

A GUIDE: DEVELOPING A STREET AND PARK TREE MANAGEMENT PLAN



*An introduction to the preparation of a strategic
approach to the care and maintenance
of your community forest*



USDA Forest Service
Northeastern Area

Northeast Center for Urban
& Community Forestry
Holdsworth Natural Resource Ctr.
University of Massachusetts
Amherst, MA
(413) 545-3755
<http://www.umass.edu/urbantree>

V. 1.0

Introduction:

This guide was developed to assist in the preparation of a street and park tree management plan for small to medium sized communities, typically less than 50 miles of roadways. The development of a street and park tree management plan is an important tool in managing our urban forests and should be the first step in the process of caring for your community's trees. Without a management plan, the individuals responsible for taking care of our urban forests will not be effective in meeting the true needs of the trees. A management plan establishes a clear set of priorities and objectives. The manager can then use these as a guideline to maintain and create a healthy resource for all people to enjoy.

The creation of a management plan can be a difficult task if a clear set of objectives is not established at the start of the planning process. Those who prepare the plan must determine what they are trying to accomplish in compiling the plan. They also have to decide what information is to be collected and inventoried for the plan. Each community needs to tailor their plan to meet their specific goals and objectives.

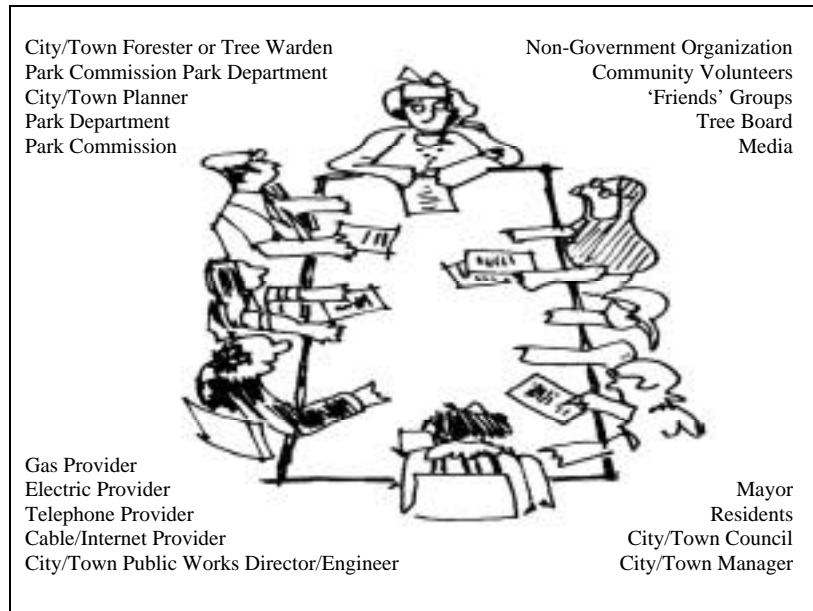
This guide will discuss the most important areas found in a basic street and park tree management plan. The topics addressed in this guide should be taken into account while compiling a street and park tree management plan. The following is a brief outline of what is covered in this guide:

- The Key Players
- Completing an Inventory
- Compile Results
- Species Distribution
- Condition Assessment
- Maintenance Needs
- Trimming
- Planting
- Economics

