
Size class of dominant trees	
Number of Trees /acre	
Number of tree species	
Basal area/acre	
Number of dead trees/acre	
List of common understory species	

Number of shrubs	
% Canopy coverage	
% Herbaceous cover	
% Downed woody material	
% Exotic or Invasive species	
Forest Structure Value	
Comments	

FOREST STRUCTURE ANALYSIS

37.2' RADIUS (1/10 ACRE) WITHIN THE POINT SAMPLE LOCATION

FOREST STAND # _____ POINT SAMPLE # _____ STRUCTURAL DIVERSITY VALUE: _____

THE FOLLOWING PARAMETERS WILL BE MEASURED AND EVALUATED AT EACH SITE. EACH PARAMETER AT POINT SAMPLE LOCATIONS WILL BE GIVEN A VALUE OF 3, 2, 1 OR 0. THREE REPRESENTS THE MOST VALUABLE STRUCTURE AND 0 THE LEAST. UPON COMPLETION OF THE SAMPLING, CALCULATE THE FOREST STRUCTURE VALUE FOR EACH STAND.

TO DETERMINE THE TOTAL STRUCTURAL VALUE, USE THE FOLLOWING SCALE:

NOVEMBER TO MARCH (LEAF OFF)
EXCLUDE PARAMETERS 1 & 6

APRIL TO OCTOBER (LEAF ON)
ALL PARAMETERS APPLY

11-15 PRIORITY STRUCTURAL DIVERSITY
6-10 GOOD STRUCTURAL DIVERSITY
0-5 POOR STRUCTURAL DIVERSITY

15-21 PRIORITY STRUCTURAL DIVERSITY
7-14 GOOD STRUCTURAL DIVERSITY
0-6 POOR STRUCTURAL DIVERSITY

- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----------|---|----------|---|----------|---|--------|---|------------|---|---------|---|--------|---|-------|---|-----------|---|---|---|---|---|---|---|-----------|---|---------|---|--------|---|----|---|--|------------------|---|-----------|---|----------|---|--------------|---|-----------|---|----------|---|---------|---|--------|---|-----------|---|-------|---|-------|---|-------|---|
| <p>1. PERCENT CANOPY CLOSURE</p> <table border="0" style="width: 100%;"> <tr><td>70 - 100%</td><td style="text-align: right;">3</td></tr> <tr><td>40 - 69%</td><td style="text-align: right;">2</td></tr> <tr><td>10 - 39%</td><td style="text-align: right;">1</td></tr> <tr><td>0 - 9%</td><td style="text-align: right;">0</td></tr> </table> <p>2. NUMBER OF SHRUBS <i>by species</i>
UNDER 20' TALL</p> <table border="0" style="width: 100%;"> <tr><td>15 OR MORE</td><td style="text-align: right;">3</td></tr> <tr><td>10 - 15</td><td style="text-align: right;">2</td></tr> <tr><td>5 - 10</td><td style="text-align: right;">1</td></tr> <tr><td>0 - 5</td><td style="text-align: right;">0</td></tr> </table> <p>3. NUMBER OF STANDING
DEAD TREES 6" DBH AND GREATER</p> <table border="0" style="width: 100%;"> <tr><td>3 OR MORE</td><td style="text-align: right;">3</td></tr> <tr><td>2</td><td style="text-align: right;">2</td></tr> <tr><td>1</td><td style="text-align: right;">1</td></tr> <tr><td>0</td><td style="text-align: right;">0</td></tr> </table> <p>4. PERCENT COARSE WOODY DEBRIS</p> <table border="0" style="width: 100%;"> <tr><td>15 - 100%</td><td style="text-align: right;">3</td></tr> <tr><td>5 - 14%</td><td style="text-align: right;">2</td></tr> <tr><td>1 - 4%</td><td style="text-align: right;">1</td></tr> <tr><td>0%</td><td style="text-align: right;">0</td></tr> </table> | 70 - 100% | 3 | 40 - 69% | 2 | 10 - 39% | 1 | 0 - 9% | 0 | 15 OR MORE | 3 | 10 - 15 | 2 | 5 - 10 | 1 | 0 - 5 | 0 | 3 OR MORE | 3 | 2 | 2 | 1 | 1 | 0 | 0 | 15 - 100% | 3 | 5 - 14% | 2 | 1 - 4% | 1 | 0% | 0 | <p>5. SIZE CLASS OF DOMINANT TREES</p> <table border="0" style="width: 100%;"> <tr><td>GREATER THAN 20"</td><td style="text-align: right;">3</td></tr> <tr><td>6 - 19.9"</td><td style="text-align: right;">2</td></tr> <tr><td>3 - 5.9"</td><td style="text-align: right;">1</td></tr> <tr><td>LESS THAN 3"</td><td style="text-align: right;">0</td></tr> </table> <p>6. PERCENT HERBACEOUS AND SHRUB
COVER UNDER 3'</p> <table border="0" style="width: 100%;"> <tr><td>75 - 100%</td><td style="text-align: right;">3</td></tr> <tr><td>25 - 74%</td><td style="text-align: right;">2</td></tr> <tr><td>5 - 24%</td><td style="text-align: right;">1</td></tr> <tr><td>0 - 4%</td><td style="text-align: right;">0</td></tr> </table> <p>7. # OF TREES SPECIES 6" DBH AND
GREATER</p> <table border="0" style="width: 100%;"> <tr><td>6 OR MORE</td><td style="text-align: right;">3</td></tr> <tr><td>4 - 5</td><td style="text-align: right;">2</td></tr> <tr><td>2 - 4</td><td style="text-align: right;">1</td></tr> <tr><td>0 - 1</td><td style="text-align: right;">0</td></tr> </table> | GREATER THAN 20" | 3 | 6 - 19.9" | 2 | 3 - 5.9" | 1 | LESS THAN 3" | 0 | 75 - 100% | 3 | 25 - 74% | 2 | 5 - 24% | 1 | 0 - 4% | 0 | 6 OR MORE | 3 | 4 - 5 | 2 | 2 - 4 | 1 | 0 - 1 | 0 |
| 70 - 100% | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 - 69% | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 - 39% | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 - 9% | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 OR MORE | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 - 15 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 - 10 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 - 5 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 OR MORE | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 - 100% | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 - 14% | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 - 4% | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0% | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GREATER THAN 20" | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 - 19.9" | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 - 5.9" | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LESS THAN 3" | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 75 - 100% | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 - 74% | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 - 24% | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 - 4% | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 OR MORE | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 - 5 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 - 4 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 - 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

