



**CITY OF  
BURNSVILLE**

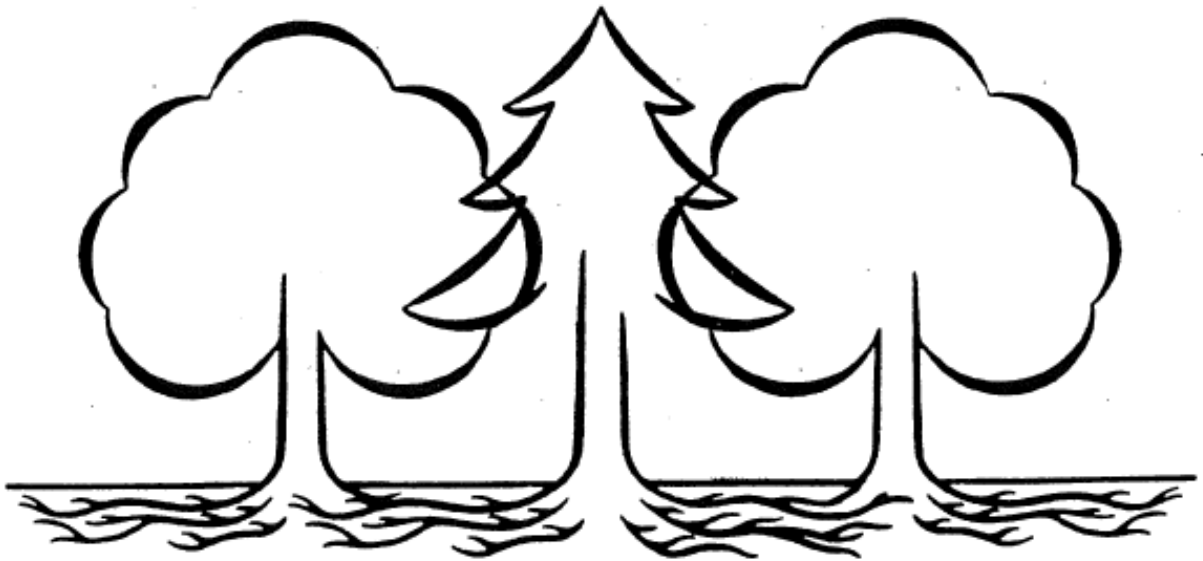
# Woodland Protection & Evaluation Packet

January, 2012

For information on how to complete the enclosed information, contact  
City Forester, Dave Grommesch at 952-895-4508 or [Dave.Grommesch@ci.burnsville.mn.us](mailto:Dave.Grommesch@ci.burnsville.mn.us)



# *A Practical Guide to Preventing Construction Damage to Trees*



*City of Burnsville, 100 Civic Center Parkway, Burnsville, MN 55337  
Adapted from Iowa State University Cooperative Extension Service*

Valuable trees are often cut down, killed, or severely damaged during construction work when simple, inexpensive care would keep them alive and healthy.

Even worse, people sometimes go to a great deal of time, trouble, and expense to try to save trees, only to have them sicken and die soon after the construction work is finished. Sometimes one contractor carefully works around a tree, only to find a subcontractor's later work has killed the tree.

When these things happen often enough, people get so discouraged they cut down and bulldoze away all trees on a site to get them out of the way. The reason that young trees can be planted when the construction work is done. It's easier and cheaper to build without any trees in the way, and they feel the trees will die anyway.

### How Valuable Is A Tree?

A tree's value depends upon whether it is used for lumber, pulpwood, firewood, or shade. Shade and ornamental trees are worth a great deal more than trees cut for lumber.

If planted by a nursery, an oak tree with an 8-inch trunk could cost several thousand dollars. Smaller trees cost less, but the mortgage on a new house must be paid off before a small tree reaches maturity.

It is usually cheaper and easier to save trees than to replace them. However, you can waste a lot of time and money trying to save the wrong trees or trying to save trees the wrong way.

### Deciding Which Trees To Save

This pamphlet will help you decide which trees to save. And it shows simple, reliable methods that will keep trees safe from construction work.

If possible, have a landscape architect, forester, nurseryman, horticulturist, arborist, or other tree expert help you identify the kinds of trees and judge their condition and suitability for saving.

The following items will be helpful if you plan to do the work yourself:

A complete set of building plans, including the proposed utility routes.

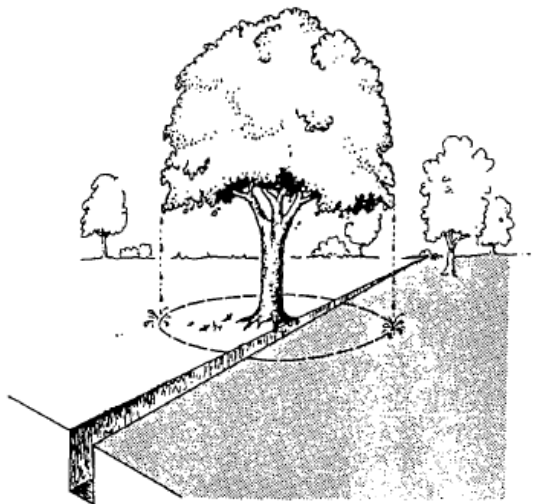
Twine or string to mark out the building, roads, parking areas, and utility routes.

Stakes. Three-foot long builder's lath (available at lumberyards) is excellent.

Measuring tape (100' cloth tape is fine).

Surveyor's flagging tape or brightly colored strips of cloth to mark stakes and especially valuable trees.

1. Using the stakes, string, and flagging tape, accurately marks out the proposed location of the building, its road and driveways, and all known utility lines. Include all parking areas and overhead and underground utilities of all kinds.

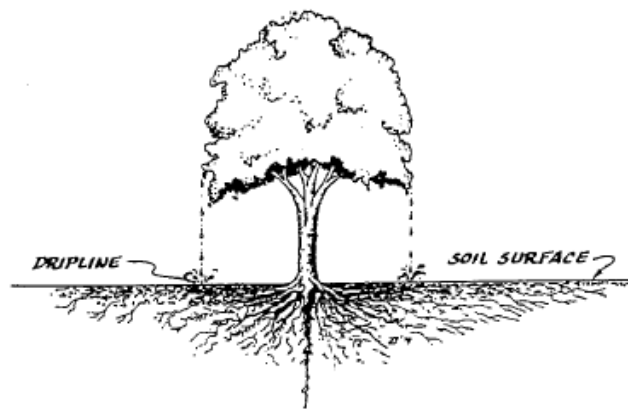


*All roots in the shaded area have been killed. The trench should be outside the dripline.*

2. Look carefully at the proposed utility line routes. Even a very shallow trench for a telephone line can kill a tree. Consider the locations of all cuts and fills. A simple rule is, "Whatever is touched by either a cut or fill is killed."

3. After marking out the building, stand back and look over the site. Quite often a small shift in the position of the building, a change in road or drive location, or even a change in a proposed utility line could make the difference between saving or cutting a valuable tree. A building does not automatically have to be located right in the exact center of the lot. Moving the building a few feet in one direction can often make it easy to save a tree.

4. Now, decide which trees are worth saving or could be saved with a little effort. If you make wise decisions now, the selected trees will be safe, and the contractor will not be handicapped by trees which would die anyway.



*The total volume of the underground roots equals the volume of trunk, branches, twig and leaves combined. However, the most important roots are inside the dripline*

## How to Save Trees & Protect the Roots

There is as much tree underground as above ground. The underground roots are much more delicate than the trunk, branches, or leaves. Since they can't be seen, they are often hurt. Root damage can kill a tree without leaving an obvious mark.

The roots within the dripline are critical. If this area is protected, the tree is not likely to be damaged by construction equipment. So keep construction activities outside the dripline of trees be saved.

## The Mini Forest

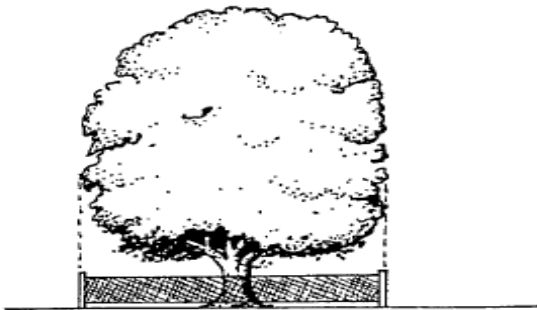
It is easier to save groups of trees than individual trees. Build a fence around the "mini-forest" to the dripline of the outside trees. The fence keeps construction machinery away from the trees. And, it's easier for machine operators to work around the clearly fenced area than trying to dodge individual trees.



*This mini-forest includes a group of trees protected from construction activities by a simple fence at the dripline of the outside trees*

## The Super Tree

Sometimes, an individual tree, although isolated from the others, is still worth saving. Simply build a fence around the dripline of this tree.



*This super tree is protected from construction activities by a fence at the dripline*

## Declare Fenced Areas "Off Limits"

After valuable trees are safely fenced, leave them alone. Nothing is to be raked, cut, planted, stored, or disturbed inside the fence.

