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The Regreening of Worcester
An Interactive Qualifying Project Report

Completed in conjunction with the City of Worcester Department of Parks, Recreation, and Cemetery

Submitted to the Faculty of the WORCESTER POLYTECHNIC INSTITUTE in partial fulfillment of the requirements for the Degree of Bachelor of Science by:

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1. **Urban Forestry**
2. **Regreening**
3. **Street Trees**

Abstract

This report, prepared for the Forestry Division of the City of Worcester Parks, Recreation and Cemetery Department, recommends a process by which Worcester's urban forest can be improved through community involvement. We gathered information both from literature and by interviewing representatives of cities with flourishing urban forests, members of community groups, and urban foresters. We then developed a process that the Forestry Division can use to encourage community groups to get street trees planted in their neighborhoods, and we created a handbook to guide community members through this process step-by-step.

Executive Summary

Trees play an important part in urban environments. Urban forestry is important because trees provide protection from the sun; reduce noise, wind, air pollution, and solar glare; and raise property values. However, in recent years many cities have experienced a decline in their urban forests. This decline has had many negative impacts. To counteract these impacts, many cities are seeking to improve their urban forests. One such city is Worcester, Massachusetts. As of 1999, more than 7,000 of Worcester's 20,000 trees needed to be trimmed or removed. The Worcester Parks, Recreation, and Cemetery Department (WPRC Dept) is addressing this problem by encouraging community involvement. If community members become involved with donating, planting, and caring for trees, this will free up time for the forester to attend to the backlogged tree maintenance requests.

The City of Worcester is not alone in its endeavors to expand its urban forest. Many cities throughout the country are facing or have faced a similar decline in tree population or condition, but many of these cities have created programs to successfully rejuvenate their urban forests. If Worcester institutes a program of community involvement in its urban forest and takes the steps necessary to keep the program current, it can become one of these cities.

The goal of this project was to develop a process by which the Forestry Division of the WPRC Dept can encourage community involvement with Worcester's urban forest through the use of printed educational materials. A handbook was produced to fill this need. It provides an easy reference for community members with questions, and describes how a citizen or community group can go about getting public trees planted on

their street or in a park. We believe this handbook will be a valuable resource to the Worcester community.

To accomplish our goal, we organized a plan for gathering and analyzing relevant data. The first step in this process was to gather background information about urban forestry, tree anatomy, tree care, and planting urban trees. After obtaining this information, the next step was to assess the city's current process. We began by interviewing the WPRC Department staff, and moved on to interviewing community members who had worked with the city to plant trees. From these interviews we gained insight into the current tree-planting process. By comparing the results of these interviews, we determined the shortcomings that the current tree planting process had, and found ways to improve it.

From the interviews we gathered useful information and opinions about what the handbook should contain. Most of the people we interviewed had much experience with trees, and were able to bring information to our attention that turned out to be very relevant to creating the handbook. The most common opinions were that the handbook should be concise, with a lot of pictures, and it should stress the importance of keeping newly planted trees watered.

Another way we strengthened Worcester's street tree planting process was to compare it to the processes used by cities known for their outstanding urban forests. We conducted case studies of some of these cities. We used this method so we could imitate the most successful aspects of each city's strategy while developing such a process for Worcester. We believe this was the best method to use because it allowed us to benefit from the experience of cities that have already created a successful process. By finding

out what worked for them and what did not work for them, we had a good starting point, and could avoid some mistakes.

The most useful piece of information we got from the model city interviews is that Worcester's situation is not unique, but Worcester is one of the only cities using a handbook of this nature to encourage community involvement. We also learned that all of the model cities used educational materials such as pamphlets and doorknockers, and some also had educational programs for the citizens. The other fact we discovered is that the most common obstacle faced by each of these cities was monetary concerns. As a result of these interviews, we decided to develop pamphlet and doorknockers for Worcester, in addition to the handbook.

Once we completed the information gathering stage, we began to develop the handbook. We met with a representative of the WPRC Department, Forestry Division to make sure that we agreed on what information should be in the handbook, and in what order it should appear. An important part of designing a street tree handbook for the City of Worcester was choosing a way of organizing the information. For this reason, we came up with three different methods of organizing the material, and gathered feedback from potential users to determine which of these organizations would be most useful. Using feedback from this testing, we improved the handbook to make it easier to understand.

The handbook we designed was meant to be short but complete. It is divided into sections based on who would be making use of it. The sections are about donating park or memorial trees, getting street trees planted for community group, and planting trees on one's own property. There are also appendices that go into more detailed information for

group leaders, or those with an interest in trees. The information from these sections and their organization is based on information we gathered from literature, interviews, and case studies of model cities.

Besides the handbook a brochure and doorknocker were also developed. The brochure was developed to meet the need created by the Earth Day Festival. It gives an overview of the handbook and the tree planting process. The doorknob hangers were made for use by the forester and tree crews to inform the neighborhood residents of new tree plantings and also so the Forestry Division could have an open line of communication with people concerned about the health of the neighborhood trees. The first doorknob hanger congratulates residents for the addition of a tree to their neighborhood and provides instructions for caring for and watering the tree. The second doorknob hanger provides space for the forester to write to the resident about a tree whose health is in question. These hangers also have contact information for the WPRC Department, Forestry Division.

Worcester has already taken the first step in this direction by seeking to increase community involvement. Based on the data we gathered and the interviews we conducted, we developed a handbook to guide community members through the process of getting their own public tree planted along their street or in a park. By using this handbook, along with the doorknockers, and pamphlet, Worcester can bolster community involvement in its urban forest.

However, these changes alone are not enough to guarantee the success of the WPRC Department's program. To increase their chances, we recommend several courses of action for the Forestry Division to take. They should keep the handbook up to

date, and circulated as widely as possible. They should also establish an educational program that will train community members to care for trees. As the level of training in the community increases, it may be possible to have the citizens perform their own plantings, and this would greatly reduce the demand on the Forestry Division, while greatly benefiting Worcester's urban forest.

Though the program Worcester is trying to develop is not necessarily unique, it is certainly not common. If this program and handbook are successful, they could prove to be a model for other cities looking to increase the level of community involvement in their urban forests. This community involvement would greatly reduce the demands on forestry departments, and helps bring communities together.

Acknowledgements

We would like to thank all the people and organizations that helped us compile the information necessary to make this handbook. Elise Wellington from the Urban Tree Task Force, Evelyn Herwitz, author of Trees at Risk, Peggy Midaugh from the Regional Environmental Council, Jim Connolly from ElmPark Prep+, Rick Farrell from MassElectric, John Trexler from Tower Hill Botanical Gardens, for giving to us freely of their time and insight. Commissioner O'Brien, Deputy Commissioner Antonelli, Larry Blaire, and Brian Breveleri from the city of Worcester who gave us the freedom to create this final product as well as the guidance and knowledge to keep us on track. The Forestry Departments of New York, NY; Chicago, IL; and Toledo, OH, for providing us with information about their programs, and a starting point for our project. We would like to thank the Worcester Historical Society for their great record keeping regarding the history of the city's urban forest as well. And finally, our advisors, Professors Chrys Demetry and David DiBiasio, who helped us patiently for the past academic year keeping us focused all along.

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1.0 Introduction

For thousands of years, forests have been the defining feature of the region known as New England. Originally, a majority of the region was covered with trees, and there were only a few isolated inhabitants to interfere with this natural habitat. That is no longer the case. An asphalt and concrete jungle of roads and buildings has, to a large extent, displaced the trees and the wildlife that formerly lived in the area. However, the forests have not entirely disappeared, they have just been forced to adapt to the new urban environment. In any urban environment, trees still play an important role in the community. They are useful not only for providing shade and beautifying the landscape, but also for eliminating pollution and cleaning the air we breathe. Urban trees also help to reduce wind, promote milder temperatures, and regulate precipitation and humidity (Deneke 44, 52, 56). However, urban forests are in need of constant attention, and will not survive if they do not receive the proper maintenance.

One particular city that is seeking to improve its urban forest is Worcester, Massachusetts, which, with a population of 169,759, is the second largest city in New England (http://www.ci.worcester.ma.us/o_develop/demographics.htm). Unfortunately, Worcester's street trees have not been receiving the care that they need, as is demonstrated by the hundreds that are dead or dying. According to a 1999 report prepared by Michael O'Brien, Commissioner of the Department of Parks, Recreation, and Cemetery, between 1989 and 1999 about 2,500 street trees were removed, but only about six hundred replacement trees were planted. As of 1999, the city had more than 7,000 trees that were in need of some sort of maintenance such as trimming or removal. Another problem is that the city's tree population is made up mostly of a single species,

creating a monoculture (O'Brien). Steps must be taken to make sure that the situation improves rather than deteriorates. To this end, it is necessary to make changes that will allow the health and biodiversity of this valuable resource to be preserved and even improved upon.

Though the Worcester Parks, Recreation, and Cemetery Department (WPRC Dept) already has a defined process for street tree planting and management, this process has proven insufficient for maintaining the state of Worcester's urban forest (O'Brien). However, the WPRC Dept does not currently have the budgeting resources to remedy the situation itself. The Forestry Division is also understaffed, and as a result, there is a massive backlog of trees needing attention. If community members were involved with donating, planting, and caring for trees, this would free up a large amount of time for the forester to attend to other issues such as the backlogged tree maintenance requests.

The City of Worcester is not alone in its endeavors to expand its urban forest. Many cities throughout the country are facing or have faced a similar decline in tree population or condition, but many of these cities have created programs to successfully rejuvenate their urban forests. If Worcester institutes a program of community involvement in its urban forest and takes the steps necessary to keep the program current, it can become one of these cities.

Therefore, the goal of this project was to develop a process by which the Forestry Division of the WPRC Dept can encourage community involvement with Worcester's urban forest. In order to accomplish this goal, we created a handbook and other printed educational materials that the city can use to provide a quick, easy reference for community members with questions. Making a recommendation for how the city should

handle requests for information, and how it should handle community members who are interested in donating trees is also a part of this project. By incorporating the good points of the current process and refining those points that are undefined, we developed a new process that will modernize the WPRC Dept's interactions with the community and help to improve the health of Worcester's urban forest. We believe that the handbook we created will be a valuable resource to ordinary citizens who are interested in planting, donating trees, and helping to maintain Worcester's urban forest.

Defining this process will help to promote community involvement, and increase public awareness of the benefits street trees can provide. All of these factors are necessary for the long-term survival of this vital resource that has been neglected for so long. Encouraging new plantings through community involvement will help both to promote species diversity and to increase public interest in preserving Worcester's urban forest. Increased public awareness will lead to increased support for the WPRC, Forestry Division, and their programs. While this project will not last long enough to see the results of these processes, it can set them in motion, sending Worcester in the right direction to take charge of the issues facing its urban forest. In doing so, Worcester will transform itself into a more environmentally sustainable and physically beautiful place to live.

2.0 Literature Review

There are many important resources that should be reviewed before preparing a handbook and process for community members of Worcester to become involved in planting public trees. We began by examining the concept of urban forestry, including why it is important, and covered the basic health issues of trees. We then related this general information to Worcester by summing up the current state of Worcester's urban forest. After that, we provided a general overview of the laws that are applicable to Worcester's urban forest. Finally, we summarized ideas from the literature concerning urban forestry public relations programs. This information enabled us to put the current urban forestry situation of Worcester into perspective and to find a context for this project.

2.1 Introduction to Urban Forestry

In the mid 1960s a new field of tree care, focusing on trees in an urban environment, emerged. This field, known as urban forestry, is important because trees improve the quality of life for city residents. However, maintaining an urban forest is a difficult task; it requires those who care for and plant trees to have a basic understanding of tree anatomy. Urban foresters perform city tree care. Their understanding of tree anatomy allows them to observe proper planting and care techniques for trees. This ensures that the street tree population will remain healthy. New technologies have emerged in tree care and planting which can bolster the health and life expectancy of urban trees. These new technologies also help trees overcome the adverse conditions that they face in an urban environment. Planning, another important part of caring for an

urban forest, often takes the form of a street tree management plan. This allows the city to better care for its forest.

2.1.1 Why is Urban Forestry Important?

One of the challenges facing the world today is the tendency for cities to be as much as nine to twelve degrees warmer than the surrounding countryside (Moll 20). If this trend is to reverse itself, people must begin to take notice and make changes that will benefit the environment to create a healthier and more natural place to live, both for themselves and for future generations. Increasing the presence of trees and vegetation is the first important step towards making the cities greener and more natural.

In order to make a difference, there will have to be people who will plant and care for this vegetation. People have had the desire to have trees and vegetation within their cities since ancient times, but it was not until the mid 1960s that the field of "Urban Forestry" emerged (Grey 5, Phillips 11). Then, in 1971 when the US Congress passed a bill allocating funds for these Urban Forestry programs, cities began creating their own programs to beautify their cities by planting and caring for trees and vegetation (Grey 7, Miller 29, Phillips 10).

Maintaining urban forests is important because urban trees improve the quality of life for city residents. These trees provide protection from the sun, absorb and reduce noise and wind, and help to keep cities cool in the summer (Grey 44, Moll 5). They also benefit cities by reducing air pollution and solar glare, and by raising property values. Urban forests also serve to reduce the erosion and soil runoff that storms cause and they improve privacy for city residents (Phillips 3, Pirone 4). For these reasons, many cities have established programs to maintain a beautiful and healthy urban forest.

2.1.2 Basic Tree Anatomy

Those who care for and plant trees need a basic understanding of tree anatomy, so they can properly care for the trees. Knowledge of tree anatomy is also useful in any discussion of urban forestry, as this knowledge allows one to identify issues associated with the health of street trees. In order to make tree anatomy easier to understand, it is possible to consider a tree as being made up of three basic parts: a crown, a trunk and roots (Crockett 16, Pirone 15, Murphy 13).

The topmost part of a tree is the crown, which is made up of branches and leaves. Branches can be either primary branches, which are attached directly to the tree trunk, or secondary branches, which are attached to the primary branches. The secondary branches typically have many twigs that grow off them; leaves grow at the end of these twigs. Contained within the leaves are chloroplasts, which serve as an energy source for the tree. These chloroplasts contain chlorophyll that reacts with light from the sun, carbon dioxide from the air, and water and minerals from the soil to create sugar, which is the tree's basic food source (Cooper 72, Crockett 23, Pirone 26).

The middle part of the tree is called the trunk. This region extends from the crown to the roots, and serves as a backbone as well as a vascular system for the tree. The center of the trunk consists of heartwood that provides support for the tree. This

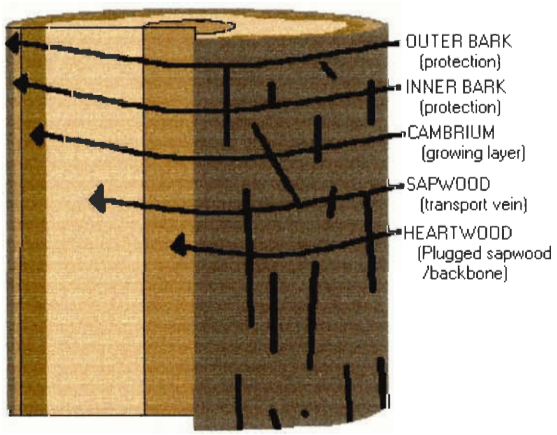

Figure 1: Cross section of a tree trunk

wood is made of old xylem that have become clogged and rigid. Around the heartwood, there are young xylem that have not yet become clogged. These xylem transport water and minerals from the roots to the leaves, where it is used for photosynthesis. The next layer going outwards is the cambium. This one-cell-thick layer functions from spring until fall to produce the cells that will become xylem or phloem. Surrounding the cambium is the phloem, a moist tubular sleeve that transports food from the leaves to the rest of the tree. The outermost layer of the trunk is the bark, which protects the tree from damage (Crockett 23, Pirone 26).