Urban & Community Forest Master Plan Town of Anywhere, USA



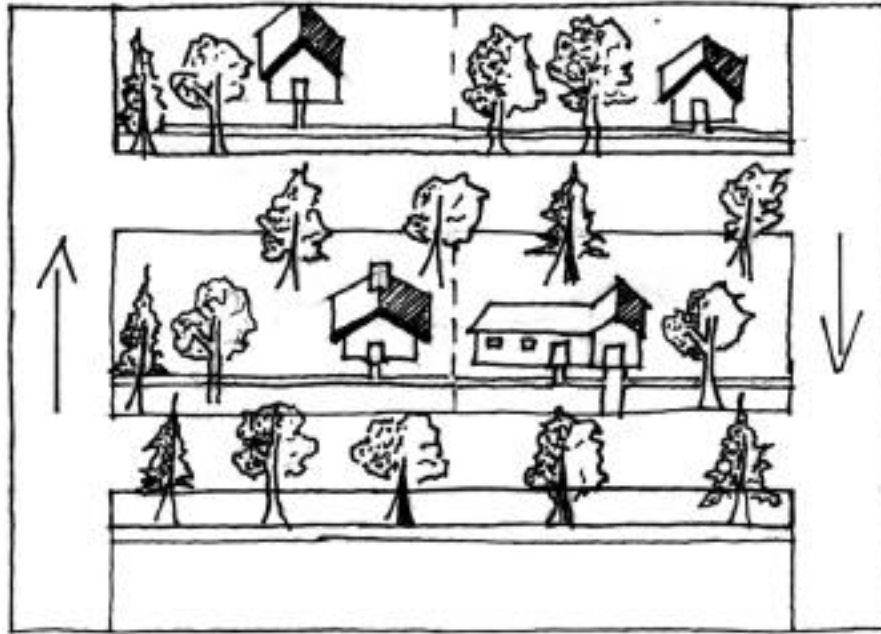
Prepared by:
Anywhere Bureau of Forestry
Mr. Arbor Day
in cooperation with
State Dept. of Environmental Conservation
March, 2000



The Key Players

An urban and community forestry program in your community must be cooperative with a variety of other municipal departments, public agencies, utility providers, policy makers, non-government organizations and the general public. The overall urban and community forestry program must interact with other city programs, especially in the most obvious areas of street and park trees. The City Forester, Tree Warden, or Urban Forester is normally the key contact person for issues related to the care of trees growing in parks or along roadways, and should be consulted and invited to be a vital component of any tree management plan that is developed for your community. In most cases, the Tree Warden or City Forester will be the individual who will ultimately have legal authority over the public trees in your community, so it is important that they play a key role in the planning strategy for your city or town's community forest. The ultimate success and effectiveness of a tree management plan, most often, relies on the support and involvement of your Community's Tree Warden or City Forester.

The planning and the development of a management plan forms the foundation for an effective and systematic tree care program. It is important to address the interests of all key players when establishing a short or long-term plan for street or park trees so that broad-based support for your tree program can be established. The issues that affect one group of stakeholders (those who have an interest in the trees) may not be directly related to another group of key players, although the trees will be the common element that ties the two groups together. Therefore, it is critical to develop a full understanding of the key players in your community in order to develop a functional and achievable management plan. The groups listed above are often found to have a vital interest in the trees found growing in your community. You should work with representatives of these groups (as applicable to your community) during the development of your management plan.



Complete an Inventory or Survey

To develop a realistic and useful management plan for a community's street and park trees, it is necessary to complete an *inventory* and *analysis* of the trees found growing in the community. There are various types of inventories that can be completed, ranging from a complete inventory of all trees, including condition and management needs assessment, to a sample survey that uses statistical analysis to project the size, condition and management needs of the community's trees. One of the easiest and most cost-effective inventories that can be completed is the visual survey, which involves traveling the roadway network in a community and reviewing the condition of the trees. It is also recommended that a visual inventory be completed if a timely damage assessment is needed in your community.

Visual Surveys

Type I: Travel along all roadways in your community and note the location and severity of all damaged trees that may present a hazard to public health and safety. Record this information by noting street addresses, species type, size, and specific type of damage.

Type II: Complete a sample survey of the community, using the visual survey method. Travel along pre-selected roadway segments that best represent the different types of community streets, such as urban core, business district, suburban, rural, and other unique locations. Record the number, species, condition, and management needs of the trees in these sample sections. You can then analyze the data and develop statistical projections as to the size, condition, and overall management needs of all the street trees.

Type III: Complete the same type of analysis in parks and other open space in your community.

Complete Inventory

A complete inventory can be used to examine and, in some cases, map the location of all the trees on a street, in a neighborhood, or all of the trees found growing in a community. The complete inventory examines every tree closely and records the information for later review and analysis.

Data Collection: In the Type II, III, and complete inventories, it is useful to use a standard format to record the tree data. The following pages provide a sample data sheet and instructions for its use. A simple, easy to use computer spreadsheet is available at <http://www.umass.edu/urbantree>, for use in your community. Commercial software packages are also available.