Be sure all workers and visitors to the site understand that no one is to enter the fenced areas for any reason. Also be sure that no fires are allowed to drift smoke or hot gasses into the protected areas of the treetops.

Remove the protective fences only after all construction work has been finished, including final grading and smoothing of the site.

## Carefully Remove Unwanted Trees

Be careful about removing unwanted trees. A tree being removed might fall on and injure one of the trees you are saving.

If possible, remove unwanted trees when none of the trees have leaves. This is especially important in heavily wooded areas. When trees are in full leaf, the sudden removal of their neighbors is a great shock, and a tree to be saved could be badly injured by sunburn.

**Any final, minor grading, and smoothing around the trees, including removal of unwanted small trees or brush, should be done after at least a year has passed. This give the trees time to adjust to the new conditions before making more changes. Do the final grading by hand.**

## Handling Grade Changes

Changes in grade, cutting banks next to trees, or piling dirt close to them is almost always a sentence of slow death for a tree. However, saving a tree may still be possible if you are willing to spend the time and money to do it.

In all cases where either cutting or filling around the roots of a tree is considered, seek expert advice before you decide which trees to keep.

Following are some simple rules of thumb that may help you decide.

## Protecting Trees from Cuts

Cutting soil away from a tree changes the soil moisture level. If the cut is relatively shallow, 1 or 2 feet, and the edge of the cut is out by the dripline, the tree is not usually harmed. A cut directly next to the trunk will kill the tree. Cuts which extend into the dripline will usually kill all but the most tolerant species.

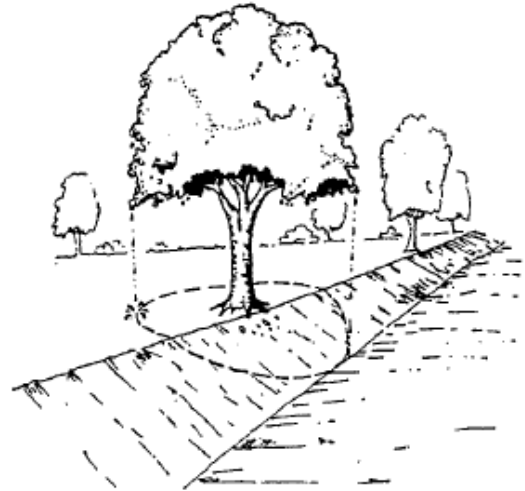
Deep cuts are hard on a tree, especially if the cut is open during hot, dry weather. The cut must be twice as far out as the dripline, and the retaining wall should be installed immediately.

## Protecting Trees from Fills

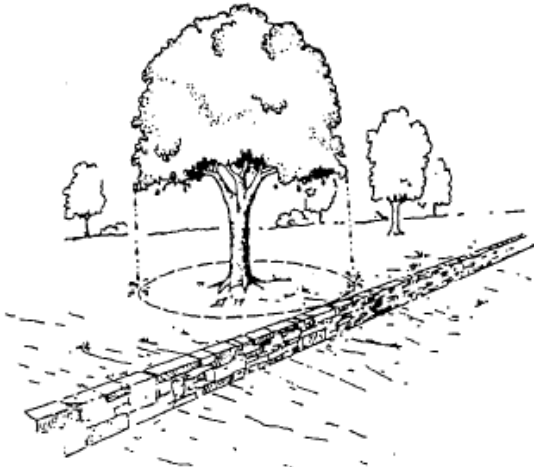
Filling around a tree smothers roots. Although the deep roots, which attaché the tree to the ground, are not affected by filling, the fine feeder roots, which are in the top 1 to 2 feet of soil, are very sensitive to changes in their environment. If these delicate small roots are injured or die, the tree is doomed. Death from filling sometimes takes 3 to 5 years. The sketches give guidance for minor fills.

It is possible to completely bury a valuable tree with special techniques. However, these can be very expensive and require expert design and installation. Generally speaking, it is easier, cheaper and more practical to alter grading plans to protect a tree that is to be buried.

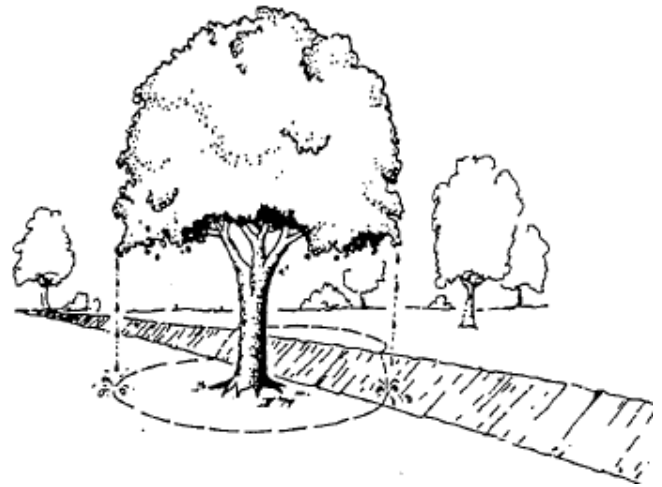
If you have a tree protection problem that cannot be solved with the information provided in this pamphlet, consult an expert with experience in saving difficult trees.



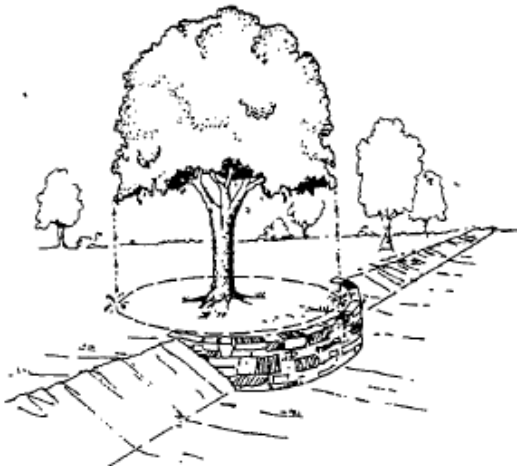
*This cut has killed half of the tree's roots. Most trees will die from root damage.*



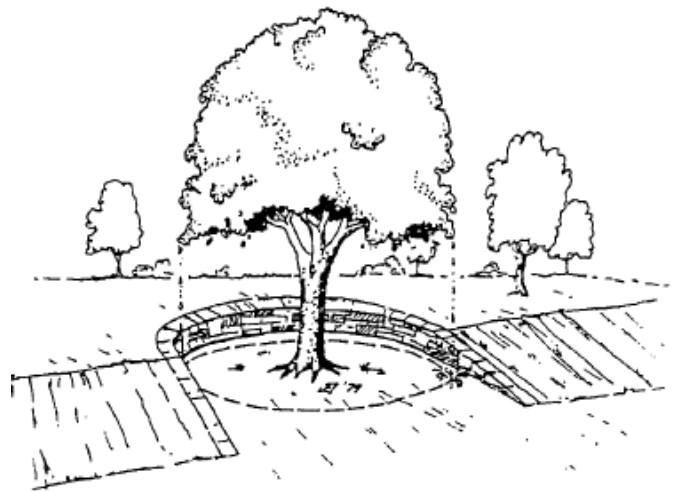
*This relatively shallow cut is outside the dripline and is protected by an attractive retaining wall. The tree should be unharmed.*



*The roots buried under the fill will die from suffocation. Most trees are killed by such fills.*



*This cut has been protected by a short, curved retaining wall at the dripline. The tree should be unharmed. Deeper cuts should be even further from the trunk,*



*The roots inside the dripline of this tree are protected from the fill by the curved retaining wall. The tree should be unharmed.*



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**CITY OF BURNSVILLE**  
**WOODLAND PRESERVATION & REFORESTATION PACKET**

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**INSTRUCTIONS FOR COMPLETING WOODLAND EVALUATION WORKSHEET  
AND TREE EVALUATION FORM**

**PURPOSE:**

You are required to file a completed Woodland Evaluation Worksheet with your Development Review Application or Tree Removal Permit application to establish the pre-development woodland condition of your site.

***WOODLAND EVALUATION WORKSHEET***

Most of the information you must provide in the worksheet pertains to deciduous trees 4 inches in diameter (measured 4 ½ feet above ground) and greater, and coniferous trees 6 feet in height or greater. Also, you must provide general information about all vegetation within the woodland portion(s) of your site. Either you or your agent who is knowledgeable about plant materials must fill out the Worksheet completely in order to avoid unnecessary delays in the processing of your application.

Please include with your completed Worksheet a survey of your site that clearly shows all existing deciduous trees 4" or greater in diameter (measured 4 ½ feet above ground) and all coniferous trees 6 feet in height or greater. Tree numbers on your site survey should match the tree numbers used on your Tree Evaluation form(s).

**General Site Data:**

Please provide a general description of the topographical and woodland character of your site, and note areas of extreme topography on your survey.

**Tree Data:**

Please list species from most prevalent to least prevalent for all deciduous trees 4 inch in diameter (measured at 2 ½ feet above ground) and greater, and all coniferous trees 6 feet in height or greater.