The bottommost section of a tree is the root system. The root system consists of a taproot and lateral roots. The taproot grows straight down from beneath the trunk, functioning both as a feeder and as an anchor. In some cases, the taproot may grow as deep as fourteen feet, but in other cases, it grows only until the lateral roots are established enough to take over the jobs of feeding and supporting the tree. The lateral roots can grow to a depth of about four feet, but they tend to stay near the surface where they have easiest access to water and oxygen supplies. The lateral roots usually spread to cover an area one and a half to four times larger than the spread of the crown. These roots extract nutrients from the soil and provide support and stability for the tree (Crockett 23, Pirone 26).

2.1.3 Basic Tree Care and Planting Techniques

In order to ensure that the street tree population will remain healthy, it is important to observe good tree care practices. An important part of tree care is ensuring that the trees are planted properly. There are two primary ways in which trees are prepared for transportation and planting. The first way is bare-rooted, when trees are

stored with no soil. This method makes trees easier to ship and handle, but it also has some limitations. Trees packed this way must be dormant, and they may die if the roots are not kept moist. The other way trees can be prepared for transportation and planting is using a burlap root ball, which is also called a containerized trees (Phillips 143, Murphy 28). This method makes it possible to transport trees that aren't dormant, and it decreases the risk that the tree will die from lack of root moisture, but it also has disadvantages. The root balls become harder to handle and transport as trees become older, because larger root balls are required for trees with larger crowns.

For a tree to be successfully planted in an urban environment, three conditions must be present. First, the species of tree planted must be one that is well suited to the area in which it will be planted. A good selection of species will also ensure that there is biodiversity, and that the urban forest will be able to survive disease and blights. The tree will also need to have enough room to grow, which consists of having a place for the roots where the soil is sufficiently moist and aerated. Finally, the tree will need to receive proper post planting care. This includes frequent watering, regular fertilizing, and timely diagnosis of and care for any diseases or infestations. Considering these factors in the planning process can greatly increase an urban forest's chance for success (Moll 35, Pirone 59).

When planting a bare-rooted tree, the first step is to unpack the roots from the packing materials and soak them for six to twelve hours.[1] The next step is to prepare the ground where the tree is to be planted. First, a hole slightly larger than the root structure of the tree must be dug, so the roots have room to spread without crowding. Then grass

[1] Planting instructions for burlap ball and bare-rooted trees can be found at WPRC Dept website: http://www.ci.worcester.ma.us

in a three-foot diameter around the hole should be removed and the soil aerated to allow the roots to grow more easily. The tree should be planted in the hole so that it is the same height that it was at the nursery. The hole should be filled with dirt packed loosely around the lower roots, and more firmly but not tightly packed dirt in the remainder of the hole. The tree should then be watered. Once all the water is absorbed, a two-inch deep protective layer of mulch should be spread around the trunk in an area three feet in diameter, but the mulch should not touch the trunk of the tree. The newly planted tree will need to be watered once every seven to ten days for the first year in its new location (Phillips 143, Murphy 30).

The first step in planting a containerized tree is to remove the burlap or containing material from the root ball. Next, the ground must be prepared by digging a hole as deep as the root ball is high with a diameter that is about five times larger than the diameter of the root ball. The tree should be placed in the center of the hole, which should then be refilled and firmly packed with soil. This area of prepared soil allows the roots to grow beyond the root ball more easily. After the soil is packed, water the tree and wait for the water to be absorbed by the soil. Then, place a three-foot diameter circle of two-inch deep mulch around the base of the trunk to help protect the roots. As with bare-rooted trees, the newly planted tree should be watered every seven to ten days during the growing season of its first year.

Trees tend to be healthier and to grow more quickly when they are properly cared for. A tree that is watered, fed, and pruned, is more likely to be healthy and beautiful than a tree that is not cared for. Established trees usually do not need to be watered unless there is a drought for more than a month, or unless the area is particularly arid.

But when younger trees are watered, it is important to make sure that the water penetrates at least several feet into the soil. If the water does not penetrate, the roots will be encouraged to grown near the surface, and that will only serve to undermine the tree's health and stability (Crockett 50, Murphy 29).

Though trees are generally able to survive without being fed, a fertilized tree will grow faster, look healthier and stay stronger than one that is not fertilized. Some of the important nutrients trees get from fertilizer are nitrogen, phosphorous, and potassium. Nitrogen encourages the trunk to grown rapidly and the leaves to be healthy and green. Phosphorous helps the roots to grow and helps the tree resist cold. Potassium strengthens helps strengthen the tree's resistance to wind, ice damage, and disease (Crockett 52, Murphy 50, Pirone 94). The tree will benefit if it is fed between early spring and mid July; however, feeding it later in the year may encourage growth that will not be mature in time to withstand the cold of winter.

There are at least three methods of feeding trees. The first, called foliar feeding, is to spray liquid fertilizer directly onto the leaves. Another method involves digging up the soil near the tree and adding dry fertilizer mix. A final method involves injecting liquid fertilizer a few feet deep into the ground near the tree using a needle-like device. Each of these methods has its strengths. The foliar feeding has an immediate effect since the leaves can absorb the nutrients and use them immediately. The dry fertilizer does not have as immediate an effect, but the nutrients can stay in the soil for a year or more, and this provides long-term benefits to the tree. The injection method is effective, but because the fertilizer is a liquid the nutrients can drain away quickly. Proper instructions

for each procedure can be obtained from reputable greenhouses or hardware stores where the fertilizers are sold (Crockett 54, Murphy 49, Pirone 100).

Pruning is also vital for maintaining a tree's appearance and utility (Pirone 115). A tree can be shaped to produce a useful addition to a yard or street if it is properly pruned. Pruning competing trunks and inward growing branches often strengthens a tree; however, there are many rules to pruning. First, never remove more than a third of a tree's crown. Often people "top" trees that grow too large or interfere with utility wires or other structures. This process is detrimental to the tree, reducing its food-making ability and causing unsightly and excessive sprouting (Pirone 122). Poor pruning also makes it susceptible to insects and disease. On the other hand, not pruning a tree that needs it may also be detrimental. Most species have a single trunk; any additional trunks should be removed before they become too large. If a branch must be removed, it should be cut back to the trunk to avoid leaving stubs.

The decision of how to prune a functional shade tree depends on whether there will be people walking under it. If people will be walking under it, any branches that are too low or angled downward should be removed (Crockett 56). When removing a branch, there are specific guidelines that must be followed. For large limbs, four separate cuts are required to complete the task. First a partial cut from beneath should be made a short distance from the trunk. A second cut should be made from above a few inches beyond the first cut, and the limb should be allowed to fall. The third cut should be made from beneath to avoid tearing the bark. The final cut completes the job by removing the stub from above, just outside the branch collar. The exposed surface should then be covered with tree-wound paint to protect the wood from insects and wood-rotting fungi

(Crockett 61, Murphy 62, Pirone 127). When removing small branches, one should make a single sharp clean cut just beyond a lateral bud or other branch.

2.1.4 New Developments in Tree Planting

When it comes to the act of planting street trees, there are several new technologies that can increase the life expectancy of the tree and make it easier to plant. Two of these technologies are hydra gel and structural soil. Hydra gel is a fine white powder that can absorb between three hundred and five hundred times it's own weight in water. Structural soil is a mix of crushed rocks, soil and hydra gel that is particularly effective when used as replacement soil for trees that are planted in sidewalks.

There are many motivations for transplanting trees using the bare root method rather than using a root ball transplanting method. When a tree is being dug up and put into a root ball, as much as ninety percent of the root system may be lost. In contrast, two hundred percent more roots may survive a bare-root transplanting. Also, bare root trees weigh much less than trees with root balls, and are light enough to be moved without the machinery that is typically necessary for transporting and planting trees with root balls. However, there has traditionally been one major drawback to bare-root transplanting. Without the protection of soil, the roots quickly dry out. Within a day or two, a bare-root tree may suffer serious damage or die (Creating an Urban Forest: The Bare Root Tree Planting Method).

According to studies done by Cornell University, hydra gel can greatly increase the amount of time trees can survive out of the ground. When it is dry, the hydra gel is a white powder, but when it is exposed to water, it quickly absorbs hundreds of times its own weight and gains gelatinous, cohesive properties. The roots can then be dipped in

the hydra gel, which forms a protective coating that supplies the tree with enough water to survive for between seven and ten days. The increased survival time allows for more flexibility when it comes to planting the trees (Creating an Urban Forest: The Bare Root Tree Planting Method).

In an effort to beautify city streets, trees are often planted in pits dug in sidewalks. However, these trees must overcome unfavorable conditions due to their location. The primary problems these trees face are limited space and compact soil. In order for ordinary soil to support a sidewalk, it must be packed tightly. As a result, tree's roots are usually unable to grow underneath the sidewalk. The roots may be able to expand if there is a weakness in the pavement, but they only accomplish this by heaving the sidewalk. Neither of these situations is desirable. Due to this lack of room for root growth, sidewalk trees have an abbreviated life span, typically only living for between seven and fifteen years (Support Your Local Tree: Cornell Structural Soil Mix).

In an effort to solve this problem, researchers at Cornell University created structural soil. By weight the soil is made up of eighty percent stone and twenty percent soil. There is also a very small amount of hydra gel included in the mix to improve the cohesiveness and stability. The structural soil provides the support that the sidewalk needs without preventing a tree's roots from growing. By allowing the roots room to grow, this soil eliminates one of the chief concerns that face sidewalk trees. Studies with this soil done at Cornell University show that trees planted in structural soil grow much more quickly and are much healthier than those planted in compacted soil. There are also indications that trees planted in the improved conditions could easily live thirty years or more (Support Your Local Tree: Cornell Structural Soil Mix).

2.1.5 Special Problems Faced by Street Trees

When planting trees in cities, it is necessary to take several factors into consideration that are not an issue for planting in more rural areas. Dr. Pirone effectively summarizes the problem with planting trees in cities when he writes, "city conditions are so unfavorable that it is a wonder they grow at all" (58). Some of these unfavorable conditions include air that is polluted from cars and industry, ground that is too compacted and paved over, and poor air and water circulation within limited root space. City trees also suffer from more frequent physical injuries and a tendency not to get as much water as they need. These trees are also hurt when the roads or sidewalks are salted to melt snow or ice. Trees weakened by these conditions also face an increased risk of disease and insect infestation. All these factors make cities very inhospitable places for native vegetation (Moll 26).

Another problem that trees face within cities is the climate changes caused by city structures. Large cities with open expanses of asphalt and concrete absorb and reflect more heat than most natural environments; large buildings create large shadows that deprive vegetation of the necessary sunlight (Moll 26). These factors make city streets less favorable for species that may be found in the surrounding natural environment.

2.1.6 Street Tree Master Plans

Planning is a necessary part of the management and care of an urban forest. Often the planning process takes the form of a master street tree management plan. A street tree management plan allows a city to better care for its urban forest. Its goals are to maximize public benefit while minimizing public cost. The basic street tree management plan may be broken up into three sections: planting, removal, and maintenance. Often it

begins with an inventory of the trees contained within the forest in question. By performing an inventory of the street trees, the department in charge of street tree management will manage their valuable resource more easily (Miller 88).

Street tree inventories provide cities with valuable information. They help the city determine the current size and condition of the trees and the level of species diversity. The city can also determine the approximately how many trees are in need of high priority maintenance, and how much space is available for to plant new street trees (ARCT inc vii).

The inventory can be performed in several ways. The first way is to conduct a survey by car. This type of survey is often referred to as a "windshield survey." While inexpensive, this method is not very practical for larger cities and does not always generate reliable data (Miller 100). The next inventory method is a sample survey method. In this method the city is subdivided and sections are selected at random for tree counts. The data is then averaged and estimates can be made. This method, however, assumes a homogeneous street tree population, which may or may not be accurate (Miller 101). The last type of inventory is a computer-based inventory. Computer inventories are the most convenient to update, but they are also the most expensive to conduct. In a computer inventory, all street tree information is stored in a database which can be updated daily, but the data collection is a lengthy process in which the inventory conductors must go out and collect data and then enter it all into the database.

Once the inventory has been conducted, it is necessary to evaluate the data and begin formulation of the master plan (Phillips 19). Data evaluation allows for the development and establishment of management goals. These goals should address the

immediate and long-term needs (approximately 50 Years (Miller 183)) of the city's urban forest. According to Miller there are three general management goals that should be established. They are: Maximum stocking of street trees, low maintenance costs and public safety, and stability of the tree population (182). In order to meet the set goals the city will next need to define their management activities.

Management activities need also to address the short and long-term needs of the city. Management activities take several different shapes and are designed to manage and maintain the street trees. First the city must develop a prioritized planting and maintenance plan. Prioritizing allows the city to operate in a cost effective manner while developing and cultivating the trees. Next is the establishment of a replacement policy. According to Miller "replacement policies should be based on expected survival chances, reasons for removal, and the overall planting plan (183)." Planting and replacement policies should allow for species diversification throughout the city. The last management activity takes the form of a proactive information/education program. In order to activate change and motivate people, a solid educational program is an essential component of the master street tree plan. Throughout this whole process an open line of communication between the forestry department and the public is essential. Feedback is an ideal way of evaluating the program.

2.2 Issues in the Worcester Urban Forest

In a 1999 report to the city of Worcester, Commissioner Michael V. O'Brien described the state of Worcester's urban forest and the problems facing it. Most of the numbers in his report originated in a 1988 street tree survey taken by an independent

group, but he also stated various statistics for what has happened to the trees since 1988 (O'Brien). By examining these numbers, it is possible to get a clear picture of the state of Worcester's urban forest and of the direction in which it is currently heading.

The 1988 tree inventory revealed several statistics about the tree population of Worcester. At the time of the survey, there were 20,227 street trees. Of these trees, ninety percent are in the maple family, with more than two thirds being of a single species: Norway maple. The remaining ten percent are made up of trees representing 78 other tree families. This represents low species diversity, as four species of maple comprise the vast majority of Worcester street trees. The majority of these trees are mature, as is demonstrated by the fact that nearly three quarters of them have a diameter of one foot or more.

There is also much room for the urban forest to expand. The study found that nearly one third of the acceptable street tree planting locations are currently vacant. According to the rating system used by the International Society of Arboriculture, the state of street trees in Worcester is "fair" to "good." However, the survey found that more than 550 trees were in bad shape and needed to be removed. Another 7,235 trees, or slightly more than one third of Worcester's tree population, were discovered to be in need of trimming for safety reasons. (O'Brien - attachment 3)

The condition of Worcester's urban forest has of course changed since the 1988 survey. Between 1988 and 1999, approximately 2,500 street trees were removed for various reasons, but only 600 new trees were planted. Thus, there was a net loss of 1,900 street trees, or approximately nine and a half percent of the total tree population of

Worcester. In 1999, 437 more street trees were removed from the streets of Worcester, but only a few new trees were planted, solely due to the efforts of volunteers (O'Brien).

Worcester is facing several issues in relation to the current state of its urban forest. One of the primary problems is that the Forestry Division is severely understaffed. According to the 1988 report, approximately 18,000 hours of work per year would be necessary to maintain the urban forest, but only about one third of that time has actually been devoted to tree care. As a result of this, there is a massive backlog of requests to inspect trees that may need some maintenance. This is in addition to the large number of trees that are already known to require trimming or removal for safety reasons. Several obstacles, including droughts and storm damage, weaken the urban forest. If these problems are not taken care of early, they will become worse, and the trees may become public safety issues by dropping branches, or by obstructing access to roads (O'Brien).