Using the Tree Inventory Data Sheet

The following items will be found on the sheets. For each response mark an X in the appropriate location. The items are as follows:

Tree information

Tree number – Record the Tree Number
Code – Record a two letter Species Code (ie: **AR** = Acer rubrum)
DBH – Record Diameter at Breast Height

Tree Condition

Place an X in the appropriate box

G = Good
F = Fair
P = Poor
D = Dead
H = Hazard

Planting Location

Record the location where the tree is located on a map of the street or park
Swlk = Sidewalk planting pit
<4' = Planting strip less than four feet of area
>4' = Planting strip more than four feet of area
Lwn = Lawn area

Condition

Weak Fork = Weak Fork
Over Wires = Overhead Utility Wires
Dead Wood = Dead Wood in Crown
Cav = Cavity

If Pruning Needed, What Type?

Clean = Crown Cleaning
Raise = Crown Raising
Reduc. = Crown Reduction

Comments

Example = Broken sidewalk
Bark damage
Broken support stake
Needs additional inspection

Date: _____ Map#: _____

Tree Inventory Data Sheet

Tree Information			Tree Condition					Planting Location				Conditions				If Pruning Needed What Type?			Comments
Tree #	Code	DBH	G	F	P	D	H	Swlk	<4'	>4'	Lwn	Weak Fork	Over. Wires	Dead Wood	Cav	Clean	Raise	Reduct.	

Legend:
 (Tree Condition) G = Good F = Fair D = Dead H = Hazard
 (Planting Location) Swlk = Sidewalk <4' = less than 4' >4' = more than 4' Lwn = Lawn
 (Conditions) Weak Fork = Weak Branch Fork Connection Over Wires = Overhead Utility Wires Dead Wood = Dead Wood in Crown Cav = Cavity in Trunk
 (If Pruning Needed What Type?) Clean = Crown Cleaning Raise = Crown Raising Reduct. = Crown Reduction

№	Type	Size	Location
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

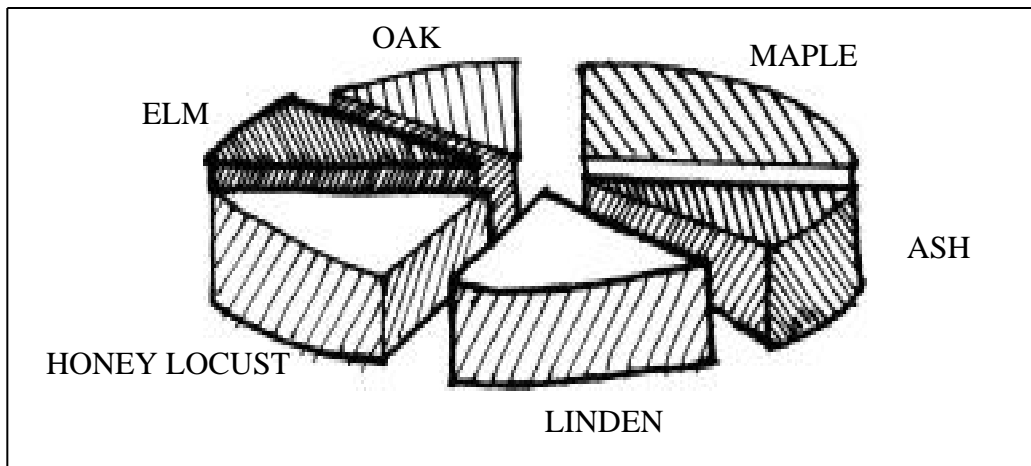
Compile Your Results

Compiling and analyzing the data is a crucial step in completing an accurate urban forest management plan. The results, when compared to your management goals and objectives, will provide you with the information you need to establish a successful management strategy.

Information from the inventory that should be addressed in the plan includes: public safety issues, maintenance needs, and the value of the urban forest. By compiling this data you will have an accurate picture of the condition of the trees found in the community. It will identify hazardous trees that pose a threat to people and property, trees that need to be trimmed away from traffic signs and street lighting, and other potential management issues. The identification of tree maintenance issues will help provide a strong foundation for determining long-term personnel needs and estimates on the time needed to perform the necessary maintenance. The data collected will also help to define the monetary value of the urban forest. This value can then be used for budget justification, grant awards, and program expansion.