Significant vegetation features can be either positive or negative and might include an exceptional stand of large, healthy sugar maples, a 50-inch red oak, or a stand of elms with Dutch elm disease.

## **TREE EVALUATION FORM**

A Tree Evaluation Form is included with this packet. Please copy as needed and transfer the information from these forms into the appropriate columns on the Woodland Evaluation Worksheet.

Burnsville's ordinance requires landowners to place a value on deciduous trees which are 4 inches or greater in diameter at 4 ½ feet above the ground and all coniferous trees 6 feet or greater in height. All forms must be submitted with your completed Woodland Evaluation Worksheet.

### **Tree Evaluation Method:**

This method of evaluating shade and ornamental trees deals with individual trees, not stands of woodland or forest trees. In addition to being standardized, it is flexible, since it can be used with all sizes of trees in a variety of locations. The expertise of the Forester will be important in the ultimate determination of tree values.

Three factors are considered in determining the dollar value of a shade or ornamental tree: 1) Basic Value, 2) Condition, and 3) Location. These factors are reflected in the formula:

$$\text{Tree Value} = \text{Basic Value} \times \text{Condition Class} \times \text{Location Class}$$

These formulas are supported by the Council of Tree and Landscape Appraisers (CTLA), the Association of Landscape Contractors of America (ALCA) and the International Society of Arboriculture (ISA), and are subject to periodic revision. They incorporate regional values for tree appraisal in Burnsville's area of Minnesota.

Though generally accepted by the Landscape industry as a valid means of determining the value of trees, it is also understood that this method is not perfect. Caution should be exercised when using this method for calculating shade and ornamental tree values for purposes of appraisal, casualties, condemnations, insurance claims and litigation.

Tree values derived by the Trunk Formula Method can be "checked for reasonableness" by multiplying the property value (estimated market value from county tax records or value from recent real estate appraisal) by the subject tree's proportional tree cover assignment (percentage of 6% - 15% contribution to property value). Trunk Formula values should approximate the tree's contribution to the real estate value.

### **I. Determining Basic Value for Trees:**

Basic Values for trees are determined by adding the Replacement Cost for a particular tree species to the product of the Base Price, Cross-Sectional Area and Species Rating.

$$\text{Basic Value} = \text{Replacement Cost} + (\text{Base Price} \times \text{Cross Sectional Area} \times \text{Species Rating})$$

- Replacement Cost is defined as the cost to buy and install the largest commonly available transplantable tree within a specific region (See Attachment A).
- Base Price is defined as the wholesale-in-the-ground cost per unit of trunk area (in<sup>2</sup>) of a replacement tree measured at a height prescribed by The American Standard for Nursery Stock (ANSI 1990) (See Attachment A).
- The measurement of the Cross-Sectional Area is expressed in square inches and the accepted method for measurement is described in Attachment B.
- Species Rating is an objective comparison of listed tree species relative to their respective inherent "survivability" in Minnesota. The Species Ratings range from 25% (Low) to 90% (High) indicating that, at the present time, there is not "perfect tree", leaving room for varietal improvements. Generally, the



percentage ratings are absolute since species survivability is a constant under normal conditions, and predictable within identifiable homogenous ecological regions of the state values for most trees. (See Attachment A).

**II. Determining Condition Class for Trees:**

Condition Class, expressed as a percent, is a measure of an individual tree’s relative physical condition as compared with a specimen tree of the same species which exhibits perfect health and form. The expertise of the Forester is critical to an accurate judgment of condition. Tree condition is expressed in three percentage classes (100, 60, 20), with a perfect specimen values at 100 percent.

Deductions are made for defects, such as poor form, wounds, decay, storm damage, and insect or disease damage. Trees should be evaluated in the condition in which they are found. The following table presents a basic guide for determining condition class.

<i>Condition</i>	<i>Description</i>	<i>Condition Class (% Value)</i>
Excellent	Perfect specimen. Excellent form and vigor for Species. No mechanical injuries.	100
Good	Average condition and vigor for area. May lack desirable form characteristics of species. May show minor insect, disease, or physiological problems.	60
Poor	General state of decline. May show severe mechanical, insect, or disease injury, but death not imminent.	20

**III. Determining Location Class for Trees:**

Location Class for trees, expressed as a percent, is a measure of the benefits derived from an individual tree. Each tree is placed in one of eight percentage classes based on an evaluation of the site location, functional value, and tree placement.

**Site Location:** The site is a major factor in determining Location Class. Identical trees located on different sites may have different aesthetic values. For example, street trees have a completely separate set of aesthetic values from trees growing on residential property. Trees should be evaluated based on their current site conditions. The following table represents basic guidelines for evaluating site location.

<i>Site Location Values for Minnesota Shade and Ornamental Trees</i>	
<b>Site Location</b>	<b>Location Class (% Value)</b>
Specimen or historical trees	100
Average residential, landscape trees	80 – 90
Malls and public area trees	70 – 80
Arboretum, park and recreation trees	60 – 80
Golf course trees	60 – 80
City street trees	40 – 80
Environmental screen trees	60 – 80
Native, open woods trees	20 - 50

**Note:** Functional or Placement deficiencies will reduce site location values, and help determine placement within the above ranges. How well the tree satisfied functional uses, such as for shade, screening for privacy, noise abatement, climate control and aesthetic requirements, should be considered when deciding where to place a tree in the ranges noted. Also Placement issues such as design symmetry, crowding from other trees, interference with utilities, public safety, and potential damage to buildings, sidewalks, and other property are factors which should be considered.





## ATTACHMENT A – DETERMINING BASIC VALUE

<b>CONIFER TREES</b>				
Common Name	Scientific Name	Replacement Cost \$	Base Price \$/sq. inch	Species Rating %
Fir, Balsam	<i>Abies balsamea</i>	440	9	55
Fir, Concolor	<i>Abies concolor</i>	440	9	65
Fir, Frasier	<i>Abies fraseri</i>	440	9	50
Cedar, Eastern Red	<i>Juniperus virginiana</i>	400	7	85
Cedar, Red Varieties	<i>Juniperus spp.</i>	400	7	75
Larch, European	<i>Larix deciduas</i>	400	7	80
Larch, Japanese	<i>Larix kaempferi</i>	400	7	80
Larch, Eastern	<i>Larix laricina</i>	400	7	85
Larch, Siberian	<i>Larix siberica</i>	400	7	85
Spruce, Norway	<i>Picea abies</i>	440	9	75
Spruce, White	<i>Picea glauca</i>	420	8	80
Spruce, Black Hills	<i>Picea glauca densata</i>	420	8	80
Spruce, Black	<i>Picea mariana</i>	420	8	80
Spruce, Colorado	<i>Picea pungens</i>	420	8	70
Spruce, Colorado Varieties	<i>Picea pungens var.</i>	440	9	70
Pine, Jack	<i>Pinus banksiana</i>	420	8	55
Pine, Swiss Stone	<i>Pinus cembra</i>	440	9	80
Pine, Limber	<i>Pinus flexilis</i>	440	9	75
Pine, Austrian	<i>Pinus nigra</i>	420	8	70
Pine, Ponderosa	<i>Pinus ponderosa</i>	420	8	75
Pine, Red	<i>Pinus resinosa</i>	420	8	80
Pine, Eastern White	<i>Pinus strobus</i>	420	8	80
Pine, Scotch	<i>Pinus sylvestris</i>	420	8	70
Fir, Douglas	<i>Pseudotsuga menziesii</i>	440	9	75
Cedar, Northern White	<i>Thuja occidentalis</i>	400	7	90
Cedar, White Varieties	<i>Thuja occidentalis var.</i>	400	7	85
Eastern Hemlock	<i>Tsuga Canadensis</i>	440	9	60

<b>DECIDUOUS TREES</b>				
Common Name	Scientific Name	Replacement Cost \$	Base Price \$/sq. inch	Species Rating %
Maple, Amur	<i>Acer ginnala</i>	585	14	70
Maple, Boxelder	<i>Acer negundo</i>	530	11	70
Maple, Black	<i>Acer nigrum</i>	640	15	70
Maple, Norway	<i>Acer platanoides</i>	585	14	60
Maple Var., Norway	<i>Acer platanoides var.</i>	585	14	60
Maple, Red	<i>Acer rubrum</i>	585	14	70
Maple Var., Red	<i>Acer rubrum var.</i>	640	15	60
Maple, Silver	<i>Acer saccharinum</i>	530	11	70
Maple Var., Silver	<i>Acer saccharinum var.</i>	530	11	60
Maple Sugar	<i>Acer saccharum</i>	640	15	70
Maple Var., Sugar	<i>Acer saccharum var.</i>	640	15	70
Maple, Tatarian	<i>Acer tataricum</i>	585	14	60
Maple Hybrids	<i>Acer x freemanii</i>	640	15	65