2.3 Public Policy Regarding Urban Forests

In order to recommend an improved process by which citizens can donate street trees, it was first necessary to understand the applicable laws. There are many laws that deal with various legal issues that arise regarding trees. These laws define the jurisdiction and responsibilities of the local government regarding street trees. They also define the responsibility of citizens toward public trees, and provide a legal structure for resolving claims of injury or mishandling of public trees. However, most of these laws are not directly relevant to creating a process for citizens to become involved in planting new street trees and maintaining Worcester's urban forest. To avoid complicating the issue, the discussion was limited to those laws that are of some relevance to this issue.

One law that addresses the issues is Chapter 87 of Massachusetts General Law. It describes the regulations that govern public shade tree policy. Understanding this law and its implications is therefore key to developing a new process for citizen involvement and tree donation. The first section of Chapter 87 defines shade trees as any tree "within a public way or on the boundaries thereof" and provides for handling disputes regarding whether or not a tree is actually under the jurisdiction of the city (Chapter 87.1). According to the Massachusetts Tree Wardens' and Foresters' Association Handbook, "Sections two and three confer upon the tree warden absolute power respecting the setting out, care, maintenance and removal of shade trees" (Holmes 77). The fourth and fifth sections of this law describe the conditions under which the tree warden can remove or grant a permit for someone else to remove a public shade tree. The sixth section allows for penalties for failing to adhere to sections three, four, and five. The seventh section gives the tree warden the authority to plant shade trees, if the town appropriates money for that purpose. The eighth section gives sole jurisdiction over trees that grow along state highways to the department of highways. The ninth section allows the tree warden to fine people who do not obtain a permit before placing a sign on a street tree. The tenth section specifies the penalty for causing injury to trees on state highways. The eleventh and twelfth sections allow for penalizing those who intentionally or wantonly cause damage to a tree or shrub owned by another person. The thirteenth and final section of the law allows cities to create a position that serves the same purpose and has the same responsibility and powers that a tree warden has within a town.

Although some cities and towns have ordinances regarding trees, Worcester has yet to pass any. Some issues these ordinances may address are: where and when

someone may plant a tree, how to determine possession of a tree, and who is responsible for a tree and the work of caring for and maintaining the tree once it has been planted. Though the City of Worcester does not have any ordinances yet, the WPRC Department is working on ordinances that will eventually be proposed to the city.

2.4 Urban Forestry Public Relations Programs

In order for any urban forestry program to be successful, it must have the support of the public. Robert Miller, in Urban Forestry: Planting and Managing Greenspaces, summed up the situation when he wrote: "No public program, regardless of technical competency, will last long without public understanding, support, and financial commitment" (Miller 312).

Although the employees of a forestry department are expected to care for the city's trees, their primary job is to serve the public. This can be accomplished through a successful public relations program, which should consist of both distributing information to the public and accepting input from the public (Miller 312, Grey 192). There are two kinds of information a forestry department should distribute. The first is specific tree care information so the public will understand what work is needed on street trees and so they understand how to care for their own trees. Secondly, they should inform the public about the forestry department's program so they understand the benefits of the department and the use of their tax dollars.

Public relations can be broken up into two primary categories. The first of these is direct public relations, which involves direct contact between members of the department and the public. The second type is indirect public relations, which makes use of the media and other means, but not face-to-face contact, to inform the public (Miller

312). We will now discuss each of these types of public relation in more detail, starting with direct public relations.

Maintenance crews play an important role in a direct public relations campaign. Because these crews may be the only part of the department that the public sees on a day-to-day basis, it is important that they present a face that will be acceptable to the public. By wearing clean uniforms, using well-serviced equipment, and driving vehicles that are clearly labeled with the department's logo, these crews may make a good impression on the public. To establish a good public image, these crews should also treat the public with courtesy. If a community member asks a member of the maintenance crew a question, the crewperson should briefly but politely answer the question, so as to not get distracted from the job at hand with a long conversation. The crews may also want to bring handouts with them so that the public may be given printed answers to any basic questions they have, but if more information is required, they should be referred to the forestry office (Miller 313, Grey 194).

The department can also interact with the public through certain special interest groups in the community. For example, neighborhood groups contacted before major projects and made part of the process may be happy to help with the planting and to care for the tree after it is planted (Miller 314, Moll 231). Service groups present another opportunity for the forestry department to make an impact. These groups are often interested in having guest speakers at their meetings, and they would probably welcome a speaker willing to talk about municipal forestry. A good presentation may generate interest within the service clubs, and since community leaders are often members of such clubs, this exposure is beneficial for the forestry department (Moll 230). Since service

clubs are often looking for projects, they may be interested in planting a tree, which provides positive publicity for the group. Garden and nature clubs also are interested in the subject of urban forestry, so the department may gain aid and long-term tree care if it develops a good relationship with them (Grey 195).

An informational campaign that may arouse public interest is a tree care clinic. Members of various community groups, as well as anyone else concerned about their trees, will find such a presentation very informative. If the presentation is well organized, features good visuals and is delivered well, it may help to increase community interest in the subject.

Schools are also a useful resource. A short upbeat presentation with lots of visual aids can help students develop an appreciation for urban trees and reduce the tendency towards vandalism. As an additional benefit, these presentations may help to inform the parents as well, since children may enjoy showing their parents any handouts that explain what they have been doing in school (Miller 315, Grey 195).

In the indirect form of public relations, contact with citizens occurs though the media, or during special events rather than occurring in person. The most common use of the media is in covering large projects or programs that catch the public's attention. The department can also arrange to be mentioned in journal or newspaper articles, or to have employees appear on local radio or television programs to increase public awareness. The department may also choose to make use of public service announcements, which can be very informative to the community when they are used effectively (Grey 195).

By having staff members write articles for newsletters published by local environmentally conscious groups, the forestry department can draw positive attention to

its programs. Even a simple action like placing doorknob hangers on the doors to neighborhood homes in a work area can help the public feel there is a strong system in place. Another useful tool is a master street tree plan. Such a plan describes public policy and goals for street trees, and can be of great use for politicians or community leaders, who need to be familiar with public policy (Phillips 159).

Public signs and billboards are effective at informing local residents and commuters of small facts like "Arbor Day is coming soon" or "Water your tree every 7 to 10 days for best results" (Miller 317). The department can help build a positive image by holding citywide events. They can also produce this effect by participating in community events that already exist; for example, they could create a float for a local parade. Two good examples of effective public relations are Woodsy the Owl and Smokey the Bear, mascots that help get important messages across to children (Phillips 162).

Good public relations can also attract recognition from state or national organizations. This kind of recognition reflects well on local public relations programs. Winning a national or statewide competition allows the forestry department to describe itself as an "award winning" department, which may improve public perception (Phillips 168). Having foresters and other members of the department publish papers in professional journals may greatly improve the professional image of the department. Also, sending speakers to state and regional trade conferences may boost the department's visibility.

As a way to get the public involved, the department can get public feedback directly through public opinion surveys. These surveys will give the department an impression of how they are doing in the eyes of the public without incurring undue cost.

Another way to get the public involved is to ask them to look for heritage trees, or big trees. This program sends the public out looking for the biggest of a species within the city (Miller 317). Adopting a tree is another way to get local residents involved. By being directly responsible for a tree, the residents become more aware of the job that the department does. Some communities have sponsored tree walks, which are walks guided by pamphlets that give tree locations, species identification and special attributes of each tree. An open house is a great way to invite the public to see the department's equipment and employees; it is also a good way to allow citizens to gather information about the department's programs. To encourage the community to attend, seedlings can be given away and prizes raffled (Phillips 159).

Tree City—USA is a program sponsored by the National Arbor Day Foundation that has been very successful at drawing attention to trees. This recognition is given out through the state forester to recognize excellence in a city's forestry program. To receive this award, a city must meet four criteria. First the community must have a local tree board or department. It also must have a local tree ordinance or by-law, and it must be a program supported by at least $2 per capita. Finally, the city must make an Arbor Day proclamation or have a memorial planting.

Arbor Day is a great resource for any organization involved with trees. For a forestry department in can mean a large celebration. Many cities have different ways of celebrating Arbor Day but many elements are constant. A short statement by the mayor frequently starts the celebration, and a ceremonial planting may follow. Seedlings and planting instructions may be given to children, who are encouraged to care for the tree as it grows. There are often short plays put on by local schools and exhibits made by the

forestry department and older school children. In many communities this ceremony can be a daylong festival (Grey 195).

3.0 Methodology

The goal of this project was to develop a process by which the Forestry Division of the WPRC Dept can encourage community involvement with Worcester's urban forest. In order to attain this goal, we organized a plan for gathering and analyzing relevant data that could be used to develop printed educational materials. The first step in this process was to gather background information. We accomplished this by conducting a literature review. After obtaining this information, the next step in finding a solution was to assess the city's current process. We began by interviewing not only the WPRC Department staff, but also people who have worked with the city to plant trees. From these interviews we hoped to gain insight into the current tree-planting process. By comparing the results from the interviews with WPRC Department staff with the results from the interviews with those who have planted trees before, we determined the shortcomings that the current tree planting process had, and how to improve it. Another way to strengthen this process is to compare it to the processes used by model cities, and to borrow the best points of other such processes. After gathering the information, we compiled it into a handbook and formulated our recommended procedure. We then performed handbook layout testing to assess the clarity and straight-forwardness of our handbook. Using feedback from this testing, we improved the handbook so that it was more easily understood and followed. Each of the above steps that were undertaken in our project will now be described in greater detail.

3.1 Gathering Background Information

Conducting background research was an important step in our project. This background research informed us of the exact nature of the issues at hand and allowed us

to formulate a more complete picture of what we needed to accomplish. In order to make an informed decision about which information was pertinent to our project, we formulated a clear definition of the problem. The specifics of the problem are clearly laid out in Commissioner O'Brien's 1999 report to the City of Worcester. We also obtained further detail during a meeting with the Commissioner and his staff in September of 2000.

Part of defining the problem was to review literature on the subject of urban forestry. Reviewing the literature enabled us to have a solid background in this topic, and gave us several ideas for what would need to be done to accomplish our objective.

3.2 Identifying Model Cities

In order to determine ways to improve Worcester's process by which community members have street trees planted, we conducted case studies of cities that have effective processes. We used this method so we could imitate the most successful aspects of each city's strategy while developing such a process for Worcester. We believe this was the best method to use because it allowed us to benefit from the experience of cities that have already created a successful process. By finding out what worked for them and what did not work for them, we had a good starting point, and could avoid some mistakes. One possibility that we were aware of was that some cities might only share information that would reflect positively on their program. We attempted to limit this effect by informing our model cities that we were just conducting research, not evaluating their programs.

We identified model cities using two sources. The first source that we used was the Worcester Forestry Division, which cited several cities with exemplary tree programs. The second source we used was literature on the subject, which also cited several

examples of cities that recovered from a difficult state of affairs, including massive tree blights, and extreme tree damage. These cities are also excellent examples of large-scale regreening in urban areas.

The cities that we identified were: Chicago, IL, Toledo, OH, and Newton, MA (Ginsburg 23). When we contacted these cities, we asked them for several relevant pieces of information. We asked them what the state of their urban forest was before they implemented their current process; what aspects of their process have been most successful; which aspects, if any, have been unsuccessful or have had to be changed; what obstacles they have encountered; what role does community involvement play in their new process; whether they require citizens to sign maintenance agreements or contracts; whether there are different strategies for targeting different groups within of their city; and, whether they have any additional advice that they feel would be helpful. From these case studies, we found out what issues we could expect to encounter along the way and what solutions have been used. These officials also gave us information during their interviews on where to find other resources.

We contacted the candidate cities by three means. First, we sent an E-Mail to each city, explaining who we were and what information we were looking for. Then we sent a letter through the US Postal Service, which again introduced us and explained what information we were looking for. Finally, we waited approximately one week so that we could be sure that the mail had arrived, and we called the prospective cities to perform or schedule a phone interview, and to make sure that they were willing to send us information. After all the information had been gathered, we then assessed it for

usefulness and relevance to the project. The interview questions may be found in Appendix A.

3.3 Developing Understanding of Current Tree Planting Process

In order to gather all the data necessary to recommend a process for tree planting, we needed to collect information and opinions from community members. One useful method of information gathering that we employed was conducting interviews. We interviewed several key groups of people to obtain necessary information. We contacted members of Worcester community groups, members of Worcester's Forestry Division as well as other cities, and people involved in tree care. For each of these interviews there were specific goals, methods of conducting the interviews, and ways to analyze the results.

The first group of interviews was conducted with members of community groups that have previously worked with the city to plant trees. The primary purpose of these interviews was to determine how the city previously handled volunteer groups that wished to plant street trees, and to find out what was done well and what could be done better. We also wanted to find out if there were any particular difficulties that these groups had with the process. We then used this knowledge to help us suggest a better process and to include relevant helpful information in the handbook.

We also tried to contact members of community groups that intend to plant trees in the near future. Through these interviews, we hoped to get honest and useful opinions on whether our handbook is helpful and our process is effective. We thought that, since they have an immediate interest in planting trees, these groups might look over the handbook more thoroughly and give a more meaningful evaluation than a group that is

only looking out of intellectual curiosity. Unfortunately, we were unable to contact any such group, as the only groups we know of already have trees and are not looking to plant any more in the near future.

Another group that we interviewed was members of the Forestry Division. Since the goal of our project was to suggest a process for Worcester to use for tree donations and plantings by community groups, and to organize a handbook to simplify this task, it was necessary to confer with the local forester on several subjects. First of all, we needed to determine if there was any specific information that he wished to see in the handbook that we might have otherwise overlooked. We also needed to be aware of the extent to which the WPRC Department had a process governing street tree plantings, and what this process is. By talking with the forester as well as other officials, such as the Lieutenant Commissioner, we were able to create a handbook and suggest a process that met all their requirements and made use of all available resources.

The final group that we contacted during our initial information gathering stage was those who care for trees, and know about local conditions. We found such people at the Worcester Horticultural Society. Our intention was to use the benefit of their experience to learn about the most common health issues that trees face in this area. Since these people care for trees locally, they had insight into specific issues we could expect to encounter that would not be covered as thoroughly in books and other written sources on the subject.

We chose to use interviews to collect this information because the vast majority is not available from other sources. Most of the information is specific to this area, and reference books on the subject only have an overview; they do not go into detail about

Worcester. Some of the information, such as the opinions of the community groups regarding the process of planting street trees in Worcester is unique, and talking to these people is the only way to obtain the information.

There are several important principles that were used to guide our interviews, ensuring their accuracy and reliability. Because of the nature of information we gathered, the most appropriate method of interviewing was in-depth qualitative interviews for most of our interviews. These allowed us to get the most complete picture from each of the people we interviewed. These interviews were the ones we conducted in person with members of community groups and the local Forestry Division. The purpose of these interviews was not just to gather factual information, but also to determine what sort of feelings each of these people had about the handbook and process that we were developing, so the unstructured conversational style of an in-depth qualitative interview was most appropriate (Rubin 3, 4).

In this type of interview, most questions should be open ended, and the questions should not lead the interviewee to any particular answer. The most effective method of capturing all the information is to record the interview and later transcribe it; there is not enough time to take detailed notes while conducting an interview. As a compromise, if the participant is uncomfortable with the idea of being recorded, a second person can accompany the interviewer to have the job of taking detailed notes. After the interview, there is much verbal data to sort through and evaluate for relevance (IGSD Handbook).

As a method, interviewing also has some weaknesses. All interviews have to be conducted very carefully, and still the results will never be perfect. We had to realize that any information we obtained was slanted according to personal point of view, and it was

difficult to know how objective each person was. To minimize this effect this we conducted as much background research as possible, and attempted to interview multiple people and paid special attention to any subjects in which they disagreed. Once we had determined which results were relevant, we analyzed the remaining information and decided whether to use it to develop the handbook, to modify the process based on the information, or to just discard it as being unrelated to our goal.