A detailed management plan can provide the means to promote future health and sustainability of the community's street trees. It is important that this information be stored in a manner that is easily accessible as well as easily updateable. This can be achieved through the use of a computer. There are many software programs that can be used to store and manage this data. Using a program that is specifically designed for street tree management can be very beneficial, saving time and money. However, any spreadsheet or database program can be used. A "Guide to Street Tree Inventory Software" is available at:

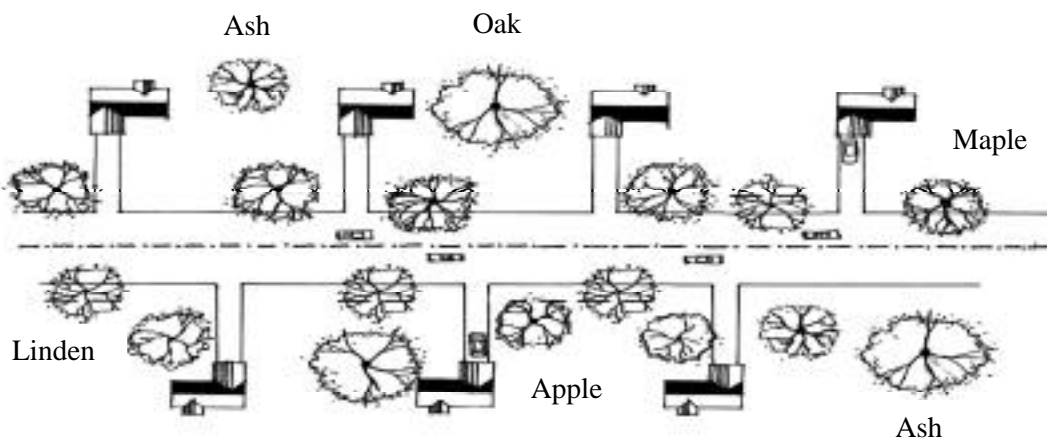
http://www.na.fs.fed.us/spfo/pubs/howtos/ht_haz/ht_haz.htm