## ATTACHMENT A – DETERMINING BASIC VALUE

<i>DECIDUOUS TREES Continued...</i>				
Common Name	Scientific Name	Replacement Cost \$	Base Price \$/sq. inch	Species Rating %
Buckeye, Ohio	<i>Aesculus glabra</i>	640	-	-
Horsechestnut, Common	<i>Aesculus hippocastanum</i>	530	-	-
Birch, Yellow	<i>Betula alleghaniensis</i>	530	11	80
Birch, Sweet	<i>Betula lenta</i>	530	11	80
Birch, River	<i>Betula nigra</i>	530	11	70
Birch, Paper	<i>Betula papyrifera</i>	530	11	40
Birch, European White	<i>Betula pendula</i>	530	11	55
Birch, Japanese white	<i>Betula platyphylla japonica</i>	530	11	55
Birch, Gray	<i>Betula populifolia</i>	530	11	60
Hornbeam, American	<i>Carpinus caroliniana</i>	640	15	70
Hickory, Bitternut	<i>Carya cordiformis</i>	640	15	80
Hickory, Shellbark	<i>Carya laciniosa</i>	640	15	65
Hickory, Shagbark	<i>Carya ovate</i>	640	15	75
Chestnut, American	<i>Castanea dentate</i>	640	15	45
Catalpa, Southern	<i>Catalpa bignonioides</i>	640	15	60
Catalpa, Northern	<i>Catalpa speciosa</i>	530	11	70
Hackberry, Common	<i>Celtis occidentalis</i>	585	14	70
Redbud, Eastern	<i>Cercis Canadensis</i>	640	15	45
Hawthorn, Hybrids	<i>Crateagus sp.</i>	585	14	70
Olive, Russian	<i>Elaeagnus angustifolia</i>	530	11	55
Beech, American	<i>Fagus grandifolia</i>	530	11	65
Ash, White	<i>Fraxinus americana</i>	585	14	60
Ash Var., White	<i>Fraxinus american var.</i>	585	14	60
Ash, Manchurian	<i>Fraxinus mandshurica</i>	640	15	65
Ash, Black	<i>Fraxinus nigra</i>	585	14	65
Ash, Var., Black	<i>Fraxinus nigra var.</i>	585	14	65
Ash, Green	<i>Fraxinus pennsylvanica</i>	530	11	65
Ash Var., Green	<i>Fraxinus pennsylvanica var.</i>	530	11	60
Ash, Blue	<i>Fraxinus, quadrangulata</i>	530	11	60
Ginko	<i>Ginko biloba</i>	640	15	85
Honeylocust, Common	<i>Gleditsia triacanthos</i>	530	11	65
Honeylocust, Common Thornless	<i>Gleditsia triacanthos Inermis var.</i>	530	11	55
Honeylocust Var., Common Thornless	<i>Gleditsia triacanthos Inermis var.</i>	585	14	45
Coffeetree, Kentucky	<i>Gymnocladus, dioicus</i>	640	15	85
Butternut	<i>Juglans cinerea</i>	530	11	45
Walnut, Black	<i>Juglans nigra</i>	585	14	70
Cucumbertree	<i>Magnolia acuminata</i>	585	14	60
Crabapple Varieties	<i>Malus spp.</i>	530	11	35-50
Mulberry, Russian	<i>Morus alba tatarica</i>	530	11	65
Mulberry, Red	<i>Morus rubra</i>	530	11	45



## ATTACHMENT A – DETERMINING BASIC VALUE

<i>DECIDUOUS TREES Continued...</i>				
Common Name	Scientific Name	Replacement Cost \$	Base Price \$/sq. inch	Species Rating %
Hop Hornbeam, American	<i>Ostrya virginiana</i>	640	15	70
Corktree, Amur	<i>Phellodendron amurense</i>	640	15	75
Corktree, Sakhalin	<i>Phellodendron sachalinense</i>	640	15	60
Sycamore, American	<i>Platanus occidentalis</i>	530	11	60
Poplar Hybrids	<i>Populus spp.</i>	530	11	50-60
Poplar, White	<i>Populus alba</i>	530	11	65
Poplar Var., White	<i>Populus alba var.</i>	530	11	55
Poplar, Balsam	<i>Populus balsamifera</i>	530	11	55
Cottonwood, Eastern	<i>Populus, deltoids</i>	530	11	70
Cottonwood Var., Eastern	<i>Populus deltoids var.</i>	530	11	70
Aspen, Bigtooth	<i>Populus grandidentata</i>	530	11	70
Poplar, Black	<i>Populus nigra</i>	530	11	55
Poplar Var., Black	<i>Populus nigra var.</i>	530	11	45
Aspen, Quaking	<i>Populus tremuloides</i>	530	11	60
Apricot, Cherry, Plums	<i>Prunus spp.</i>	530	11	30-45
Plum, American	<i>Prunus americana</i>	530	11	50
Chokecherry, Amur	<i>Prunus maackii</i>	530	11	50
Birdcherry, European	<i>Prunus padus</i>	530	11	50
Cherry, Pin	<i>Prunus pennsylvanica</i>	530	11	65
Cherry, Black	<i>Prunus serotina</i>	530	11	60
Chokecherry, Common	<i>Prunus virginiana</i>	530	11	55
Pear, Ussurian	<i>Pyrus ussuriensis</i>	585	14	70
Oak, White	<i>Quercus alba</i>	640	15	80
Oak, Swamp White	<i>Quercus bicolor</i>	640	15	90
Oak, Northern Pin	<i>Quercus ellipsoidalis</i>	640	15	70
Oak, Bur	<i>Quercus macrocarpa</i>	640	15	85
Oak, Northern Red	<i>Quercus rubra</i>	640	15	70
Oak, Black	<i>Quercus velutina</i>	640	15	65
Oak, Eastern Pin	<i>Quercus palustris</i>	640	15	65
Locust, Black	<i>Roninia pseudoacacia</i>	530	11	60
Willow Hybrids	<i>Salix spp.</i>	530	11	45
Willow, White	<i>Salix alba</i>	530	11	50
Willow Var., White	<i>Salix alba var.</i>	530	11	45
Willow, Peach-leaved	<i>Salix amygdaloides</i>	530	11	50
Willow, Corkscrew	<i>Salix matsudana totusosa</i>	530	11	25
Willow, Black	<i>Salix nigra</i>	530	11	50
Willow, Laurel	<i>Salix pentandra</i>	530	11	50
Mountainash, Korean	<i>Sorbus alnifolia</i>	585	14	60
Mountainash, American	<i>Sorbus americana</i>	530	11	60
Mountainash, European	<i>Sorbus aucuparia</i>	530	11	50
Mountainash Var., European	<i>Sorbus aucuparia var.</i>	585	14	50
Mountainash, Showy	<i>Sorbus decora</i>	585	14	65



## ATTACHMENT A – DETERMINING BASIC VALUE

<i>DECIDUOUS TREES Continued...</i>				
<b>Common Name</b>	<b>Scientific Name</b>	<b>Replacement Cost \$</b>	<b>Base Price \$/sq. inch</b>	<b>Species Rating %</b>
Tree Lilac, Japanese	<i>Syringa reticulata</i>	640	15	75
Tree Lilac Var., Japanese	<i>Syringa reticulata var.</i>	640	15	75
Linden Hybrids	<i>Tilia spp.</i>	585	14	60
Linden, American	<i>Tilia americana</i>	585	14	70
Linden Var., American	<i>Tilia americana var.</i>	585	14	65
Linden, Littleleaf	<i>Tilia cordata</i>	585	14	70
Linden, Var., Littleleaf	<i>Tilia cordata var.</i>	585	14	65
Elm, American	<i>Ulmus americana</i>	530	11	70
Elm, Siberian	<i>Ulmus pumila</i>	530	11	65
Elm, Slippery (Red)	<i>Ulmus rubra</i>	530	11	75
Elm, Rock	<i>Ulmus thomasi</i>	530	11	75



## ATTACHMENT B - DETERMINING CROSS-SECTIONAL AREA OF TREE TRUNKS

“Cross-Sectional Area,” expressed in square inches, is a measure of tree size. Diameter measurements are taken at a point on the trunk 4½ feet above ground level (breast height). Abnormal trunk conditions, branch crotches or forked trunks may make it necessary to alter the position of the measurement at a point on the trunk 6 inches to 12 inches below the deformity. Multi-stemmed trees are counted as separate trees. Their value is based on the diameter of the largest stem plus 30% percent of the value derived from the combined diameters of the remaining stems. A range of cross-sectional areas is listed below:

<i>RANGE OF CROSS-SECTIONAL AREAS</i>				
Trunk Diameter (Inches)	Cross-Sectional Area (Square Inches)		Trunk Diameter (Inches)	Cross-Sectional Area (Square Inches)
2	3.1		22	380.1
3	7.85		23	416.3
4	12.6		24	452.4
5	16.45		25	491.7
6	20.3		26	530.9
7	35.3		27	573.4
8	50.3		28	615.8
9	64.4		29	661.4
10	78.5		30	706.9
11	95.80		31	755.60
12	113.1		32	804.3
13	133.50		33	856.10
14	153.9		34	907.9
15	177.5		35	962.9
16	201.1		36	1,017.9
17	227.0		37	1,076.0
18	254.5		38	1,134.1
19	284.35		39	1,195.4
20	314.2		40	1,256.6
21	347.15			