3.4 Developing the Handbook and Process

Once we completed the information gathering stage, we began to formulate a process and a handbook to aid Worcester community members in planting public trees. In order to do this, we took several additional steps to be fully prepared. We met with a representative of the WPRC Department, Forestry Division so that we could make sure that we agreed on what information should be in the handbook, and in what order it should appear. We also agreed upon what the WPRC Department needed to use for a process involving community members donating trees, since a process that the department did not accept was unlikely to be successful. We confirmed which city personnel needed to be contacted during the preparation for a tree planting, which influenced both our process and our handbook.

Once we were aware of what the city wanted, we used this information to formulate and organize both the handbook and the process. The handbook contains a step-by-step guide through the process. To develop the process, we had to logically go through the steps of preparing for and planting of a public tree, and make sure that each step was addressed in a logical order.

An important part of designing a street tree handbook for the City of Worcester was choosing a way of organizing the information. For this reason, we came up with three different methods of organizing the material, and attempted to determine which of these organizations would be most useful. Our goal in creating each of these designs was to come up with as many fundamentally different models for the handbook as possible, but still to make each layout simple and intuitive.

After coming up with various layouts for the handbook, the next step was to perform testing. The goal of testing was to determine what aspects of each layout were most appealing to people in general, and to try to use their feedback to either choose a layout or to design a new layout. Our original plan was to get feedback from three different groups before designing our layout, but slow responses forced us to make a choice before we had received the volume of feedback we were hoping for. The three groups we sought feedback from were the WPRC Department, the Forestry Division, neighborhood groups that have planted trees before, and people who had no experience with planting trees or interacting with the city. The city's opinion was important because they are the primary users of the handbook, and any feedback they had was clearly significant. We wanted opinions from neighborhood groups that previously planted trees with the city before because we wanted the opinion of groups who were familiar with the intricacies of the whole process and working with the city. Finally we wanted to get feedback from people who had no experience either with trees or in dealing with the city, because we wanted to make sure that our handbook is organized in way that is clear to those without prior knowledge of the subject. We ended up getting feedback from WPI students, because they were the most convenient group to locate. We did not need a

random sample, because the testing was only meant to provide feedback, not to draw significant conclusions.

The final step in the process was making use of the layout testing results. This involved evaluating the responses to determine which layout was the best received and determining whether any further improvement of the layout would be necessary. Since this process is more of an art than a science, we did not set a solid number to determine what would constitute a single favorable layout or under what circumstances we would need to come up with a hybrid or entirely new layout. Instead, we decided on basic principles to govern our decisions that left room for us to produce the best results without relying on a formulaic approach. We carefully noted any negative criticisms or any strong preferences to help us establish the positive and negative aspects of each layout. We then used this information to choose the most popular layout, or decide that a new layout would be necessary.

4.0 Results

The results of our information gathering were numerous and each of these results influenced our project. One idea for gathering information was to research model cities. Several cities were mentioned in literature as having outstanding forestry programs; due to this we decided to find out what made these cities so successful. The model city interviews proved to be helpful, and from them we gained a better appreciation for the field of urban forestry as a whole as well as a few ideas for furthering our project. We also interviewed local community members and professionals. Through these interviews we gained much insight as to the current state of Worcester's urban forest, what community members felt we should include in our handbook, and ideas for further information. These interviews also reinforced our choice of model cities. After our initial information gathering, we put together several possible layouts for a handbook, and performed layout testing. This testing allowed us to choose the best organization for our handbook. We also used two ideas we had gained from the model city interviews. We created a brochure and doorknockers as distributable educational materials.

4.1 Case Studies

By conducting interviews with several cities that are known for their abundant and healthy tree population, we gained insight that helped us develop our handbook about tree planting for the City of Worcester. We contacted four cities to conduct interviews: Toledo, Ohio; Chicago, Illinois; New York, New York; and Newton, Massachusetts. We got in contact with a representative of the forestry department for each city except Newton, where the person we needed to talk to was on an extended leave of absence. During these interviews, we asked each city several questions about how its citizens are

involved in maintaining or extending the local urban forest. We asked them about any obstacles they had to face in developing their current urban tree program. We also asked about printed materials, and whether they had anything like the handbook we were developing.

When questioned about obstacles that had to be overcome in the development of each city's urban tree program, both Toledo and Chicago mentioned money as the primary limiting factor. While money still continues to be a problem for Toledo, Chicago's situation has recently changed due to a very tree-friendly mayor. New York was the exception in this case, answering not that money was an issue but rather that they had more fundamental problems. The major limiting factors that were noted by New York were time and manpower constraints.

The level of community involvement in urban forestry programs varied greatly among the cities. The city that has the most community involvement is New York. The New York City tree program is completely request driven, and has an extremely high level of community involvement. Many varied programs are run by or supported by the city such as the community young tree stewards, non-profit tree organizations (e.g. Trees New York), and training programs to teach community members the basics of pruning and tree care. In contrast to this is Toledo, which has virtually no community involvement at all; approximately ninety to ninety-five percent of their actions are in response to citizens' concerns, but citizens are in no way involved in tree planting or maintenance. There was also community involvement in Chicago's urban forest, but not to the same extent as New York City. It plants many trees without direct involvement from community members, whereas almost all trees planted in New York are planted at

the request of a resident. Even though the community involvement level varied greatly from city to city, one fact remained the same: no matter what the involvement level, all cities agreed that having community involvement made a difference in their urban forest. However, each city made it clear that citizens were in no way responsible for planting trees in any of these cities.

Each of the cities makes use of printed materials to promote community awareness. The most common of these printed materials is a "door knocker," which can be left to notify community members of their new trees and their care requirements. Other commonly used printed materials were fliers about topics such as the Gypsy Moth, or the Asian Long Horn Beetle. These fliers are used to notify and inform the public of any issues of immediate concern to the health of trees. None of the cities had a handbook like the one currently in development for Worcester. This information is of great importance to us because it tells us that we are in the process of doing something new and innovative.

Another important result we got from the interviews is that none of these model cities require citizens to sign any form of contract or good faith agreement, promising follow up care, to get a tree planted. However, the representative from each city agreed that it sounded like an interesting and helpful idea. Both Chicago and New York would allow citizens to hire a contractor to plant trees, assuming the appropriate permits are obtained, but there is no stipulation that the trees have to be cared for.

From these interviews we have learned that the project we are doing in Worcester is unique. None of the other cities attempt to involve citizens in the manner that Worcester is attempting. Since this type of program supported by the public is not in

place in any of these cities, we cannot truly use any of them as a model for Worcester. We discovered many interesting things about their urban tree programs, but Worcester's program will have a different focus from that of any of these model cities.

Though we did not actually conduct an interview, we also had some contact with the Providence Neighborhood Tree Planting Program and the Rhode Island Tree Council. This contact came late in our project, after we had already assembled the handbook and synthesized the information from our other interviews. The Neighborhood Tree Planting Program in Providence, RI has a goal similar to that of our project, which is to involve the community in planting public trees. They have established a tree stewardship course, which teaches interested individuals what is necessary for proper tree care and how to support trees in their communities. None of these ideas were new to us, as we had encountered them during our other interviews or from literature, but Providence's use of them reinforces what we had already concluded.

4.2 Interviews

In conducting interviews with various community leaders and experts on the subject of trees, we gathered much important information. Most of this information can be grouped into one of two categories: background information, and thoughts and opinions about what should be in the handbook. The background information is relevant because it enables us to put the experience of each individual into context, and it provides us with a basis for evaluating any information that has been suggested to be included in the handbook. The thoughts and opinions of experts on trees, and of those who have experience with planting trees will be useful in determining the structure and content of the handbook. Each person we interviewed was uniquely qualified to contribute her or

his opinions to this project. Table 1 provides a list of the interviewees and their qualifications.

Table 1: list of the interviewees and their qualifications

Interviewee	Qualifications
Evelyn Herwitz	Author of and primary researcher for Trees at Risk, a book about the current state of Worcester's tree population
Brian Breveleri	Forester for the city of Worcester, and an educated arborist
Elise Wellington	Member of the Urban Street Tree Task Force and a former president of the Worcester Garden Club
Peggy Middaugh	Executive director of the Regional Environmental Council
Rick Farrell	Arborist for MassElectric

While asking the interviewees about what they thought should be in the handbook and how it should be organized, we observed a general consensus on several main points. Everyone agreed that the handbook should be kept short and simple. The interviews also revealed that most of the participants had the same idea of what the purpose of the handbook should be. The handbook should not just be a description of how to get a tree planted, but it should also contain information about the benefits of trees and general tree care tips.

Besides the handbook, another common topic that arose during several of the interviews was the Nathaniel Wheeler Trust. From Brian Breveleri and Evelyn Herwitz, we learned of the existence of a trust, administered by Fleet Bank, which was set up to pay for projects that would beautify Worcester. Though we learned this trust had, on at least a few occasions, given money to pay for street tree plantings, this was not sufficient information to be useful.

The Wheeler Trust is relevant to our project because one section of the handbook that we are writing addresses finding resources to help pay for having a tree planted. Since the Wheeler Trust has on several occasions donated money for this purpose,

including enough information about it so that people reading the handbook could apply for it or at least know how to find out about it would be helpful. In order to get this information, we asked several of the people we interviewed if they knew anything about this trust. As it turned out, one of the people we interviewed, Elise Wellington, had been an advisor to the Wheeler Trust. She provided us with a few basic details, but she suggested we talk to the trust officer for the Wheeler Trust at Fleet Bank, Mary Jane Tuohy or anyone who may have replaced her, if we wanted more in depth information.

Elise Wellington had been an advisor to the Wheeler Trust because she was president of the Worcester Garden Club, and when the trust was established, the presidents of the Worcester Garden Club and Worcester County Horticultural Society were made advisors to the trust officer. The funds of the Nathaniel Wheeler Trust are to be exclusively used for the beautification of Worcester, and to this end, several groups have gotten funds to pay for tree plantings in their neighborhoods.

Some other topics we learned about while doing interviews were tree care and planting techniques. Once the tree is in the ground, one of the most important things to do is to make sure that it is watered. Both urban foresters we interviewed and all the books we read agree that watering a tree is very important during its first few years of life. We have been repeatedly told that we need to stress how important it is to a tree's survival and health that it be well watered. Another piece of information we got from both foresters, Brian Breveleri and Rick Farrell, was that it is important that the trees be planted in a high quality hole. Both stressed that using high quality soil or backfill to replace the dirt once the hole is dug is also important. Normal soil may not have enough

nutrients, so using special fill may be required to give the tree a decent chance of survival.

Both Mr. Breveleri and Mr. Farrell also stressed that choosing a good location is important. The location should be chosen so that the tree can grow without interference from utility wires or other obstacles. The tree will have the best chance of being appreciated if it is not placed somewhere that it will become an obstruction. For example, trees with low branches shouldn't be planted where people will be walking, and tall trees should not be planted beneath utility wires. We also found that most people, not just the foresters, agreed that the best place to plant trees was not in the sidewalk, but in the tree lawn. The strip of grass is a much more friendly place for a tree to grow, and trees planted there tend to live much longer than trees planted in pits in the sidewalk.

We also got information about some new planting technology that is currently being developed or has recently come into widespread use. Brian Breveleri informed us of the existence of hydra gel and structural soil, both of which can be used to increase the success rate and health of city trees. He also informed us about where to find more information about these resources, as well as providing us of copies of informational videos created by Dr. Nina Bassuk at Cornell University.

There were some disagreements about where trees could successfully be planted. Brian Breveleri and the city of Worcester fully support planting new trees in pits in the sidewalk, but some of the community leaders feel that a sidewalk is not an acceptable place to plant trees, because they tend to live only a short time. Some of these people feel that putting trees in a place where they may only live for ten years is a waste of resources

that could be better spent planting trees where they would be successful and live for much longer.

4.3 Layout Testing

We conducted layout testing for the street tree handbook to find a way of organizing the information that would be simple and intuitive for people trying to make use of it. To accomplish this goal, we first created three unique organizations of the handbook. The first layout grouped the information by topic, so that all the information on tree care, or on tree planting would be in its own section. The second layout grouped the information based on who would be making use of it. In this layout all the information needed by a neighborhood group wanting to get trees planted could be found in a single section. The third layout grouped information as a planner, or set of steps that could be followed with additional material available separately. The exact layouts that we used for testing as well as the questions that we asked of the people we wanted feedback from are included in Appendix B.

Of the three groups we surveyed about the handbook layout (see Methodology section 3.5 for more details), only the WPI students we interviewed face-to-face responded quickly enough for us to make use of their results. All of these people were ones who had no prior experience with planting trees. However, the results from this group strongly favored layout B in all categories, so we decided to organize the handbook along these lines.

This layout of the handbook consists of three primary sections, which are divided based on who would make use of each. It also contains several appendices, which could be of use to anyone. One section is aimed at people who want to pay the city to plant a

tree, either as a memorial, or as a park tree. Another section is for community groups that would like to have several trees planted within their neighborhood; it provides a step-by-step guide through the process they would have to follow to get these trees planted. The last section is for people who are interested in planting their own trees on their own land, and includes basic tree care information. Because the sections are divided based on who will be using them, the city can easily send out only the sections that are needed. The contents of each of these sections are based on the information we got from our interviews and case studies.

The appendices contain extra information that may be helpful for people who are interested in trees, but are not specifically necessary for the successful use of any section of the handbook. This information was put in appendices to keep the primary document small and manageable, so it would not overwhelm the average citizen, but so that it was available for those who need it. These appendices contain information, such as a tree selection guide, that will be of interest to community group leaders, but may be too involved for most people. The complete handbook is included as Appendix C.

After we had organized the handbook to conform to layout B, we received feedback from both the city and from several members of a neighborhood association that had previously planted trees with the city. Both of these groups also strongly favored layout B, which confirmed the validity of the choice we had already made.

4.4 Developing a Brochure and Doorknockers

Understanding the importance of public relations for the forestry division of any city, it was decided that beyond the handbook, a brochure and doorknockers were

necessary to complete the development of the WPRC Department's public relations. Both literature on the subject and our interviews with model cities suggested that having materials to hand out to the public would be beneficial. The brochure is meant to create public awareness of the available tree planting programs. The two doorknockers are meant to create a better rapport with community members.

Several versions of a brochure were developed containing the same textual content but having different stylistic components and graphics to allow the WPRC Department to choose the style most appropriate for their needs. Each had the capability to be printed in a single color for ease of reproducibility and cost concerns. The brochure was made specifically with the intention of distribution first at Earth Day (April 28th 2001) and also at later dates. They all contained eye-catching graphics and text, which covered basic tree planting programs as well as a synopsis of why people should plant trees, both locally and globally. Also, they contained a short explanation of the WPRC Department, Forestry Division's mission and involvement in the city to further their public relations.

The brochure was developed to meet the need created by the Earth Day Festival. The coverage this new program will receive due to this festival will be enough to start it very strongly within the community, but the brochures will help create the support and interest necessary to keep the program running long-term.

The doorknob hangers were made for use by the forester and tree crews to inform the neighborhood residents of new tree plantings and also so the Forestry Division could have an open line of communication with people concerned about the health of the neighborhood trees. The first doorknob hanger congratulates residents for the addition of

a tree to their neighborhood. It also provides instructions for watering and caring for the tree, and contact information for the WPRC Department, Forestry Division. The second doorknob hanger provides space for the forester to write to the resident about a tree whose health is in question. These doorknob hangers would be used when the forester was responding to calls made by community members regarding specific trees. They have room for the forester to write what action should be taken for the tree, and at the end a short paragraph reminds residents that if a tree was not healthy and had to be removed, there are ways to get new trees planted. This hanger also has contact information for the WPRC Department, Forestry Division.