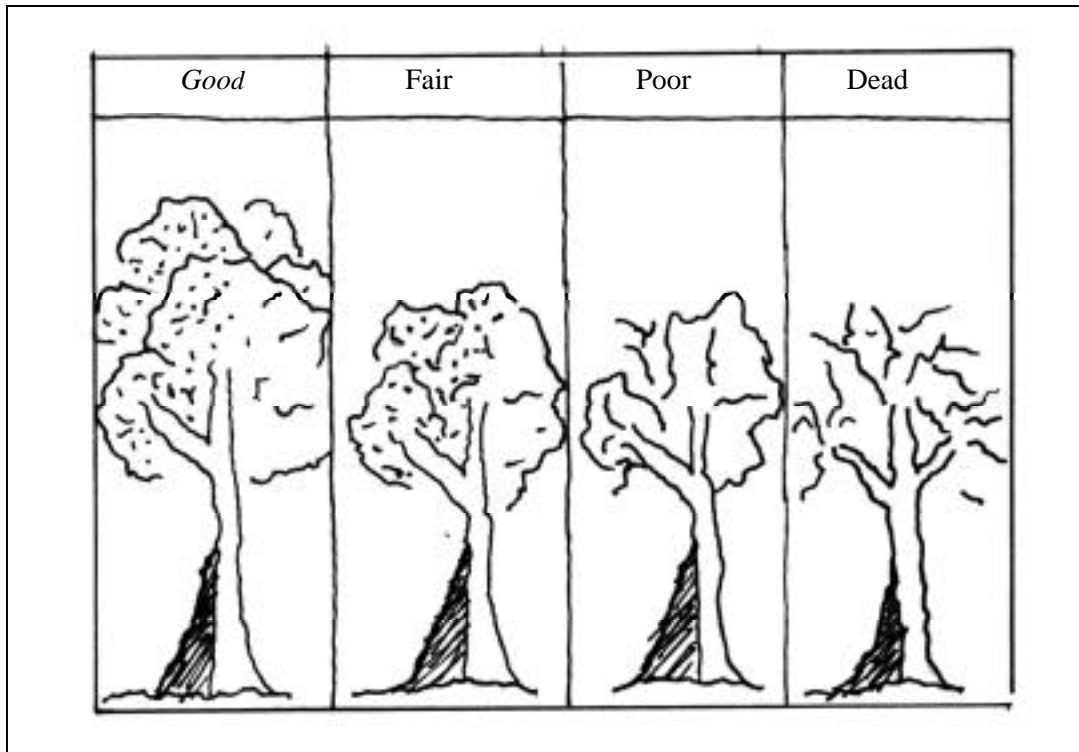


Species Distribution & Plant Selection

Using the information obtained in the tree inventory, you can analyze the species distribution of the trees growing in the community forest, allowing for the development of planting strategies that are appropriate for a healthy tree population. The species distribution of the trees indicates the percentages of each species of tree growing along the streets and in the parks. In this analysis, you calculate the number of each species of tree and compare it to the overall number of trees growing in the community.

Analysis of the species distribution enables you to develop management and planting strategies that are aimed at providing a balanced range of tree species in the community. An overall goal of the balanced distribution is to have no more than *ten-percent of any particular species* of tree growing along the streets or in the parks. New planting plans and schedules should address the need to provide a balanced species and age class distribution of trees for the future. By choosing the appropriate species and distribution of trees to be planted in the community, the likelihood of severe insect or disease outbreak is reduced and the maintenance of the trees can be more evenly distributed over time.





Condition Assessment

The overall health and condition of a community's trees must be fully assessed in order to develop an effective strategic management plan for their care and maintenance. It is important that a consistent and accurate assessment method be followed in order to determine the condition of the trees. In most cases, a ranking system based on the following condition classes is used:

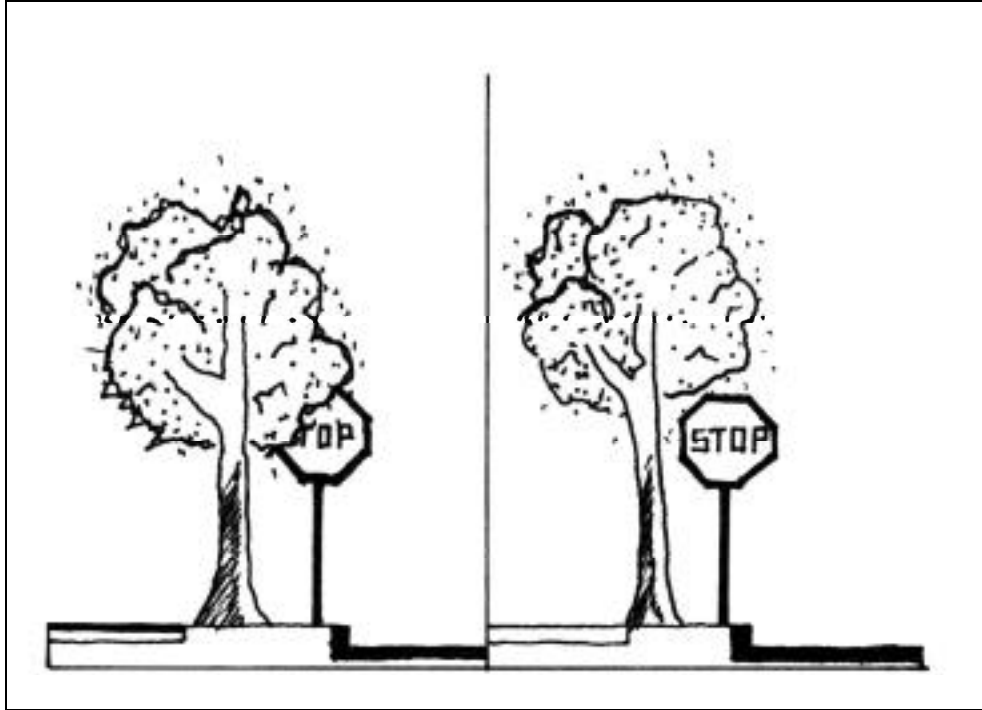
Good – No apparent signs of physical damage, decay, disease or insect damage, or deadwood in the crown, limbs, or trunk.