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## NOTICE

### TREE SPECIES WHICH DO NOT MEET REFORESTATION REQUIREMENTS

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Trees which may not be planted to comply with the reforestation requirements are:

Common Name	Latin Name
Ash, White	<i>Fraxinus americana</i>
Ash Var., White	<i>Fraxinus american var.</i>
Ash, Manchurian	<i>Fraxinus mandshurica</i>
Ash, Black	<i>Fraxinus nigra</i>
Ash Var., Black	<i>Fraxinus nigra var.</i>
Ash, Green	<i>Fraxinus pennsylvanica</i>
Ash, Blue	<i>Fraxinus, quadrangulata</i>
Catalpa, Northern	<i>Catalpa speciosa</i>
Cottonwoods, Poplars (seeded varieties only)	<i>Populous spp.</i>
Ginkgo (Female only)	<i>Ginkgo biloba</i>
Locust, Black	<i>Robinia pseudoacacia</i>
Maple, Boxelder	<i>Acer negundo</i>
Maple, Silver (seeded varieties only)	<i>Acre saccharinum</i>
Mulberry Species	<i>Morus spp.</i>
Olive, Russian	<i>Elaeagnus angustifolia</i>
Non-native Ornamental Trees and Shrubs	

In addition, no single species of approved replacement trees are allowed to constitute more than 25% of the replacement trees for a particular site. This is intended to promote species diversity and reduce the likelihood of single disease or insect problems from destroying vast segments of the urban forest (i.e. Dutch elm disease was particularly devastating due to the over-reliance on them in urban plantings). Examples of acceptable and unacceptable reforestation plans are listed below. The species of trees listed are for example only.

#### **An Acceptable Reforestation Plan**

25% Black Hills Spruce, *Picea glauca densata*  
25% Swamp White Oak, *Quercus bicolor*  
25% River Birch, *Betula nigra*  
25% Honeylocust, *Gleditsia spp.*

#### **An Unacceptable Reforestation Plan**

40% Green Ash, *Fraxinus pennsylvanica*  
40% Colorado Blue Spruce, *Picea pungens*  
10% Crabapple, *Malus spp.*  
10% Norway Maple, *Acer platanoides*





**CITY OF BURNSVILLE**

**WOODLAND EVALUATION WORKSHEET**

Inspected by: \_\_\_\_\_  
Date of Inspection: \_\_\_\_\_  
Case File No. \_\_\_\_\_

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**NOTICE: Site Survey and Tree Evaluation Forms must be attached.**

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**General Project Information**

1. Project Name/Location Address: \_\_\_\_\_  
\_\_\_\_\_

**General Site Data**

2. Topographic Character: \_\_\_\_\_  
3. Woodland Character: \_\_\_\_\_

**Tree Data**

4. Overview of Woodland:

Tree Species	% (of Total Woodland)
a. _____	_____
b. _____	_____
c. _____	_____
d. _____	_____
e. _____	_____
Total 100%	

5. Significant Vegetative Features:

- a. Major Stands or Tree: \_\_\_\_\_
- b. Unique Species or Size: \_\_\_\_\_
- c. Disease/Damage: \_\_\_\_\_

**Woodland Evaluation Worksheet**

**Page 2**

**Tree Evaluation Form(s) Summary**

- 6. Total Value of Trees to be Removed: \$ \_\_\_\_\_ %
- 7. Total Value of Trees to be Preserved: \$ \_\_\_\_\_ %
- 8. Total Value of Reforestation Required: \$ \_\_\_\_\_

Note: Location of Reforestation must be shown on the landscape plan – see attached sample.

**Notes & Comments (Please add any additional information you feel would be helpful in evaluating the impact of your project on the woodland.):** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**CITY OF BURNSVILLE**

**TREE EVALUATION FORM**

<u>Tree #</u>	<u>Species</u>	Save (S) Or <u>Remove (R)</u>	Basic Value (see back)	X	Condition Class	X	Location Class	=	<u>Tree Value</u>
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____
_____	_____	_____	_____		_____		_____		_____

TOTAL VALUE THIS SHEET: \_\_\_\_\_

VALUE OF TREES TO BE REMOVED THIS SHEET: \_\_\_\_\_

VALUE OF TREES TO BE SAVED THIS SHEET: \_\_\_\_\_



**EXAMPLE – Village of Lake Earle – The Rottlund Company #96212  
 TREE INVENTORY, PROPOSED REMOVAL & VALUATION LIST BASED ON WOODLAND SURVEY**

**S = Trees Saved    R = Trees Removed**

S/R	TREE #	SIZE	TYPE	X-SECT	SPEC%	COND.%	LOC	VALUE
R	0010	12"	Cottonwood	113.1	.40	.60	.20	146.58
R	0011	12"	Cottonwood	113.1	.40	.60	.20	146.58
R	0013	8"	Cottonwood	50.3	.40	.60	.20	65.79
R	0014	6"	Cottonwood, DBL	30.3	.40	.60	.20	39.27
S	0018	8"	Cottonwood, DBL	75.3	.40	.60	.20	97.59
R	0023	8"	Cottonwood	50.3	.40	.60	.20	65.19
R	0027	13"	Box Elder	113.1	.20	.60	.20	73.29
R	0031	6"	Box Elder, DBL	30.3	.20	.60	.20	19.63
R	0033	9"	Cottonwood	78.5	.40	.60	.20	101.74
R	0034	11"	Cottonwood, DBL	117.75	.40	.60	.20	152.60
R	0035	8"	Cottonwood	50.3	.40	.60	.20	65.19
R	0057	13"	Cottonwood, DBL	169.7	.40	.60	.20	219.33
R	0069	6"	Box Elder	20.3	.20	.60	.60	39.46
R	0073	15"	Bur Oak	177.0	1.00	.60	.60	1,720.44
R	0077	22"	Bur Oak (2/3 dead)	380.1	1.00	.20	.60	1,231.52
R	0078	22"	Bur Oak	380.1	1.00	.60	.60	3,694.57
R	0082	7"	Russian Olive	35.3	.80	.60	060	274.49
R	0091	14"	Bur Oak	153.9	1.00	.60	.60	1,495.91
R	0092	13"	Bur Oak, DBL	133.5	1.00	.60	.60	1,297.62
R	0093	7"	American Elm	35.3	.40	.60	.60	137.25
R	0095	14"	Bur Oak	153.9	1.00	.60	.60	1,495.91
R	0096	6"	Chinese Elm	20.3	.40	.60	.60	78.92
R	0097	14"	Bur Oak	153.9	1.00	.60	.60	1,495.91
R	0098	7 ½ "	American Elm	50.3	.40	.60	.60	195.57
R	0101	17"	Bur Oak	227.3	1.00	.60	.60	2,214.22
R	0103	15"	Red Oak (1/2 missing)	177.5	1.00	.20	.60	575.10
R	0104	15"	Bur Oak	177.5	1.00	.60	.60	1,725.30
R	0105	13"	Bur Oak	133.5	1.00	.60	.60	1,297.62
R	0109	14"	Cottonwood	153.9	.40	.60	.60	598.36
R	0111	13"	Cottonwood	133.5	.40	.60	.60	519.05
R	0113	16"	Cottonwood	201.1	.40	.60	.60	781.88
R	0114	6"	Box Elder, Quad	20.3	.20	.60	.60	39.46
R	0115	6"	Box Elder, DBL	20.3	.20	.60	.60	39.46
R	0117	12"	Chinese Elm	113.1	.40	.60	.60	439.73
R	0119	10"	Willow, DBL	78.5	.20	.60	.60	152.60
R	0124	12"	Cottonwood, DBL	113.1	.40	.60	.60	439.73
R	0125	7"	Cottonwood, DBL	35.3	.40	.60	.60	137.25
R	0126	6"	Cottonwood	20.3	.40	.60	.60	78.93
R	0127	6"	Willow (7 trunks)	20.3	.20	.60	.60	39.46
R	0128	8"	Willow (6 trunks)	50.3	.20	.60	.60	97.78
R	0130	6"	Willow, DBL	20.3	.20	.60	.60	39.46
R	0131	6"	Willow, Quint	20.3	.20	.60	.60	39.46
R	0132	7"	Willow	35.3	.20	.60	.60	68.62

Page 1	Total Saved:	\$97.59
	Total Removed:	\$23,576.23

**EXAMPLE – Village of Lake Earle – The Rottlund Company #96212  
 TREE INVENTORY, PROPOSED REMOVAL & VALUATION LIST BASED ON WOODLAND SURVEY**