These two doorknob hangers were developed with the WPRC Department forester to meet his needs in every day business with the public. Due to this partnership early in the process, it is felt that these hangers will be very useful for the Forestry Division. Both the doorknockers and the brochure can be found in Appendix D.

5.0 Conclusions and Recommendations

The City of Worcester is not alone in its endeavors to expand its urban forest. Many cities throughout the country are facing or have faced a similar decline in tree population or condition, but many of these cities have successfully created programs to rejuvenate their urban forests. If Worcester institutes a program of community involvement in its urban forest and takes the steps necessary to keep the program current, it can become one of these cities.

Worcester has taken the first step by looking for ways to encourage community involvement. By getting popular support for its tree-planting initiative, Worcester will be able to sustain more momentum than would be possible without public backing. The primary goal of this project was to create a handbook which would have all the information the public would need to get involved in street tree planting, and would help to stimulate public interest in having trees in front of their own houses.

Before creating the handbook, we had to develop a process that community members could use to interact with the city to have street trees planted in their own neighborhood. Though we searched through a large amount of literature and interviewed people from exemplary cities, we did not find any cities that had previously instituted a program like the one that is beginning here in Worcester, Massachusetts. We did however find that the people we interviewed thought the program to encourage community involvement is a good idea, and many of them expressed an interest in seeing the handbook as soon as it was complete.

The handbook we designed was meant to be short but complete. It is divided into sections based on who would be making use of it. The sections are about donating park

or memorial trees, getting street trees planted for community group, and planting trees on one's own property. There are also appendices that go into more detailed information for group leaders, or those with an interest in trees. The information from these sections and their organization is based on information we gathered from literature, interviews, and case studies of model cities.

Beyond developing the process and writing a handbook for the city, we also created a brochure and two doorknockers for the city to distribute. The brochure provides a brief description of the benefits trees provide for an individual or a community. Its primary purpose is to be distributed at Earth Day, but it can be distributed to anyone who wants some quick information about benefits of urban trees. One of the doorknockers is designed to be left by a forester after planting a new tree. The doorknocker informs the community member that a new tree has been planted and provides watering instructions. The other doorknocker is intended to be left by a forester after examining a tree about which a community member has reported a problem. The doorknocker has space for the forester to describe what the problem is and what action will be taken.

Each of these educational materials we developed will be useful in encouraging and sustaining community interest in planting urban trees, but we recommend that the city consider doing additional work beyond the scope of this project to keep their program on track. First and foremost, we recommend that the city keep the handbook current, reflecting any changes in public policy. They should also make any improvements that might be necessary after the handbook has been in use and they get feedback from people who use it as their guideline to have street trees planted.

We also recommend that Worcester make the handbook available as widely as possible. There are several ways that the city could go about achieving this widespread availability. The handbook could be translated into any languages that are commonly spoken in Worcester. It could also be made available in an electronic format, either on the City of Worcester's web site or on CDs, which can be more easily and cheaply reproduced than an entire physical handbook. Also, electronic media are becoming increasingly popular, and there are some segments of the population that are more likely to take an interest in this program if the information is available in these formats.

Another important thing the city will want to do, which it is already working on, is to develop some tree ordinances so that it has the legal authority to enforce many of the policies it wishes to implement. Having local street tree ordinances would allow the city to establish and enforce policies requiring new developments to have trees, or could do things such as clarify the rules by which disputes over tree ownership are resolved.

Though it is beyond the scope of this project, we recommend that Worcester add an educational element to the process it uses to deal with community members interested in public trees. A program similar to the tree stewardship program in New York would be of great benefit in developing a sound relationship between the Forestry Division and the community. If such a program were successfully instituted, it would also be beneficial to look into having citizens do the actual plantings for public trees.

Though the program Worcester is trying to develop is not necessarily unique, it is certainly not common. If this program and handbook are successful, they could prove to be a model for other cities looking to increase the level of community involvement in

their urban forests. This community involvement would greatly reduce the demands on forestry departments, and helps bring communities together.

6.0 Bibliography

Chapter 87, Massachusetts General Law. "Shade Trees".

Cooper, Geoffrey. The Cell: Molecular Approach. 2nd ed. Washington, D.C.: ASM Press, 2000.

Creating an Urban Forest: The Bare Root Tree Planting Method. Dir. Peter Caroll. Perf. Andy Hillman and Nina Bassuck. Cornell University. Photosynthesis Productions, 1998.

Crockett, James Underwood. Trees: The Time-Life Encyclopedia of Gardening. New York, NY: Time Life Books, 1972.

Deneke, Frederick. Urban Forestry. New York: John Wiley and Sons, 1978

"IGSD: Handbook for Interactive Qualifying Project Advisors and Students" <http://www.wpi.edu/Academics/Depts/IGSD/IQPHbook/>

Ginsburg, Janet. The City of Chicago's Guide to Urban Tree Care. Chicago, IL.: City of Chicago, 1994.

Holmes, Francis W. Massachusetts Tree Wardens' and Foresters' Association Handbook, Seventh Edition. 1993.

Kvale, Steiner. InterViews: An Introduction to Qualitative Research Interviewing. Thousand Oaks, California: Sage Publications, 1996.

Miller, Robert. Urban Forestry: Planning and Managing Urban Greenspaces. 2nd ed. New Jersey: Prentice Hall, 1997.

Moll, Gary, and Sara Ebenreck, ed. Shading Our Cities: A Resource Guide for Urban and Community Forests. Washington, D.C.: Island Press, 1989.

O'Brien, Michael V, Commission of Parks, Recreation, and Cemetery. Memorandum. Date October 8, 1999. To: Thomas R. Hoover, City Manager. Subject: "The Current State of the Urban Forest and Recommendations for the Maintenance and Management of this Natural Resource for the New Millenium."

Phillips, Leonard. Urban Trees: A Guide for Selection, Maintenance, and Master Planning. Washington, D.C.: McGraw-Hill, 1993.

Rubin, Herbert J. and Irene S. Qualitative Interviewing: The Art of Hearing Data. Thousand Oaks, California: Sage Publications, 1995.

Support Your Local Tree: Cornell Structural Soil Mix. Dir. Peter Caroll. Perf. Andy Hillman and Nina Bassuck. Cornell University. Photosynthesis Productions, 1998.

Worcester Parks, Recreation and Cemetery Department

"Worcester, MA - City Governmental Site for the Internet" http://www.ci.worcester.ma.us

Appendix A: Interview Structure

Structure of interview with model cities:

Hello, my name is Jessica Caron. Recently, I sent you a letter regarding the "Regreening of Worcester" Project. I would like to schedule a phone interview with you in order to discuss community involvement in your Urban Forestry Program. This interview will take approximately 20 minutes.

Questions:

1. How much of a role does community involvement play in your urban forestry program?

2. Do you feel that it has made a difference?

3. How does your program handle community members who are interested in planting or donating trees?

4. What do you feel are the strengths of your program?

5. Have there been any obstacles that you have had to overcome in the development of your program?

6. Have any parts of your program not gotten the results that you were hoping for?

7. Does the city require community members who plant trees to sign maintenance agreements or contracts assuring that they will care for the tree?

8. Does your program utilize printed educational materials?
   Would you be willing to send a copy of those materials?

Appendix B: Layout Analysis Questions

Simple answers of the letter of the layout would be fine for all the questions but more would be appreciated on number four. If there are any specific questions about content or anything else feel free to contact me at 363-2375.

Thank you for your time,

Erin Sullivan

1. Which layout is more clear and easier to understand in terms of content of the handbook?
2. Which layout seems easier to split up and reproduce for specific purposes?
3. Which layout is more concise and to the point?
4. Which layout is more aesthetic? Which do you like more and why?

LAYOUT A

Introduction Why are Trees Important? and What is Urban Forestry?

What is the Tree Planting Process? Create a basic timeline and provides an explanation for the process of planting street trees

Tree care Discussing the specific needs of trees at each stage after planting up to five years

Resources Identifying websites, books, and organizations that may be able to answer further questions regarding tree health, planting, tree identification, public policy regarding trees, etc

Grant Resources

Frequently Asked Questions

Appendices:

Appendix 1: Forms Regarding Tree Planting

Form A Donation form for memorial/park tree

..... **Form B Example Backyard Planting Maps**

Form C Neighborhood Planting Organization Form

Form D Site selection Form for Neighborhood Planting

Form E Tree Species selection Form for Neighborhood Planting

Appendix 2: Tree Selection Guide

How to Select Trees

Tree Selection Guide

Appendix 3: Organizational Planner

Timeline

Checklist

Calendar

Press Release Packet

Maintaining Motivation

LAYOUT B

Why should we plant trees?

I want to donate a single tree

- Process
- Applicable Forms

My neighborhood wants to plant many street trees

- Process
- Tree care
- Applicable forms
- Grant guide
- Planner
- Press Release Packet
- Checklists

I want to plant trees in my own backyard.

- Process
- Tree Care
- Guide to selecting sites

I'm a contractor who is building, do I need to plant trees?

- Applicable laws
- Short discussion on tree selection and site selection

Frequently Asked Questions

Tree Selection Guide

LAYOUT C

Timeline (a process outline)

Provides all details of the process from start to finish

All forms are inline

Grant guide where applicable to the process

Press release packet where applicable to the process

Process followed by after planting tree care

Checklist

Contains all steps that are necessary for approval in a check box format

Has spaces to write in the agreed upon spaces in the case of "agree upon location" and the agreed upon tree species in the case of "agree upon tree species"

Calendar

Much like a day planer type thing

Space to write meetings and milestones

General Information and Resources:

Why are trees important

Chapter 87

Websites, books, and organizations that may be able to answer further questions

Appendices:

Maintaining Motivation

Tree Selection Guide

Appendix C:

Worcester's Urban Tree Handbook

A Guide to Worcester's Tree Planting Program

TO REQUEST ADDITIONAL INFORMATION CONTACT THE DEPARTMENT OF PARKS, RECREATION, AND CEMETERY, FORESTRY DIVISION.

Phone: (508) 799-1300
Fax: (508) 799-1253

Table of Contents

Why Should We Plant Trees?

What are the benefits of having street trees? and What can I do to help?

A large population of healthy trees can benefit any city. Trees help to make neighborhoods more attractive and friendly in appearance. They provide shade in the summer to keep the city cool. In the winter they provide protection from wind, reducing residents' heating costs. Trees are also good for reducing the effects of storms. They keep storm drains from overflowing, and soil from washing away. Trees also absorb noise, block solar glare, and help to reduce air pollution. Since they provide all these benefits, trees belong on our streets and they deserve our care.

Because of the value of trees, many cities have established programs to maintain a beautiful and healthy urban forest. Here, the Worcester Parks, Recreation, and Cemetery (WPRC) Department is in charge of these programs. Part of the WPRC Department is a division called Urban Forestry, which is devoted to caring for city trees. The division is responsible for trimming live trees, removing dead trees, and inspecting public trees for problems. Also they have to clean up trees that suffer from storm damage. They are responsible for caring for all trees on streets, in parks, and in Hope Cemetery.

With all these responsibilities, the WPRC Department, Forestry Division has limited resources to plant new trees and provide care for them. For this reason, the city needs the help and support of the community. Though citizens are not allowed to physically plant trees in public locations without permission, there are things you can do to help the WPRC Department, Forestry Division. The WPRC Department, Forestry Division will accept donations, and use the funds to purchase and plant a tree in a park or cemetery as a memorial tree. If a whole neighborhood group gets together and wants street trees on it's block, the city will also use donated funds to perform such plantings. If money is an issue, but you still want a tree, there are ways to receive funding. There are several grant-conferring organizations, and with some time and effort, you may be able to get a grant to pay for trees you would like planted.

For every type of tree planting, there is a set of steps that you must take. This handbook explains what you have to do for each type of planting. Just find the type of planting that interests you and follow the steps described in the appropriate sections. There are also several resources provided in this book that go beyond the outlined steps that may help you succeed in your tree planting projects.

I Want to Donate a Single Tree

The gift of a tree can be used to commemorate many different occasions: the birth of a child, or grandchild, or the passing of a loved one. No matter the reason, or whether there is a reason at all, the contribution of a single tree to a park or street can be a resource to the city and its citizens for decades to come. Outlined below one will find all the information needed to donate a single tree.

Process

- *As a Memorial…*

If you are interested in having a tree planted as a memorial, you need to fill out the Memorial Tree Planting Application Form (Form 1) and return it to the city with $250 for the tree and plaque. The city will do all the work necessary for the planting, but you may still want to be present when the planting occurs. To do so requires you to contact the forestry division and find out when the tree will be planted (799-1300). Most memorial trees are planted in parks, but it may be possible to have a memorial tree planted as a street tree also if it is part of a larger, planned street tree planting. There is no follow-up responsibility in these kinds of tree donations and these trees are present for your enjoyment. If you need more information or have questions that are not answered in this section, contact the Parks, Recreation, and Cemetery Department.

- In a Park…

If you are interested in having a tree planted in a park, you must also fill out the Memorial Tree Planting Application Form (Form 1) and return it to the city with $250 for the tree and planting. The city will do all the work necessary for the planting, but if you would like to be present for the planting contact the forestry division to find out when it will be planted (799-1300). This donation requires no further commitment on your part. If you need more information or have questions that are not answered in this booklet, contact the Parks, Recreation, and Cemetery Department.

Worcester Parks, Recreation, and Cemetery Dept
50 Skyline Drive
Worcester MA, 01605
1-508-799-1190

FORM 1: MEMORIAL TREE PLANTING APPLICATION FORM

Name: _____

Organization (if any) _____

Address: _____

City: _____ State: _____ Zip: _____ Telephone: _____

Note: Purchase of tree, planting, stakes, mulched & 1-year* limited guarantee is $250.00 including plaque. All planting will take place in the Spring. * (Acts of God, vandalism, & accidents by third party are not covered under the guarantee.)

Type of Tree:(Please circle choice) Number Desired: 1 2 3 4 5 ___other

Street Planting	Park Planting
London Plane Tree	Northern Red Oak
Ginkgo biloba(male only)	Green vase Zelkova
Redmond Linden	Bradford Pear
Washington American Elm	Dawn Redwood

Location Desired (if applicable)_____

Plaque Requested ____Yes ____No (Plaques will wear in time – additional or replacement plaques @ a cost of $15.00)

If yes, inscription on Plaque to read as follows:_____

Sign:_____

Make checks payable and mail to:

Worcester Parks, Recreation & Cemetery Dept.
50 Skyline Drive
Worcester, MA 01605

Urban Forester

Office Use Only:

Planting Company P.O.# Planting Date Plaque Installation Date

Effective as of 4/28/01

My Neighborhood Would Like to Have Street Trees Planted

Provides a basic timeline, and an explanation of the steps necessary for Street Tree Planting.

Before you get started, you may want to keep in mind that having several trees planted within a neighborhood is a considerable task, and there are many things you will have to keep track of along the way. In order to help you keep track of it all and to keep members of your neighborhood group motivated, we have included an organizational planner and as much help as a handbook can provide. You should consult this section to help keep your schedule running smoothly. Below are listed the steps that you will need to follow to have your trees planted.

Process

1. Organize your group:

If you do not have a neighborhood association or business association or any other group already formed then flyer the neighborhood and ask everyone if they would be interested in getting a tree in front of their homes. Even if you do have a neighborhood association, it would be good to approach the people that may not regularly participate in it to make sure you have found everyone interested. There is no commitment at this point in the process but it would be good for everyone who is interested to meet together to accomplish step two.

- ✯ Flyer your area to find interested people.
- ✯ Set up a meeting of all interested people.