Fair – Minor signs of limited insect and disease infestation, structural faults and minor deadwood in the crown, limbs, or trunk.

Poor – Tree is in general state of decline, exhibiting major disease or insect damage, physical defects, major dead wood in the crown or other serious defects.

Dead – Greater than 90% of the crown contains dead wood.

Hazard – Tree that poses an immediate threat to public safety



Maintenance Needs

The management plan should include an assessment of the maintenance needs of the trees, a strategy for the removal of hazard conditions, and the development of an operational maintenance program. An operational maintenance program can include pruning, irrigation, fertilization, cabling, and other programs on an “as need” basis.

In terms of public trees, public safety is the most important issue. **Hazard trees can produce a considerable threat to the safety of people, animals, and property.** Dead, split, and broken branches should be eliminated before they cause damage to people and property. Low-hanging, live branches should be removed so that they do not interfere with pedestrian and vehicular traffic. Branches that obscure clear vision of warning signs, traffic signals, or other traffic must also be removed.

Additionally, other maintenance needs of the trees may be examined, including stump removal, utility trimming, and complete tree removal. The management plan should develop a timetable and strategy for the completion of all maintenance tasks over a period of time determined by budget, personnel and equipment capabilities.

Disposal of the tree debris, including recycling operations, should always be considered in the maintenance plan for your community.

Also, the utilities who service your community should be contacted as a potential source of assistance in the maintenance of trees growing along your town’s roadways.



Trimming

One of the major categories to be addressed in the management plan is the pruning needs of the trees. Pruning is a very important management measure that is often overlooked in urban forest management because of its cost. But it has been proven that proper pruning can greatly extend the health, safety, and life of trees. A cycle of pruning maintenance for individual trees can help create a balanced community forest management program.

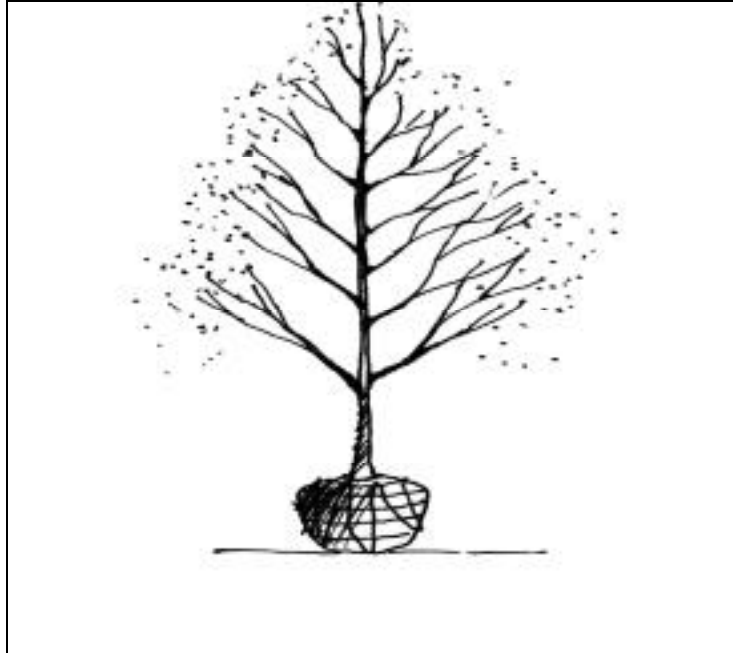
Health, appearance, and safety are the main reasons why urban trees should be pruned. There are many different pruning needs: depending on the location, size, and growth habits of the trees. There are three basic types of pruning that can be used to address most situations. These types include:

Crown Cleaning: includes the removal of dead, diseased, obstructing, split, and/or broken branches that are 2 inches in diameter or greater. Limbs that are susceptible to failure from dense or heavy foliar masses should be thinned.