**S = Trees Saved    R = Trees Removed**

S/R	TREE #	SIZE	TYPE	X-SECT	SPEC%	COND.%	LOC	VALUE
R	0133	12"	Willow (6 trunks)	113.1	.20	.60	.60	219.87
R	0134	9"	Willow (Leaning	64.4	.20	.20	.60	41.73
R	0135	13"	Cottonwood	133.5	.40	.60	.60	519.04
R	0136	12"	Chinese Elm, DBL	169.7	.40	.60	.60	659.80
S	0137	9"	Willow (6 trunks)	64.4	.20	.60	.60	125.20
R	0138	6"	Cottonwood	20.3	.40	.60	.60	78.93
R	0140	7"	Willow, Quint	35.3	.20	.60	.60	68.62
R	0141	9"	Willow, TPL	64.4	.20	.60	.60	125.20
R	0142	6"	Willow, Quint	20.3	.20	.60	.60	39.46
R	0147	9"	Chinese Elm	64.4	.40	.60	.60	250.39
R	0148	9"	Chinese Elm	64.4	.40	.60	.60	250.39
R	0149	6"	Box Elder (7 trunks)	60.9	.20	.60	.60	118.39
R	0157	7"	Willow, TPL	35.3	.20	.60	.60	114.37
R	0164	6"	Chinese Elm, DBL	30.3	.40	.60	.60	117.81
S	0167	6"	Chinese Elm, TPL	40.6	.40	.60	.60	137.35
R	0169	6"	Chinese Elm, DBL	30.3	.40	.60	.60	117.31
R	0175	6"	Chinese Elm	20.3	.40	.60	.60	78.93
R	0176	8"	Chinese Elm	50.3	.40	.60	.60	195.57
R	0177	7"	Chinese Elm	35.3	.40	.60	.60	137.25
R	0180	6"	Chinese Elm, TPL	40.6	.40	.60	.60	157.85
R	0184	6"	Chinese Elm, DBL	30.3	.40	.60	.60	117.81
S	0187	28"	Bur Oak	615.8	1.00	.60	.60	5,985.58
S	0194	84"	Cottonwood (1/2 missing)	5,541.7	.40	.20	.60	266.00
S	0196	65"	Cottonwood	3,318.3	.40	.60	.60	12,901.55
S	0197	11"	Cottonwood	95.8	.40	.60	.60	372.00
S	0198	17"	Cottonwood, TPL	455.6	.40	.60	.60	1,771.37
S	0199	12"	Cottonwood	113.1	.40	.60	.60	439.73
S	0200	14"	Cottonwood, DBL	230.9	.40	.60	.60	897.74
S	4145	6"	Cottonwood	20.3	.40	.60	.60	78.93
S	4146	6"	Cottonwood	20.3	.40	.60	.60	78.93
S	4147	11"	Cottonwood	95.8	.40	.60	.60	372.47
S	4448	8"	Cottonwood	50.3	.40	.60	.60	195.57
S	4149	14"	Cottonwood	153.9	.40	.60	.60	598.36
S	4450	13"	Cottonwood	133.5	.40	.60	.60	519.05
S	4451	14"	Cottonwood, DBL	230.9	.40	.60	.60	897.74
S	4152	7"	Cottonwood, DBL	52.95	.40	.60	.60	205.87
S	4153	6"	Cottonwood	20.3	.40	.60	.60	78.93
S	4154	13"	Cottonwood	133.5	.40	.60	.60	519.05
S	4155	7"	Cottonwood, DBL	52.95	.40	.60	.60	205.87
S	4156	7"	Cottonwood, DBL	52.95	.40	.60	.60	205.87
S	4157	13'	Cottonwood	133.5	.40	.60	.60	519.05
S	4158	7"	Cottonwood	35.3	.40	.60	.60	137.25
S	4159	9"	Cottonwood	64.4	.40	.60	.60	250.39
S	4160	6"	Cottonwood	20.3	.40	.60	.60	78.93
S	4161	15"	Cottonwood	177.5	.40	.60	.60	690.12

Page 2	Total Saved:	\$3,534.42
	Total Removed:	\$28,404.20

**EXAMPLE – Village of Lake Earle – The Rottlund Company #96212**  
**TREE INVENTORY, PROPOSED REMOVAL & VALUATION LIST BASED ON WOODLAND SURVEY**

**S = Trees Saved    R = Trees Removed**

S/R	TREE #	SIZE	TYPE	X-SECT	SPEC%	COND.%	LOC	VALUE
S	4162	8"	Cottonwood	50.3	.40	.60	.60	195.57
S	4163	15"	Cottonwood	177.5	.40	.60	.60	690.12
S	4164	9"	Cottonwood	64.4	.40	.60	.60	250.39
S	4165	12"	Cottonwood	113.1	.40	.60	.60	439.73
S	4166	8"	Chinese Elm	50.3	.20	.60	.60	97.78
S	4167	8"	Box Elder	50.3	.20	.60	.60	97.78
R	4168	8"	Chinese Elm, DBL	64.4	.20	.60	.60	125.19
S	4169	9"	Cottonwood (Dead)	64.4	.20	.00	.60	0.00
S	4170	6"	Box Elder, DBL	30.3	.20	.60	.60	58.90
S	4171	6"	Black Cherry	20.3	.40	.60	.60	78.93
S	4172	17"	Paper Birch, DBL	341.7	.60	.60	.60	1,992.79
S	4173	15"	Paper Birch (1/2 missing)	177.5	.60	.20	.60	345.06
S	4174	6"	Paper Birch, DBL	30.3	.60	.60	.60	176.71
S	4175	14"	Paper Birch	153.9	.60	.60	.60	897.54
S	4176	6"	Paper Birch	20.3	.60	.60	.60	118.39
S	4177	13"	Paper Birch, DBL	200.3	.60	.60	.60	1,168.15
S	4178	16"	Paper Birch, DBL (1/2 dead)	201.1	.60	.20	.60	390.94
S	4179	7"	Paper Birch	35.3	.60	.60	.60	205.87
S	4180	16"	Paper Birch, DBL	201.1	.60	.60	.60	1,172.82
S	4181	6"	Box Elder	20.3	.20	.60	.60	39.46
S	4182	10"	Paper Birch	78.5	.60	.60	.60	457.81
S	4183	8"	Paper Birch	50.3	.60	.60	.60	293.35
S	4184	16"	Paper Birch, TPL	402.0	.60	.60	.60	2,344.46
R	4185	7"	Paper Birch, DBL	53.0	.60	.60	.60	309.40
S	4186	10"	Paper Birch, Quint	196.3	.60	.60	.60	1,144.82
S	4187	9"	Paper Birch, Quad	161.0	.60	.60	.60	938.95
S	4188	12"	Paper Birch, Dead	113.1	.60	.00	.60	00.00
S	4189	9"	Paper Birch	64.4	.60	.60	.60	375.58
S	4190	18"	Paper Birch, TPL	254.5	.60	.60	.60	1,481.33
R	4436	10"	Cottonwood	78.5	.40	.60	.20	101.74
S	4437	14"	Cottonwood	153.9	.40	.60	.60	688.11
S	4438	12"	Cottonwood	113.1	.40	.60	.60	439.73
S	4439	12"	Cottonwood	113.1	.40	.60	.60	439.73
S	4440	10"	Cottonwood	78.5	.40	.60	.60	305.21
S	4441	36"	Cottonwood	1,017.9	.40	.60	.60	3,938.16
S	4442	12"	Cottonwood	113.1	.40	.60	.60	439.73
S	4443	10"	Cottonwood	78.5	.40	.60	.60	305.21
S	4444	12"	Cottonwood, DBL	113.1	.40	.60	.60	439.73
S	4445	8"	Willow	50.3	.20	.60	.60	97.78
S	4446	8"	Cottonwood, TPL	100.6	.40	.60	.60	391.13
S	4447	6"	Willow, TPL	20.3	.20	.60	.60	39.46
R	4448	8"	Cottonwood	50.3	.40	.60	.20	65.19
R	4449	8"	Willow, TPL	50.3	.20	.60	.20	32.59
S	4450	12"	Cottonwood	113.1	.40	.60	.60	439.73
S	4451	12"	Cottonwood, DBL	169.7	.40	.60	.60	659.79

Page 3	Total Saved:	\$633.81
	Total Removed:	\$24,076.73

**EXAMPLE – Village of Lake Earle – The Rottlund Company #96212**  
**TREE INVENTORY, PROPOSED REMOVAL & VALUATION LIST BASED ON WOODLAND SURVEY**