2. Determine your goals:

Once you get everyone together discuss what you want to accomplish. To get a better perspective of the task at hand, ask your group some questions to set goals:

- ✯ How many trees does your group want to have planted?

  → If the number is less than ten, you may want to recruit more members or join with another group in your area that would also like to have street trees planted. The city may be able to put you in contact with similarly minded groups nearby. (799-1300)
- ✯ Do you have the money to plant each tree plus the cost of mulch for the first three years?

  → If you have the money to pay for the trees, that will make getting your trees a lot easier, but you may still be able to get them even if you don't. There are several funds that have been set up in Worcester that are devoted to beautifying the city. One of these funds may give you a grant to pay for the planting if you apply. See the Grant Guide for more information if this applies to you.
- ✯ Are there enough people in your group ready to make a three-year commitment to care for the trees once they are in the ground?

  → If there aren't enough people to care for all the trees your group wants to have planted, you will need to adjust the number of trees or get new group members to join the project. The city requires that there is a person responsible for each tree it plants in neighborhood planting programs. One person may be responsible for more than one tree, but this handbook does not recommend one person being responsible for more than four trees.

Once you establish what you are capable of and what you want to do you should be able to establish some kind of commitment from the community members. Have them fill in the Community Group Information Form (Form 2). Also note all of your goals on your Neighborhood Planting Planner for easy reference.

- ✯ Meet with your group
- ✯ Set goals and note in Planner.
- ✯ Fill in the Community Group Information Form (Form 2)
- ✯ Contact WPRC Department, Forestry Division about planting (799-1300)
- ✯ Give the urban forester or designee a copy of your completed Form 2 at your first meeting

3. Select sites:

Once you have met with an urban forester or designee and your plan is being considered, walk the neighborhood with the urban forester or designee and group members to decide locations for the trees to be planted. Before each site can be approved, the city must check with DigSafe (1-800-DIG-SAFE), a service that will alert them of any underground utilities or pipes. Each site must also be approved by the city. Once each site is agreed upon by the closest resident and the tree caretaker (if different people), the, and DigSafe, the Tree Location Agreement Form (Form 3) must be filled out and signed where appropriate. Your group should keep one copy and give one copy to the urban forester or designee.

- ✯ Walk neighborhood and find sites
- ✯ Get closest resident's approval
- ✯ Get approval from person responsible for each tree
- ✯ Get all sites approved by DigSafe
- ✯ Get all sites approved by WPRC Department urban forester or designee
- ✯ Fill in the Tree Location Agreement Form (Form 3). Keep a copy and give your urban forester or designee a copy.
- ✯ Receive Tree Selection Guide from your urban forester or designee (one copy per group)

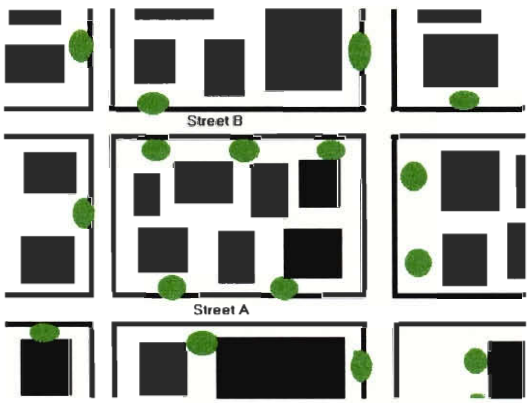

Figure 1 Map out your neighborhood and proposed planting sites, great for reference.

4. Select trees:

Planting sites tend to vary greatly in available size and soil quality. For this reason, each tree needs to be selected so that it is suitable for the location where it will be planted. There is a tree selection guide that is a supplement to this handbook that may help you in selecting a tree for a site, but it is not comprehensive. The urban forester or designee will provide you with a copy when you get to this step. If you happen to pick a tree that is not suitable for your location, the urban forester or designee will be happy to suggest other trees that would be more appropriate. In the end, it may be necessary for the urban forester, the nearest resident and the tree's assigned caretaker (if different people) to make a compromise. Once a tree for each site is selected and approved by the urban forester, the closest resident, and the person caring for the tree (if different people), the Tree Type Agreement Form (Form 4) should be filled out and signed where appropriate. Your group should keep one copy and give one copy to the urban forester or designee.

- ✯ Consult nearest resident and person caring for tree (if different people) for species preferences
- ✯ Consult urban forester for species recommendations
- ✯ Come to a solid agreement on all trees
- ✯ Fill in the Tree Type Agreement Form (Form 4). Keep a copy and give a copy to your urban forester or designee.

5. Apply for grants (if necessary):

This can be a very long process but as long as the previous steps are all taken care of it should be manageable. The first step is to research grants that may be available and then to contact them and apply. A more expanded discussion of how to go about the research of grants is included in the Grant Guide Section of this handbook.

6. Sign good faith agreements:

Once your group has found a way to pay for a planting, you must fill in your final form, the Good Faith Agreement (Form 5). There should be one person signing for each tree that will be planted. The person caring for each tree should keep one copy and a copy should be given to your urban forester or designee. These forms shall be kept by the city for the first three years your trees are in the ground.

- ✯ Fill in the Good Faith Agreement (Form 5)(one for each tree). Keep copies and give a copy of each to your urban forester or designee.

7. Set date for planting:

Now that you have made all the necessary preparations, you can talk to your urban forester or designee to set a date for the planting. Depending upon the kind of attendance you want for this event and media coverage you want, the selection of the date may be important (see step 8). Either way it would be nice to have some members of your group available to the planting team on the selected date.

- ✯ Call the forestry department and set date (799-1300)
- ✯ Ensure there will be some residents present to be available to the planting team even if no ceremony will occur.

8. Set up a ceremony on the planting date (optional):

Depending on the nature of the planting, you may want to have a ceremony to commemorate the trees being planted. It could be something as informal as a barbecue in front of someone's house, or something more elaborate that involves the press and public speakers. Either way it's a fun way to celebrate all the hard work that has gone into the process, and to keep the neighborhood excited through the final steps. If you are interested in having media coverage, you should talk to the WPRC Department, Forestry Division and work with them to get the coverage you want.

- ✯ Set up Ceremony
- ✯ Contact WPRC Department, Forestry Division to set up media coverage

9. Care for trees for three years:

It is your responsibility to provide care for your trees for at least the first three years after they are planted. All care instructions are listed in the Tree Care section of this handbook. If your trees suffer from any damaged, infestations, or infections, please report this information to your group leader, who will inform the urban forester. If you are the group leader, remember that all questions should go through you so your urban forester is not being called several times a day about the same thing. Also the urban forester will contact you, as the leader, and expect you to get the word out about specific problems he may find.

10. Enjoy your new neighborhood trees:

Congratulate yourself for your hard work. All your effort to get your trees, and to care for them for their first three years will pay off, and you will have new neighborhood trees to enjoy for many years to come.

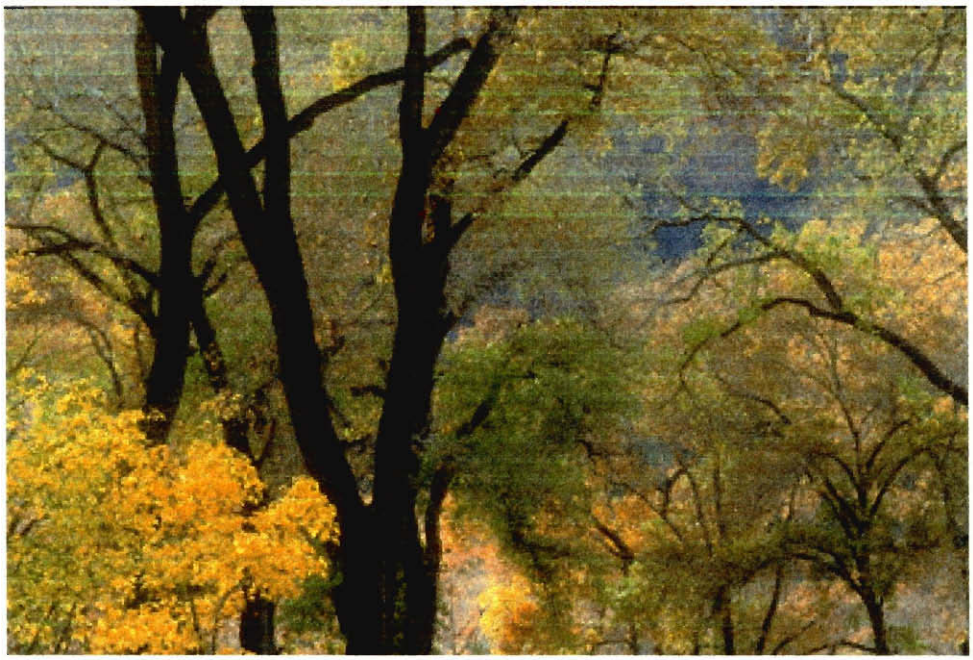

Figure 2 Well established trees in an urban neighborhood.

How Trees Work

In order to understand trees, it is easiest to think of them as being made of three primary parts: the crown, the trunk and the roots. The roots anchor the tree in place and absorb nutrients from the soil. The trunk is the tree's backbone and connects the roots and crown. The crown consists of the branches, twigs and leaves, and is where the tree makes its food.

The first part of a tree this handbook will consider is the roots. Despite being hidden from view, the roots are often the largest part of a tree. In searching for food, they may spread out over an area much wider than the crown of the tree. Trees typically have three types of roots. First is the taproot, which is the main support for the tree and grows straight down, directly beneath the trunk. There are also lateral roots, which spread out just beneath the soil. The final type of roots, the feeder roots, grow at the end of lateral roots, absorbing water and nutrients from the soil.

The environment that city trees face is very different from the environment that other trees face in the forest. First, the ground in which they are planted is very different. In the city, nearly none of the rainwater is absorbed by the soil, so there is very little moisture available for trees. This is compounded by the fact that there are very few nutrients in the soil of the city. In the woods, when leaves fall they decompose and become part of the soil, providing necessary nutrients. In the city, most organic matter that collects on the ground is removed by city clean up crews, so the soil does not get these nutrients. Another factor that affects tree growth is soil compaction. Well-aerated soil leaves room for the roots to grow and get oxygen, but city soil is rarely well-aerated. In cities, people tend to walk over the ground where the tree is planted, so the soil is usually very compacted and rocklike. In the worst cases, all but a small square where the trunk comes out of the pavement is covered in cement. So, city trees grow in nutrient poor, dry soil, which is compacted and clay-like. These factors along with salt from the road and other pollutants from both the air and the soil leave a young tree weak and susceptible to disease, which is already more common among city trees. Figures one and two contrast the nutrient resources and the space root systems have in both a city and a natural environment.

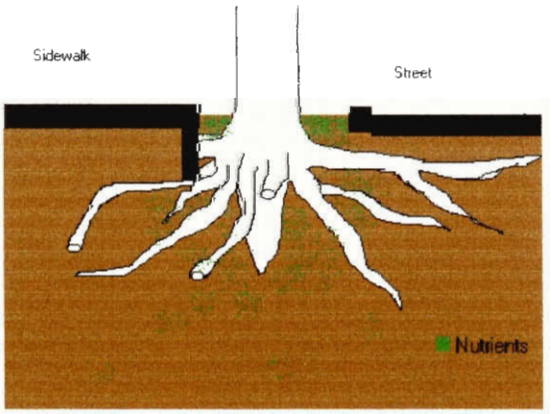

Figure 3 A sidewalk pit for street trees

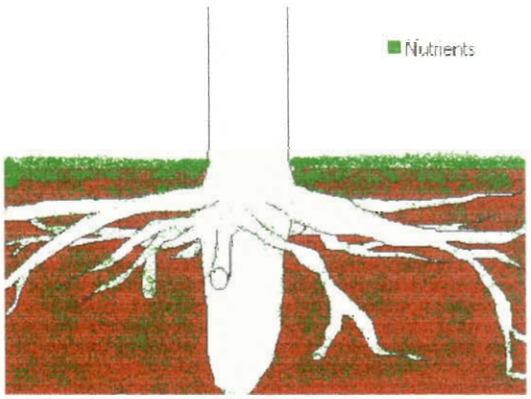

Figure 4 A tree's root system in a more natural environment

The second basic part of a tree is the trunk. The trunk acts like a pipe, transporting water, food, and oxygen between the roots and the leaves. These functions are shown in figure three. If the trunk is damaged, the tree may be unable to transport nutrients and it could die. This could be caused by physical damage to the trunk from things such as lawnmowers, or by girdling the tree. Girdling is when something is wrapped around the trunk of a tree. If the girdle is left around the trunk, the tree will strangle itself and block the flow of nutrients as it grows.

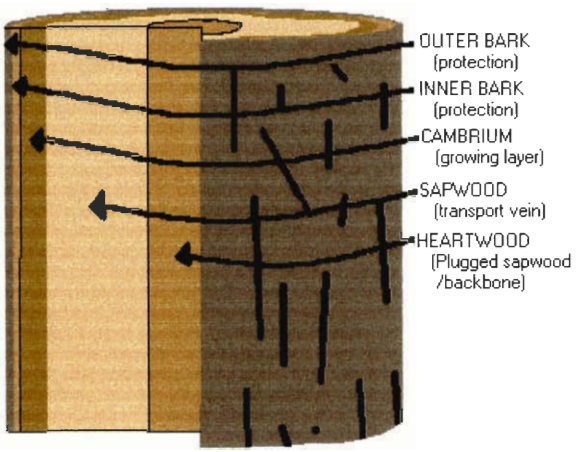

Figure 5 A cross section of a trunk

The third basic part of a tree is the crown. This is where green leaves make food from the energy they collect from the sun. The twigs and branches carry the food back to the trunk, so it can be distributed to the rest of the tree. Beyond this important function, the crown is also useful for providing shade, and it contains all the foliage of the tree. Trees have many different shapes that their crowns can take. A rounded crown, or a crown which spreads, would be a more effective shade tree than a tall columnar or conical shaped tree, which don't have crowns that spread. The columnar trees are appropriate to plant near buildings, since their crowns do not spread.

Tree Care

First Year Care

The destructive factors found in a city environment can be combated by good care early in the tree's life. With proper maintenance, trees can live a longer and healthier life. To have the best chance for survival, these street trees need to be cared for carefully in the very beginning. When the city plants a street tree, the soil within the tree pit is removed and replaced with a better soil. This soil helps the tree get nutrients and allows water and air to penetrate more deeply. The city also plants the tree with fertilizer pellets that provide necessary nutrients for the first three years. Using supporting stakes or guy wires and a protective layer of mulch to ensure the tree remains straight and is properly insulated is also commonly done by the city.

After being planted, the tree will need to be watered every week. The amount of watering depends on the rainfall, but it is recommended that the tree get at least 5 to 10 gallons per week. The best watering method is to either place a hose running on low at the base of the tree for a few hours, or to get a bucket and put a hole in the bottom to allow the water to slowly saturate the ground. Fill the bucket several times. Watering once a week will ensure the tree does not wilt and will look healthier. It is also a good idea to watch out for any kind of branch damage, infestation, or signs of disease. You should report these problems to your group leader so they can inform the urban forester and any necessary action can be taken.

Second and Third Year Care

At the beginning of the second growing season, any supporting stakes or guy wires should be removed so they do not hamper the tree's growth. Once the snow melts and the ground thaws you should notice that the mulch around the base of the tree has composted into the ground. It is your responsibility to replace the mulch and continue watering the tree. There should be a mulch layer two to three inches thick that covers the entire pit but does not touch the tree trunk. This should also be done after the tree's second winter (at the beginning of the third growing year). It is a forester's saying that in the first year [the tree] sleeps, in the second, it creeps, and in the third, it leaps. This should tell you to expect a good healthy tree by the third year with lots of growth. If this isn't happening, you should contact the city to talk about whether there is anything that needs to be done about it.