Crown Raising: includes the removal of lower tree branches to allow for safe movement of vehicles and pedestrian under the canopy of the tree. Limbs above the sidewalk shall be no lower than 8 feet. Limbs above the road shall be no lower than 18 feet.

Crown Reduction: includes reducing the overall mass by thinning out the top and sides or just removing individual limbs of the tree. Reduction pruning is commonly associated with pruning away from buildings, structures, or overhead utility wires.

The basis of these recommendations come from the ANSI Standard A300.



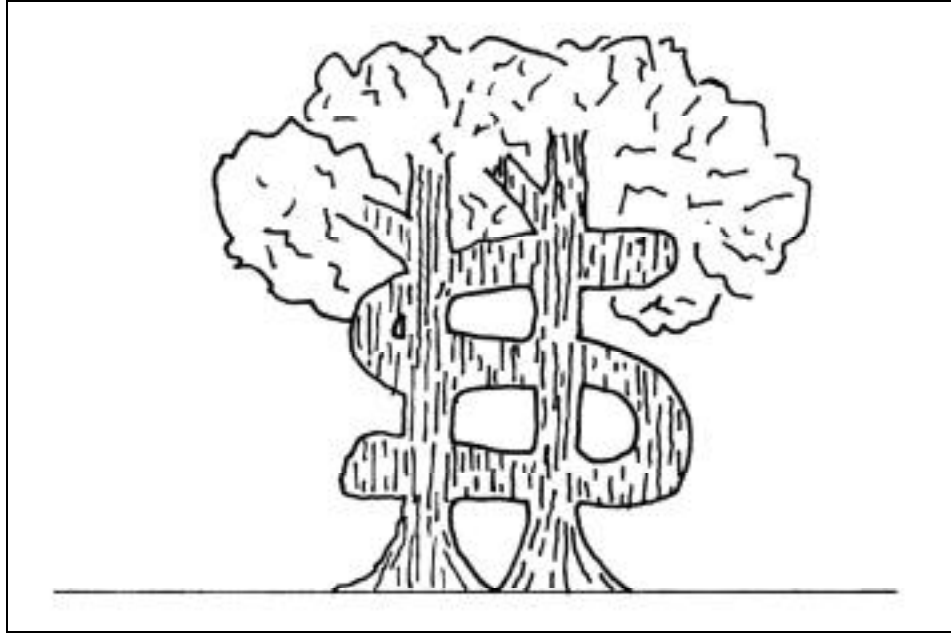
Planting

A key objective to be addressed in a management plan is the identification of planting locations. Planting locations should be identified during a separate visual survey or a complete inventory. There are many benefits to planting trees and sustaining a community's urban forest. Trees help tie a community together and raise the quality of life for its residents.

In many cases our urban forests are aging and consequently declining. The planting of new trees must become a priority. It requires careful planning and attention to detail. A tree that is planted properly is two times as likely to survive, compared to one that is carelessly planted. Before planting, a plan must be developed.

The development of a planting plan should take several issues into consideration. What is the function of this planting? What are the limiting factors at this site (overhead wires, confined root zone, soil conditions, climate conditions, etc.)? How will these new plantings be maintained? Who will be involved in this planting? These are just some of the questions that should be addressed before planting.

The development of a planting plan should not only address these issues, but it should also specify the exact planting requirements. It is best to work with a knowledgeable professional on the planting specifications. These specifications should include the species to be planted, the size, the spacing, the size of the root ball, and the hole that it is to be planted in, as well as other unique factors. One of the best sources of this information is the **American Association of Nurserymen**. They publish the American Standard for Nursery Stock. This reference is essential for writing planting specifications and contract writing.