**S = Trees Saved    R = Trees Removed**

S/R	TREE #	SIZE	TYPE	X-SECT	SPEC%	COND.%	LOC	VALUE
S	4452	6"	Cottonwood, DBL	30.3	.40	.60	.60	117.81
S	4453	6"	Willow, DBL	20.3	.20	.60	.60	39.46
S	4454	14"	Cottonwood	153.9	.40	.60	.60	598.36
S	4455	24"	Willow	452.4	.20	.60	.60	879.47
S	4456	8"	Willow	50.3	.20	.60	.60	97.78
S	4457	10"	Cottonwood	78.5	.40	.60	.60	305.21
S	4458	12"	Cottonwood	113.1	.40	.60	.60	439.73
S	4459	10"	Box Elder	78.5	.20	.60	.60	152.60
S	4460	10"	Box Elder	78.5	.20	.60	.60	152.60
S	4461	12"	Elm	113.1	.40	.60	.60	439.73
S	4462	10,12"	Cottonwood	191.6	.40	.60	.60	744.94
S	4463	16"	Cottonwood	201.1	.40	.60	.60	781.88
S	4464	10"	Box elder	78.5	.20	.60	.60	152.60
S	4465	8"	Box Elder	50.3	.20	.60	.60	97.78
S	4466	12"	Elm	113.1	.40	.60	.60	439.73
S	4467	12"	Cottonwood	113.1	.40	.60	.60	439.73
S	4468	8"	Willow	50.3	.20	.60	.60	97.78
S	4469	16"	Cottonwood	201.1	.40	.60	.60	781.88
S	4470	8"	Elm	50.3	.40	.60	.60	195.57
S	4471	14"	Elm	153.9	.40	.60	.60	598.36
S	4472	6"	Elm	20.3	.40	.60	.60	78.93
S	4473	12"	Elm	113.1	.40	.60	.60	439.73
R	4474	12"	Cottonwood	113.1	.40	.60	.60	439.73
S	4475	6"	Box Elder	20.3	.20	.60	.60	39.46
S	4476	20"	Box Elder	314.2	.20	.60	.60	612.75
S	4477	10"	Elm	78.5	.40	.60	.60	305.21
R	4478	6"	Box Elder, TPL	40.6	.20	.60	.60	78.93
S	4479	18"	Elm	251.5	.40	.60	.60	977.83
S	4480	6"	Elm, DBL	30.3	.40	.60	.60	117.81
S	4481	12"	Cottonwood, TPL	126.1	.40	.60	.60	490.28
S	4482	8"	Cottonwood, DBL	75.3	.40	.60	.60	292.77
S	4483	7"	Cottonwood	35.3	.40	.60	.60	137.25
S	4484	13"	Cottonwood	133.5	.40	.60	.60	519.05
S	4485	10"	Willow	78.5	.20	.60	.60	152.60
S	4486	12"	Willow	113.1	.20	.60	.60	219.87
S	4487	10"	Willow, Quad	78.5	.20	.60	.60	152.60
S	4488	10"	Willow, TPL	78.5	.20	.60	.60	152.60
S	4489	14"	Willow, TPL	153.9	.20	.60	.60	299.18
S	4490	9"	Box Elder	64.4	.20	.60	.60	125.19
S	4491	9"	Cottonwood, DBL	96.4	.40	.60	.60	374.80
S	4492	9"	Cottonwood	64.4	.40	.60	.60	250.39
S	4493	9"	Cottonwood	64.4	.40	.60	.60	250.39
S	4494	6"	Cottonwood	64.4	.40	.60	.60	250.39
S	4495	8"	Cottonwood	50.3	.40	.60	.60	195.57
S	4496	13"	Cottonwood	133.5	.40	.60	.60	513.05
S	4497	17"	Cottonwood	227.8	.40	.60	.60	885.69

Page 4	Total Saved:	\$518.66
	Total Removed:	\$15,392.39



**EXAMPLE – Village of Lake Earle – The Rottlund Company #96212**  
**TREE INVENTORY, PROPOSED REMOVAL & VALUATION LIST BASED ON WOODLAND SURVEY**

**S = Trees Saved   R = Trees Removed**

<b>S/R</b>	<b>TREE #</b>	<b>SIZE</b>	<b>TYPE</b>	<b>X-SECT</b>	<b>SPEC%</b>	<b>COND.%</b>	<b>LOC</b>	<b>VALUE</b>
S	4498	12"	Cottonwood, DBL	169.7	.40	.60	.60	659.79
S	4499	7"	Cottonwood	35.3	.40	.60	.60	137.25
S	4500	12"	Cottonwood	113.1	.40	.60	.60	439.73

Page 5	Total Saved:	\$1,236.77
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**PROJECT TOTALS:**

TOTAL TREE VALUE REMOVED:        \$28,263.12  
TOTAL TREE VALUE SAVED:            \$69,207.68





Permit Fee: \$225.00

Paid: \_\_\_\_\_

## CITY OF BURNSVILLE

### 2012 TREE REMOVAL PERMIT

**Note:** A Tree Removal Permit is not required on projects which have gone through the Development Review Process and have an approved Development Agreement with the City of Burnsville.

**Property Owner:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

\_\_\_\_\_

**Fax:** \_\_\_\_\_

**Location of Tree Removal Lot/Block or PID (if address not available):** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Site Survey Completed and Attached

\_\_\_\_\_ Tree Evaluation Worksheet Completed and Attached

\_\_\_\_\_ Woodland Preservation Cash or Letter of Credit Collected

(Security amount is 1.5 times the value to be preserved, bonding only required on these trees to be preserved which are beyond the removal threshold.)

Approved by: \_\_\_\_\_

Date \_\_\_\_\_

**Permit void after twelve months from approval date.**

**- S A M P L E -**

***CALCULATING GREEN SPACE***

**SITE DATA:**

SITE AREA:	578,691 S.F.	=	13.28 AC
BUILDING AREA:	76,327 S.F.		
GREEN REQUIRED:	289,346 S.F.	=	50%
GREEN PROVIDED:	321,853 S.F.	=	55.6%
GREEN WITHIN PARKING REQUIRED:	166,193 S.F. @ 3%	=	4,985 S.F.
GREEN WITHIN PARKING PROVIDED:	13,074 S.F.	=	7.9%
PERIMETER OF BUILDING:		=	2,520 L.F.
REQUIRED GREEN:		=	1,260 L.F. = 50%
PROVIDED GREEN:		=	1,970 L.F. = 78.2%

***CALCULATING WOODLAND PRESERVATION***

**WOODLAND SURVEY:**

TOTAL WOODLAND VALUE:		\$40,991.15
REMOVAL THRESHOLD		\$20,495.58 = 50%
<u>723 TREES INVENTORIED</u>		
460 TREES TO BE REMOVED	=	63.6%
263 TREES TO BE SAVED	=	36.4%
VALUE OF TREES REMOVED	=	\$26,070.37
VALUE OF TREES SAVED	=	\$14,920.78
REQUIRED VALUE TO BE SAVED	=	\$20,495.58
ACTUAL WOODLAND SAVED	=	<u>\$14,920.78</u>
VALUE TO BE REFORESTED	=	\$ 5,574.80
AVERAGE 6' EVERGREEN PRICE	-	\$ 350.00
\$5,574.80 - \$350.00 = 15.9 TREES		
PROPOSED REFORESTATION OF 16 – 6' EVERGREEN TREES		

**ZONING ORDINANCE EXCERPT:**  
***Title 10-8-9 Woodland Protection Standards (May 2010)***

10-8-2:       **DEFINITIONS:** For purposes of this chapter, the following words and phrases are defined as follows:

**BUILDING ACTIVITY AREA:** The area on the lot where building activity shall take place, including the entire area affected by building and grading activities related to the approved construction.

**CLEAR-CUTTING:** The removal of an entire stand of trees.

**COMPACTION:** Reducing the bulk of soil in a tree's critical root zone (within the drip line) by rolling, tamping and compression.

**CROWN COVER:** The ratio between the amount of land shaded by the vertical projection of the branches and foliage area of standing trees to the total area of land, usually expressed as a percentage.

**CUTTING:** Cutting means felling or removal of a tree or any procedure (including root removal) the result of which is to cause the death or substantial destruction of a tree. Cutting does not include normal pruning and trimming.

**DRIP LINE:** An imaginary vertical line, which extends from the outermost branches of a tree's canopy to the ground.

**REMOVE OR REMOVAL:** The actual physical removal, or the effective removal through damaging, poisoning or other direct or indirect action resulting in, or likely to result in, the death of the tree.

**SHALLOW SOILS:** Soils located over bedrock which lies three feet (3') to five feet (5') below the ground surface.

**TREE:** Any perennial woody plant having a main trunk and a distinct crown. See also – definition of vegetation.

**TREE PRESERVATION AREAS:** Areas identified on a site plan where no construction or vegetation removal activity can occur, except undesirable trees and vegetation approved by the city forester.

**UNDEVELOPED PROPERTY:** Any property within the city on which no development (as defined in 10-4-2) has occurred.

**VARIANCE:** The same as that term as defined or described in Minnesota Statutes, Chapter 462, and sections 10-4-2 and 10-5-4 (A) of this title.

**VEGETATION:** All plant growth, including without limitation, trees, shrubs, mosses and grasses. See also – definition of tree.

**VEGETATION, NATIVE:** The pre-settlement group of plant species native to the North American continent which were not introduced as a result of European settlement.

**WOODLAND:** Any tree or stand of trees and other associated vegetation to include understory trees, shrubs, grasses, and leaf litter.