Fourth Year and Beyond

Your commitment to the city has been met, but there is still a tree in front of your house that needs attention. If you are interested in having the healthiest tree you can you should continue to water the tree. Any kind of trimming will be done by the city but watering every tree in the city is impossible so this small but very important task is left to the communities that have the trees. In addition, you can still call the city with concerns about insects, diseases, damages, and death since the members of the community are the first to see it. These two simple tasks are yours to take up if you choose; the benefits will be trees that look better and live longer. Moreover, a longer living tree can continue to shade and beautify your neighborhood as well as serve as an air filter, noise absorber, and more for years to come.

Tree Care Planner

First Year:

- Date Tree Planted:_____

- Watering Schedule:
- Every
  Sunday Monday Tuesday Wednesday Thursday Friday Saturday

- Check for damage regularly and report it to your group leader so your urban forester can take care of it.

Second Year:

- Replace Mulch after last of snow melts (date completed): _____

- Remove stakes and supporting wires one year after planting
  - (date completed):_____

- Watering Schedule:
- Every
  Sunday Monday Tuesday Wednesday Thursday Friday Saturday

- Check for damage regularly and report it to your group leader so your urban forester can take care of it.

Third Year:

- Replace Mulch after last of snow melts (date completed): _____

- Watering Schedule:
- Every
  Sunday Monday Tuesday Wednesday Thursday Friday Saturday

- Check for damage regularly and report it to your group leader so your urban forester can take care of it.

Fourth Year:

Your responsibility to the city has been met but you still have a tree in front of your property that needs to be watered. The city does not have the manpower to water every tree in the city so that responsibility falls upon the communities that have the trees. Another thing that you can do is still check for damage regularly and report it to your group leader so your urban forester can take care of it.

Worcester Parks, Recreation, and Cemetery Dept, Forestry Division
119 Webster Street
Worcester MA 01603
1-508-799-1300

FORM 2: COMMUNITY GROUP INFORMATION

By signing below I express my interest and commitment to beautifying my neighborhood through the planting and care of street trees.

Group Member's Name UNDERLINE NAME IF LEADER	**Address**	**Phone Number**	**Signature**

Make Copies of Form for Additional Members

Effective as of 4/28/01

FORM 3 of Tree Planting Forms

Worcester Parks, Recreation, and Cemetery Dept, Forestry Division
119 Webster Street
Worcester MA 01603
1-508-799-1300

FORM 3: TREE LOCATION AGREEMENT FORM

As the abutting property owner I agree to have a tree planted, and as the care take of the tree I understand my obligation of care for the first three years after planting as outlined in the Tree Care section of the Worcester's Urban Tree Handbook.

Address of Abutting Property	**Abutting Property Owner's Name** (Person Caring for Tree in Parentheses if different)	**Abutting Property Owner's Signature** (Signature of Person Caring for Tree in Parentheses if different)	**Signature of Urban Forester if Site Approved** ❑ Check Box if DigSafe approved
			❑
			❑
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			❑
			❑

Make copies of this form for Additional Sites

Effective as of 4/28/01 ____ of ____

Worcester Parks, Recreation, and Cemetery Dept, Forestry Division
119 Webster Street
Worcester MA 01603
1-508-799-1300

FORM 4: TREE TYPE AGREEMENT FORM

I agree to the tree selected here to be planted adjacent to my property and, I, as the person responsible for the tree, also agree on the tree selected here.

Address of Abutting Property	**Tree Type** (Common Name)	**Abutting Property Owner's Signature** (Initials of Person Caring for Tree in Parentheses if different)	**Signature of Urban Forester if Tree Type Approved**

Make copies of this form for Additional Trees

Worcester Parks, Recreation, and Cemetery Dept, Forestry Division
119 Webster Street
Worcester MA 01603
1-508-799-1300

FORM 5: GOOD FAITH AGREEMENT FORM

I, _____, as a participant in the Worcester Tree Planting Program agree to follow the guidelines laid out in the Tree Care Section of Worcester's Guide to Urban Trees. Specifically, I agree to water the agreed upon trees every seven days for the first three growing years (defined to be from April 1st to October 1st) after planting and mulch the ground surrounding it for the second and third spring after planting. I will also remove any support stakes from the tree pit after the first winter and report all disease, infestation, and damage to my group leader so they can report it to our urban forester.

I understand that I do all this for the benefit of my neighborhood and myself and, in good faith, agree to be diligent.

Participant's Signature: _____ Date:_____

Telephone number (home): _____

Address: _____

Grant Guide

1. Search for money:

The first step in funding your neighborhood planting is to find a source of money. Often local businesses can be approached and asked if they would like to help support the planting even if they cannot afford to pay for it all. In addition, larger companies in the area may be interested in helping the communities near them.

The next source that should be explored is grants. There are grants available both on a local and a federal level so be sure to search both categories. To do this, go to the local public library and go to the reference section. They will have many books listing up to date federal grants as well as an online database of grants that may be available for your neighborhood.

Possible keywords to search with:

Trees	Urban Forests	Green Spaces
Reforestation	Urban Renewal	Beautification
Neighborhood	Community	Street
Public Way	Climate Change	(be creative!)

The library offers workshops on researching grants. If you cannot make it to one of these then try to schedule an appointment with the resident expert. They will be able to show you how to use the online database and the federal guides. Make sure you do not overlook the Nathaniel Wheeler Trust here in Worcester. This grant is operated out of the main Fleet branch in Worcester. The main branch can be reached at 1-508-791-7811.

2. Compile all of your information:

Before you begin to write to any of the grant bestowing agencies compile all the information you have about your specific site planting. This should be very easy to do since you should have everything from each step all together in the first place. You may want to draw a map of your neighborhood and mark the proposed tree sites as well.

This will make the writing part easier since most trustees will want to see everything is well planned down to the last detail before they give you any money.

3. Write grant applications:

The public library again is a great resource since they have many books dedicated solely to grant writing. The only general statements that can be made is that while writing your grant application it would be best to give as much information as possible regarding the planting. Do not assume that the trustees of any grant know something, spell out each step, and describe each commitment. Any factual information more general than your planting can be found in the historical facts section since some grant agencies will want a broad history of the project requesting funding.

Neighborhood Planting Planner

1. **Organize your group:**
   - ☐ Flyer area to find interested people
     - Date Flyers sent out:_____
   - ☐ Set up a meeting of interested people
     - Date & Time:_____

2. **Determine Your Goals:**

Using the questions in the handbook as guidelines, write out the goals of your community group here. This will help to keep you and your group focused on your goals.

_____

_____

_____

_____

_____

_____

_____

_____

   - ☐ Fill in Form 2
     - Date:_____
   - ☐ Contact WPRC Department, Forestry Division about planting
     - Date:_____
     - Person contacted:_____
   - ☐ Give the urban forester or designee a copy of your completed Form 2 at your first meeting
     - Date of first meeting:_____

3. **Select sites:**
   - ☐ Walk neighborhood and find sites
   - ☐ Get closest resident's approval
   - ☐ Get approval from person responsible for each tree
   - ☐ Get all sites approved by DigSafe
   - ☐ Get all sites approved by WPRC Department urban forester
   - ☐ Fill in Form 3. Keep a copy and give your urban forester or designee a copy.
     - Date above steps were completed:_____

4. **Select trees:**
   - ☐ Consult nearest resident and person caring for tree for species preferences
   - ☐ Consult urban forester for species recommendations
   - ☐ Come to a solid agreement on all trees

☐ Fill in Form 4. Keep a copy and give a copy to your urban forester or designee.
- Date above steps were completed:_____

5. Apply for Grants:

Name of Grant Needed	Date Due	Date Sent	Amount
1.			
2.			
3.			
4.			
5.			

6. Sign good faith agreements:
☐ Fill in Form 5
- Date:_____

7. Set date for planting:
☐ Date of planting:_____

8. Set up a ceremony on the planting date

9. Care for tree for three years
☐ Follow steps in the Tree Care Planner

10. Enjoy your new neighborhood trees

Press Release Packet

How To Pitch A Story To The Press

Contacting the right person

In every paper you have to know who is interested in the subject you want to talk about otherwise you will great difficulty pitching your story. Ask who is interested in environmental stories or even more specifically, who is interested in Worcester street trees.

Once you have a name (and a story) contact that person and establish rapport. Maybe bring them your press release in person rather than faxing it to them. Most reporters will be willing to meet with you as long as you go to them. Call first and make sure they are available.

Making the story stand out

Try to look at your story from as many different angles as possible. Maybe it would work well as a human-interest story or a business story. Think of the different sections of the paper and see how it would fit in each. It may just work best as a straight environmental story but making appeal to different people may make it more desirable to print.

Tips

If all else fails and no reporters want to pick up your story, you can always write a very factual letter to the Editor. This way the message still gets out about your story.

Since there is often a big push for good copy on Sunday, Monday papers often are lacking substance so calling to pitch your story to the staff on Sunday may get you extra attention.

The writer you want to cover your story may be very busy so find out when their deadline is and call at the beginning of the cycle: so for a Sunday writer that would be Monday or a biweekly columnist the beginning of the next week.

Make sure you include a telephone number where you can be reached all the time, weekends and evenings so the writer can contact you for further information or a quote.

Prepare a soundbite for yourself. Have a good quote prepared and on a note card so if the reporter calls, you have something to say. Some good quotes could be facts or special interest comments but it varies from event to event.

Call—Fax—Call. When you send your press release call the reporter first to let them know and then call them afterwards and ask them about something very specific so they have to pick up your fax. This will make sure they at least spend a few moments looking at it.

Start your press release with a very eye-catching paragraph. Read a few articles from the paper you want to cover your story and see how they build their articles. Make your press release as exciting as the front-page news while not straying from the subject.

My Neighborhood Would Like to Help Plant New Street Trees

A supplement for "My Neighborhood Would Like to Have Street Trees Planted" Section

This section is meant to be followed as a supplemental guide to planting trees in a neighborhood setting. It is not any more complicated but it does require a little more commitment on the part of the neighborhood planters. There is only one additional form, the Commitment to Plant Form (Form 6). This form is basically an acknowledgement that you, as a group, are willing to help with the planting process.

Talk to your urban forester or designee about doing this and they will help you decide if this is a good process for your group. Number of members and age of participants may be limiting but not always so it is best to go on a case-by-case basis. Your group must get your urban forester's approval to participate in this process.

To begin this process you should discuss with your group whether or not they're interested in participating in this program when you meet with them in the beginning. Also discuss it with your urban forester or designee when you give him your Community Group Interest Form (Form 2). They will be able to discuss whether this is a viable option for your group. If your group is interested and your urban forester approves, you should fill out your Commitment to Plant Form (Form 6) and turn it in with your Good Faith Agreement (Form5).

Once a date is set your group leader must meet with the urban forester to learn how to plant trees properly. This is necessary to complete this process.

On the planting date all members participating must go and dig out a hole where each tree will go. They must also be present when the trees are delivered to help with the actual planting since a tree planting team will not be staying on site once all the trees are delivered. Each member will also mulch all the trees and water them. Many children can become a part of this planting day too.

Worcester Parks, Recreation, and Cemetery Dept, Forestry Division
119 Webster Street
Worcester MA 01603
1-508-799-1300

FORM 6: COMMITMENT TO PLANT FORM

I agree to be present on the day of planting to dig out a hole, plant a tree according to proper instruction, and mulch that tree. I understand that I am expected to have tools and be wearing appropriate shoes.

Number of Trees being Planted: (Total) _____

Name of Planter	Signature

Make copies of this form for Additional Planters

Effective as of 4/28/01 **____ of ____**

I Would Like to Plant a Tree on My Own Property

How to plant your own tree.

Trees can often be the best friend of a homeowner or resident by protecting them from the heat of summer and the bitter cold of winter and lowering their heating/air-conditioning bills in the process. The proper placement of trees can also beautify a property and raise its value. For all the wonderful things a tree all we have to do is plant them properly and take care of them. Below, all the information is outlined that one would need to plant and begin caring for their tree.

Process

1. Select a Site:

First you must select a site for your tree. The best way to do that is to diagram your property and make note of any structures, paths, driveways, utility lines, ditches, hills, etc. If the property is rented, you must first get permission from the owner. Also, you must consult Dig Safe (1-800-DIG-SAFE) before you make a final decision or do any digging. This is a free service offered within Massachusetts that provides information about the location of buried water pipes, gas mains, and electrical wires. The final decision can be made after the safety of the area is established.

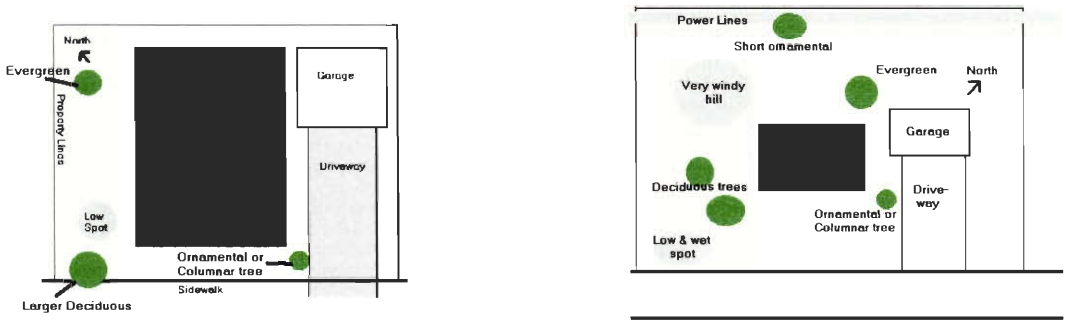

Figure 6 No matter the size of your property trees can benefit you and your family

There are many options for planting a tree on your own property but just selecting a random site and planting is not the best way to go about it. The two maps above show the different factors one should consider when choosing a site. There are several factors that you should take into consideration when choosing where to plant the tree. The first thing to consider is moisture. Low spots tend to be moist and stay wet all year, and though some trees may like the moisture, others may drown. A second thing to consider is the location of buildings on the property. For example, an evergreen on the north side of a building will provide protection from cold winter winds, but it will not provide much shade for the house in the summer. If the same evergreen is placed on the south side, it will shade both the summer and winter sun causing the house to be cool in summer but

even colder in the winter. A better idea would be to plant a deciduous tree (one that looses its leaves in the winter) on the south side to protect from summer heat, and evergreens on the north side to protection from winter winds. Another thing to consider when planting a tree near buildings is how much the crown spreads. If you want a tree within less than twenty feet of a building, it is a good idea to use a columnar variety. The branches of these trees tend to grow up rather than out, so you will not have to worry about branches growing through your windows. Another important factor you should consider before you select a site to plant the tree is exposed soil. A site with more exposed soil will provide the tree with more room to get the food, moisture and air that it needs to live. Finally, if you have utility wires over where you would like to plant, you should select a short tree or shrub that will not grow tall enough to interfere with the wires. The tree selection guide can help you find an appropriate type of tree for whatever site you choose to use.