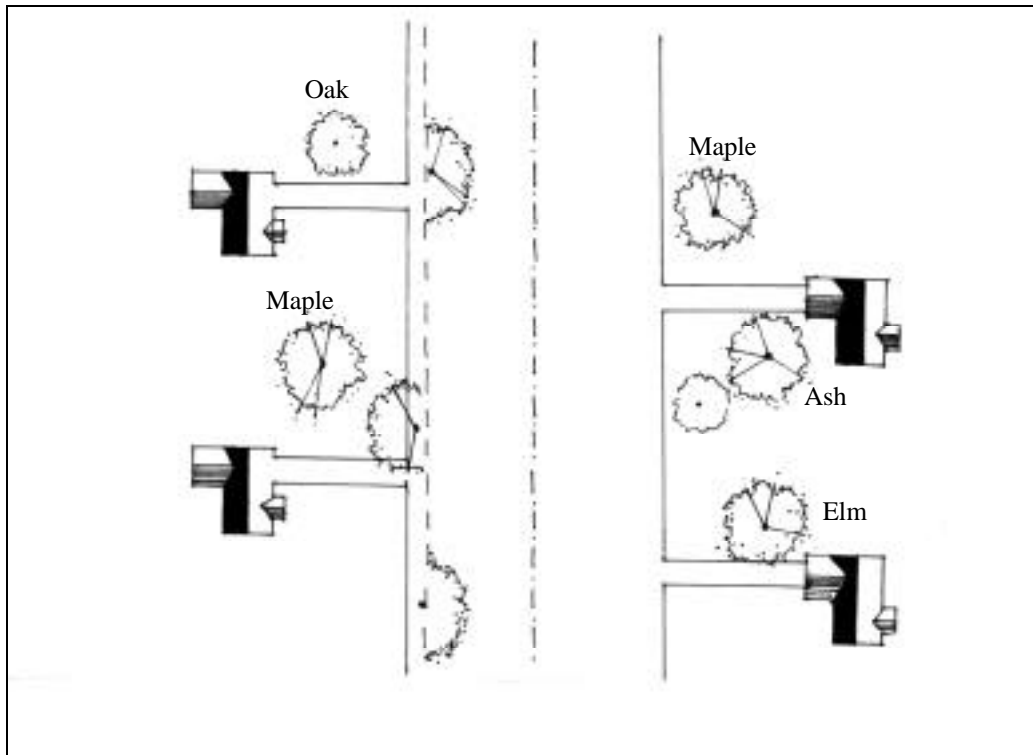


Economics

Shrinking urban forestry budgets are having an increasingly serious effect on the health of our urban trees. A management plan can be a valuable tool in the effort to secure adequate funding. The information contained in a management plan informs the manager what they have, and projects what they will need to sustain their program in the future. This true fiscal picture can then be used to build support for higher levels of funding. The best way to build this support is to equate the value of the urban forest in real dollars. Solid information is the key in securing the necessary funding to maintain the urban forest for generations to come.

A fiscal plan can assist in putting the needs of your community's urban forest in perspective with other municipal agencies. The plan should clearly define the needs of the urban forest, which will make it easier to create a reasonable tree care budget. The plan should clearly establish the monetary value and needs of the trees for years to come. It should also indicate the cost of not maintaining our urban and community forest in order to show the cost-benefit analysis of maintaining the trees.

In most cases, the dollar value of existing trees will either remain the same or increase as time goes by, as long as they are maintained adequately. This is in contrast to other capital expenditures, such as building and maintenance equipment, which decreases in value with age. This can be one of the strongest arguments for raising the level of funding for urban forests each year. There are also additional sources of funding that a community can use to maintain their trees. One source of funding is grant programs available from the state. These grants can be used for planning planting, education, and maintenance. Other grants are also available at the federal level from such organizations as EPA, HUD, and the USDA Forest Service.



Additional Reading and Information Sources:

USDA Forest Service (Northeast Center for Urban and Community Forestry)

<http://www.umass.edu/urbantree>

National Arborist Association

<http://www.NATLARB.com>

International Society of Arboriculture

<http://www.ag.uiuc.edu/~isa/>

A Guide to Street Tree Inventory Software

<http://www.na.fs.fed.us/spfo/pubs/uf/streettree/toc.htm>

Recognize Hazardous Defects in Trees

http://www.na.fs.fed.us/spfo/pubs/howtos/ht_haz/ht_haz.htm

Tree Maintenance

P.P. Pirone, Oxford University Press
200 Madison Avenue, New York, New York, 10016

Urban Forestry

Robert W. Miller, Prentice-Hall
Upper Saddle River, New Jersey, 0745