10-8-3:       **LEGISLATIVE FINDINGS AND PURPOSE:**

(D)   **Woodland Overlay District:** The preservation of trees and woodlands within the city is critical to the health, safety and welfare of the citizens of the city, as well as those of the metropolitan area. Existing and

potential development within the city and the metropolitan area has the effect of reducing and in some cases eliminating wooded areas, which, if preserved and maintained, serve important ecological, recreational and aesthetic functions to the benefit of present and future residents of the city. Therefore, the purposes of this title are:

To preserve woodlands and trees on individual sites, protect the safety of the residents by preventing wind and water erosion, slope instability and rapid runoff, promote the health of the residents by absorption of air pollutants, contaminants and noise; increasing rainfall infiltration to the water table, provide a diversified environment for many kinds of animals and plants necessary for wildlife maintenance and important to the aesthetic values and recreational requirements of the area and promote energy conservation by shading buildings in the summer and breaking winds in the winter.

10-8-4: **OVERLAY DISTRICT ADMINISTRATION:**

(A) **Administration:** Except as hereinafter provided, no one may perform any development in a Stormwater, Woodlands, Wetlands, Soil Erosion or Restrictive Soils Overlay District or obtain a development permit, without first having demonstrated that the proposed activity will meet or exceed the additional performance standards contained in this title. Any application for a development permit on land which is covered, in whole or in part, by this title shall include a site plan. Other engineering data, such as surveys, soil studies, and other descriptive information, may also be required at the direction of the city. A specific description of the type, amount and location of the development, and a description of the ecological characteristics of the natural features contained on the property, as well as the conservation plan describing actions to be taken to mitigate detrimental effects of development may also be required. When the proposed development includes the construction or alteration of a structure, eight (8) sets of plans shall be submitted with the application.

(B) **Exceptions:**

1. **Emergency Work Necessary to Preserve Life or Property:** A person may commence emergency work necessary to preserve life or property, provided that within ten (10) days following the commencement of that activity, he/she submit a site plan for review along with any other information, requested by the city necessary to determine if the performance standards contained in this title were met.

If upon this review it is determined that all of the performance standards were not met, a plan shall be submitted and implemented (following city approval) to restore the natural resources to meet the intent of the performance standards contained in this title.

2. **Repair or normal maintenance.**

(C) **Conditional Use:** An applicant of a proposed development whose development does not comply to the letter with one or more of the standards in chapter 8, but meets the spirit of the standards, may apply to the city council for a conditional use permit, pursuant to Section 10-5-5. The applicant shall demonstrate that the standards of section 10-5-5 have been met, and that the proposed development adheres to the purposes of the overlay district standards. The planning commission and city council may attach conditions they deem necessary to protect the overlay district and insure that the intent and purpose of the overlay district is accomplished.

(D) **Enforcement:** The city manager, or his or her designee, is responsible for the administration and enforcement of this chapter. Any violation of the provisions of this chapter or failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with grants of variances or conditional and interim uses) shall constitute a misdemeanor and shall be punishable as defined by law. Violations of this chapter can occur regardless of whether or not a permit is required for a regulated activity pursuant to section 10-8-10(A)(1) of this chapter.

- (E) **Interpretation:** In their interpretation and application, the provisions of this chapter shall be held to be minimum requirements and shall be liberally construed in favor of the city and shall not be deemed a limitation or repeal of any other powers granted by state statutes.
- (F) **Abrogation and Greater Restrictions:** It is not intended by this chapter to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this chapter imposes greater restrictions, the provisions of this chapter shall prevail. All other provisions of this title inconsistent with this chapter are hereby repealed to the extent of the inconsistency only.
- (G) **Definitions:** Unless specifically defined in sections 10-4-2 and 10-8-2 of this title, words or phrases used in this chapter shall be interpreted so as to give them the same meaning as they have in common usage and so as to give this chapter its most reasonable application. For the purpose of this chapter, the words "must" and "shall" are mandatory and not permissive. All distances, unless otherwise specified, shall be measured horizontally.

10-8-9: **WOODLAND PROTECTION STANDARDS:** No development shall be allowed or development permit issued within the City of Burnsville until the council finds that the development will comply with the following:

- (A) To the extent possible, woodlands shall be preserved by locating structures in existing clearings and by the use of other innovation design technique. Variances may be granted to developers when granting of such will help protect and preserve a woodland.
- (B) **Undeveloped Land.** No coniferous trees six feet (6') or taller or deciduous trees four inches (4") or greater in diameter as measured at four and one half feet (4 ½') above the ground shall be removed from undeveloped property without a tree removal permit, or as part of a city approved development of the property. A woodland evaluation worksheet is required on all new development projects. Any trees removed prior to development, through a Tree Removal Permit, shall be included in future woodland removal calculations. For purposes of calculating woodland values, trees in existence as of 11/15/82 (date of original Woodland Ordinance) shall be included. While development shall retain the maximum amount of woodland possible, it is recognized that a certain amount of woodland removal is an inevitable consequence of the urban development process.

The threshold of clearing for each zoning district, beyond which reforestation shall be required, is as follows: (Ord. 1196, 4-6-10)

<u>Zoning District</u>	<u>*Woodland Removal Threshold</u>
R-1, R-1A	40%
R-2, R-3A, R-3B, R-3C, R-3D	50%
B-1, B-2	50%
B-3, B-4	60%
I-1, I-2, I-3, GIM, GIH	60%

\*Applies only to deciduous trees 4" or greater in diameter at 4½' feet above the ground and coniferous trees 6' feet or taller.

- (C) **Developed Land.** Property owners may remove trees, (unless restricted by a CUP or PUD or other development agreement) under the following circumstances:
  1. In all zoning districts, any deciduous trees less than four inches (4") in diameter, at four and a half (4 ½") above the ground, and any dying or dead trees. No permit is required.
  2. On residential lots under two (2) acres any tree. No permit is required.

3. On residential lots of two (2) or more acres, and all other zoning districts, up to the tree removal threshold identified in Section “B.” Removal of trees requires a tree removal permit and reforestation for trees removed beyond the identified thresholds.

- (D) Trees, which are committed to preservation through permit or agreement, shall be surveyed by the developer or landowner. A replacement value for each tree will be determined by the city using the city's Shade Tree Evaluation Method. Letter of credit for the value of trees which are to be preserved beyond the removal threshold under this chapter shall be at the rate of one and one-half (1½) times the determined valuation.

The city’s standard letter of credit form shall be used. The letter(s) of credit will be released when the following conditions are met:

1. Eighteen (18) months has passed from the end of construction (determined by the issuance of a certificate of occupancy) in the area for which the letter(s) of credit were collected. (Ord. 1196, 4-6-10)
2. An inspection by city staff has verified that the trees which were to be preserved are in good condition.

Exceptions to the above will be considered if unique circumstances exist. Exceptions must be reviewed and approved by both the city forester and planning staff.

- (E) The city may permit additional tree removal by requiring reforestation in adjacent areas such as yard setbacks, outlots, or parklands. A tree removal permit to exceed the identified removal threshold will only be issued after review by the city forester and planning staff to ensure that the best available layout has been used to preserve significant trees and woodland areas. Reforestation shall occur in an amount equal to 1.5 times the value of the trees removed beyond the tree removal threshold. The value of the trees removed shall be determined by the shade tree evaluation method. Reforestation plans shall not include the use of any of the tree species which are currently on the city’s list of “Species Which Do Not Meet Reforestation Requirements.” No more than 25% of the reforestation plan shall consist of any one species, including shrubs provided on any related landscape plan.
- (F) Grading, contouring, paving, compaction of soils, or any excavation or trenching shall not occur within the dripline of tree preservation areas. Such activity has a detrimental effect on the aeration and permeability of the soils and causes permanent damage to the primary root zone of trees.
- (G) Measures shall be taken to protect and preserve the woodlands as described in the city’s “Practical Guide to Preventing Construction Damage to Trees.”
- (H) Notwithstanding the above, the removal of dead or dying trees seriously damaged by storm, other acts of nature, or disease is not prohibited. Trees removed due to acts of nature do not require reforestation.
- (I) **Construction Sites.** No movement and placement of equipment or materials storage shall be permitted outside the building activity area or in the tree preservation area. All buildings and driveways shall be located to avoid tree damage consistent with minimum building setback requirements of the zoning ordinance. The tree preservation area shall be temporarily fenced (with highly visible 4’ high fencing) by the developer during all construction so that all trees in the tree preservation area shall be preserved. The city manager or designee shall have the authority to stop construction on the site until adequate barriers have been constructed. If a barrier is constructed on the site and is not adequately maintained in a manner, which protects the tree preservation area, the city manager or designee shall have the authority to stop construction until the barrier is repaired.
- (J) Permits authorizing removal of trees may be issued by the city manager or designee in circumstances when the issuance of such a permit is found to be consistent with the purpose of this section.



In all cases of permit application, the city manager or designee shall use reasonable interpretations of the circumstances in determining whether or not the permit should be issued.

- (K) **Appeals.** The property owner may appeal to the planning commission and city council any decision made by the city manager or other city official under the provisions of this section within thirty (30) days of the decision being rendered.