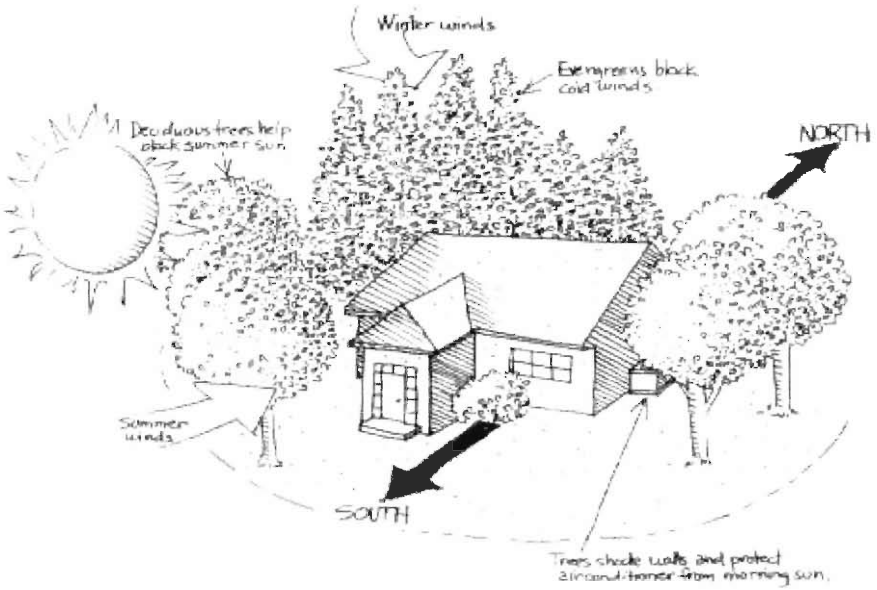

Figure 7 Paying attention to where you place trees on your property can help reduce bills and make your home more comfortable.

2. Purchasing a Tree:

When you go to select a tree to plant in your backyard, you can use the same methods used by urban foresters. Before you purchase any tree, look at it carefully. First, check to see if the tree has any damage to the trunk or branches. Also, check to see if the tree shows signs of over-watering or under-watering, including if the tree is wilting or has excessively yellow leaves. If any of these conditions are true, the tree is not in good health, and you should probably consider looking for a different tree. For its own trees, the city requires a healthy crown that has never been pruned. It is suggested that you use a similar standard when choosing your own trees. The city prefers trees that do not have multiple trunks, and trees that do not have any branches less than six feet from the ground. This may not be important depending on your purpose for planting the tree, but it is a good rule if you intend to be able to walk under the tree. Besides these factors, the city also checks to make sure that each tree has no insect problems or diseases, and that it looks healthy. If you follow these tips, you should be able to find a healthy tree that will meet all your expectations.

3. When to Plant:

The best time to plant a tree is when it is dormant. For trees that loose their leaves, the tree is dormant from the time the last leaves fall off in the autumn until new buds begin to grow in the spring. Thus, the best times to plant a tree are either in mid to late fall, or early spring. At these times, the trees are easiest to move, and they have the best chance of survival.

4. How to Plant:

Dig a hole. The hole should be as deep as the root ball and should be as wide as three times the diameter of the root ball. The hole is made this wide so the soil new roots will be growing into will be loose and easier to establish in.

Make sure the root ball is at the proper height. The best way to do this is to identify the root flare and make sure it is partially visible after the tree is planted. Roots prefer to be near the surface since they must seek oxygen so do not bury the root ball too deep.

Make sure the tree is straight. Look at the tree from several directions before refilling the hole since this will be very hard to correct later.

Fill the hole gently but firmly. To ensure there are no air pockets it is best to add a few inches of soil at a time and then settle with water. It is not necessary to fertilize trees at the time of planting.

Stake the tree if necessary. If it is very windy in the area you are planting the tree use two stakes with a flexible tie material. Canvas fabric works well stapled to the stakes. Make sure to remove stakes after the first year of growth so the tree is not hindered.

Mulch the base of the tree. Adding a layer of organic matter two to four inches thick will aid your tree. It will act as a blanket holding moisture and keeping temperatures suitable. Some possible materials are leaf litter, wood chips, shredded bark, etc. This layer should not be exposed to the tree trunk otherwise, the excess moisture may cause the live tree to begin to rot. Leave two inches or so clearance between the mulch and the tree trunk.

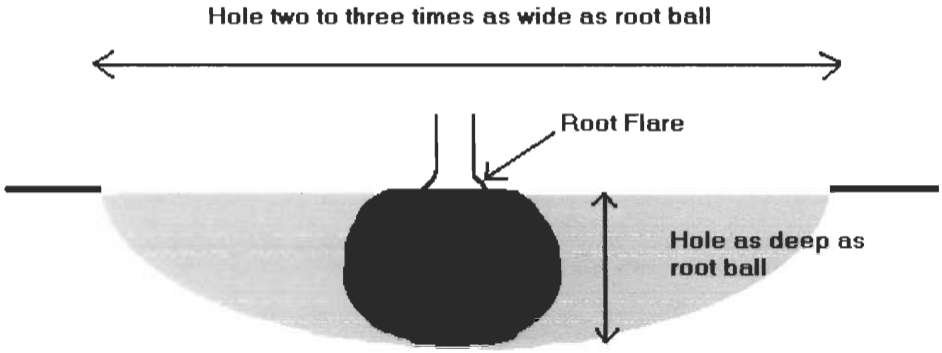

Figure 8 Proper tree planting technique is important for healthy trees

How Trees Work

In order to understand trees, it is easiest to think of them as being made of three primary parts: the crown, the trunk and the roots. The roots anchor the tree in place and absorb nutrients from the soil. The trunk is the tree's backbone and connects the roots and crown. The crown consists of the branches, twigs and leaves, and is where the tree makes its food.

When selecting trees for a city environment, one must consider each part of a tree to make sure a it is right for its location. For example, if a neighborhood is looking for an attractive shade tree but has old sewer systems and little space, a willow or a silver maple may be a very bad choice. Both trees grow quickly and provide shade, but they also have fast growing roots that are likely to choke the sewer system and damage water pipes.

The first part of a tree we will consider is the roots. Despite being hidden from view, the roots are often the largest part of a tree. In searching for food, they may spread out over an area much wider than the crown of the tree. Trees typically have three types of roots. First is the taproot, which is the main support for the tree and grows straight down, directly beneath the trunk. There are also lateral roots, which spread out just beneath the soil. The final type of roots, the feeder roots, grow at the end of lateral roots, absorbing water and nutrients from the soil.

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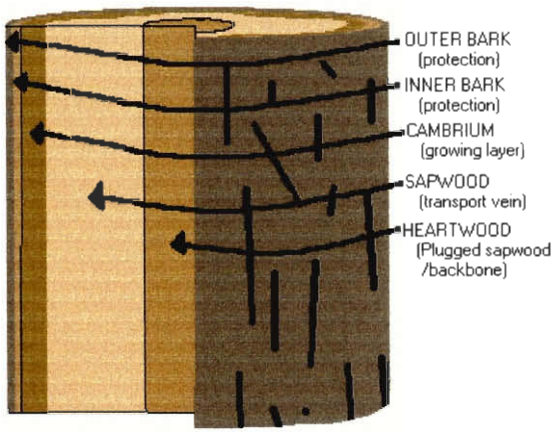


Figure 9 Cross Section of a trunk

The third basic part of a tree is the crown. This is where green leaves make food from the energy they collect from the sun. The twigs and branches carry the food back to the trunk, so it can be distributed to the rest of the tree. Beyond this important function, the crown is also useful for providing shade, and it contains all the trees foliage. Trees have many different shapes that their crowns can take. A rounded crown, or a crown which spreads, would be a more effective shade tree then a tall columnar or conical shaped tree, which don't have crows that spread. The columnar trees may be better used as to protect from the wind or as decorative trees. They are also appropriate to plant near buildings, since their crowns don't spread.

Tree Care

First Year Care

Once your tree is in the ground take care that it has lots of room. Take care not to compact the soil around the base of the tree, allowing it room to grow and get nutrients. Also keep the tree mulched. This mulched area is meant to insulate the tree as well as provide a nutrient rich area with composting materials. Use composted leaves and other biodegradable things like wood chips as a base for the mulch and rebuild right before winter to ensure a good insulation.

After being planted, the tree will need to be watered every week. The amount of watering depends on the rainfall, but it is recommended that the tree get at least 5 to 10 gallons per week. The best watering method is to either place a hose running on low at the base of the tree for a few hours, or to get a bucket and put a hole in the bottom to allow the water to slowly saturate the ground. Fill the bucket several times. Watering once a week will ensure the tree does not wilt and will look healthier. It is also a good idea to watch out for any kind of branch damage, infestation, or signs of disease. There are many good resources which will help you identify these problems yourself but sometimes it is best to call in a professional arborist to care for your tree. See the resource section for books on disease, insects, and pruning.

Second and Third Year Care

At the beginning of the second growing season, any supporting stakes or guy wires should be removed so they do not hamper the trees growth. Once the snow melts and the ground thaws you should notice that the mulch around the base of the tree has composted into the ground and you should now replace it as well as to continue watering the tree. There should be a mulch layer two to three inches thick that covers the entire pit but does not touch the tree trunk. This should also be done after the tree's second winter (at the beginning of the third growing year). It is a forester's saying that in the first year [the tree] sleeps, in the second, it creeps, and in the third, it leaps. This should tell you to expect a good healthy tree by the third year with lots of growth. If this isn't happening maybe you should contact an arborist to talk about whether there is anything that needs to be done about it.

Fourth Year and Beyond

You have given your tree a very good start in life and to ensure it continues to be a great resource in your backyard water it regularly, and even when it's older, give it a good soaking in especially dry seasons. Mulching will remain helpful, providing a stable root environment and preventing mechanical damage by keeping lawnmowers away from the trunk. Any tree that has been in the ground for more than two years could benefit from fertilizing. It is best to do this in the early spring but it is not harmful to do it any time of year. This adds nutrients, which will aid in the growth of your tree, the major nutrients a tree needs are nitrogen, phosphorous, and potassium. Local garden centers can tell you which blend of nutrients is best for your tree.

Frequently Asked Questions

Where do we get trees and how much do they cost?

A tree for a park or city is approximately $250. See sections I Want to Donate a Single Tree, My Neighborhood Would Like to Have Street Trees Planted, or I Would Like to Plant a Tree on My Own Property.

Who plants the trees and delivers them?

The city plants trees in parks and streets. Private trees can be planted by the property owners or can be planted by hired arborists etc.

What type of tree can I plant and whom do I speak to to get the process started?

See sections I Want to Donate a Single Tree, or My Neighborhood Would Like to Have Street Trees Planted.

When is the best time to plant trees?

It is best to plant in the spring or fall while the trees are dormant. See Process from I Would Like to Plant a Tree on My Own Property.

What do I have to do to take care of this tree?

See Tree Care either in My Neighborhood Would Like to Have Street Trees Planted, or I Would Like to Plant a Tree on My Own Property.

Do I really need a tree on my front yard?

See Why Should We Plant Trees?

There are ants in my porch/ squirrels in my roof/ birds over my car/ can you cut down the tree?

All proposed tree removals must go through a tree hearing and be approved by the forester in accordance with Massachusetts State Law.

Applicable Regulations

Massachusetts Shade Tree Laws and Worcester Tree Ordinances

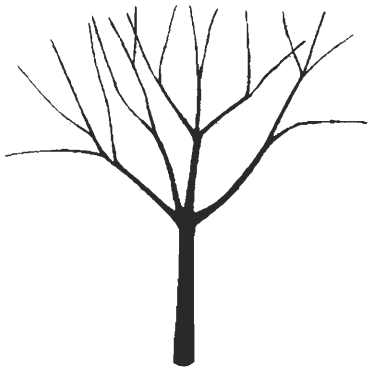
Tree Selection Guide

Care of Nina Bassuk, Ph.D., from Cornell University's Urban Horticultural Institute

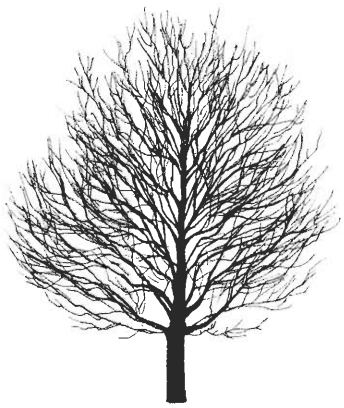
Here is a guide to help you choose the correct tree for your neighborhood. It is not comprehensive and if you choose a tree here that does not necessarily mean that that specific species of tree will be available at a nursery at a reasonable price. This guide is meant to give you a good idea of what is possible and just point you in the right direction. An example would be if you know you have to choose a smaller tree to fit underneath utility wires you may decide you want a crab apple but a choice of specific species may be better left for your urban forester since they will know which is hardier and more appropriate in this area, and which are available.

RECOMMENDED URBAN TREES FOR USDA ZONE 6 AND BELOW

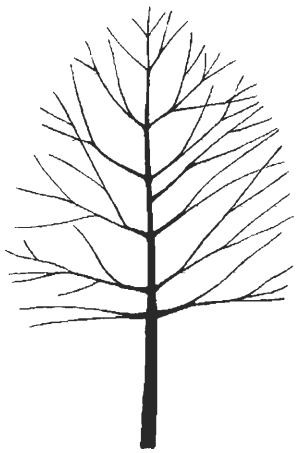
I. SMALL TREES, SUITABLE FOR PLANTING UNDER LOW OVERHEAD UTILITY WIRES OR RESTRICTED SPACES



Scientific name: *Acer buergeranum*
Common name: Trident Maple
Environmental characteristics:
Zone: 5b or 6a - 8a
Wet/dry: tolerates moderate drought
Salt: moderate tolerance
pH: 5.0 - 7.0
Other:
Insect/Disease factors: none serious
Ornamental characteristics:
Height: 20' - 25'
Shape: round
Other: variable fall color, low branched, will require pruning to be used as a street tree
Cultivars:
Additional: transplant in spring or fall

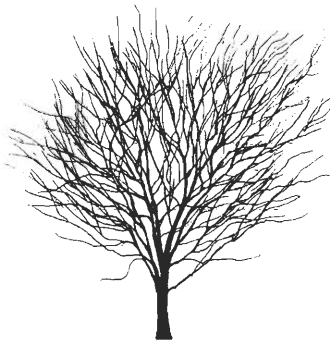


Scientific name: *Acer campestre*
Common name: Hedge Maple
Environmental characteristics:
Zone: 5a - 8b
Wet/dry: tolerates drought
Salt: moderate tolerance
pH: 5.0 - 8.2
Other: adapted to compaction, severe pruning
Insect/Disease factors: relatively pest free
Ornamental characteristics:
Height: 25' - 35'
Shape: round
Other:
Cultivars: 'Queen Elizabeth' (more upright, vigorous [zone 6b - 7b]), 'Schichtel's Upright' (5b - 8b)
Additional: easily transplanted in spring or fall



A. truncatum 'Norwegian Sunset'

Scientific name: *Acer truncatum*
Common name: Shantung Maple
Environmental characteristics:
Zone: 5a - 7b (species is variable, hybrid cultivars zone 5)
Wet/dry: requires moist, well drained site, tolerates moderate drought
Salt: moderate tolerance
pH: 5.0 - 8.2
Other: resistant to leaf scorch
Insect/Disease factors:
Ornamental characteristics:
Height: 25' - 30'
Shape: round
Other: when emerging leaf color purplish-red changing to green, fall color yellow/orange/red
Cultivars: hybrids with A. platanoides are 'Norwegian Sunset' (upright round, orange-red to red fall color, more heat & drought tolerant than *A. platanoides*) and 'Pacific Sunset'(upright oval, finer branched and red fall color earlier than 'Norwegian Sunset')
Additional: transplant in spring or fall

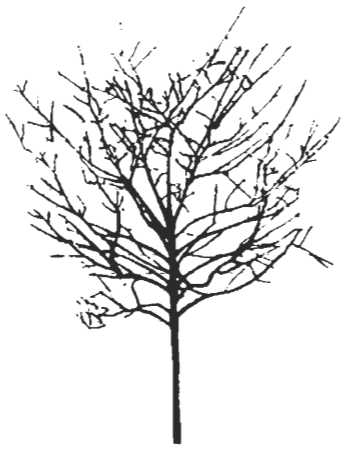


A.. 'Cumulus'

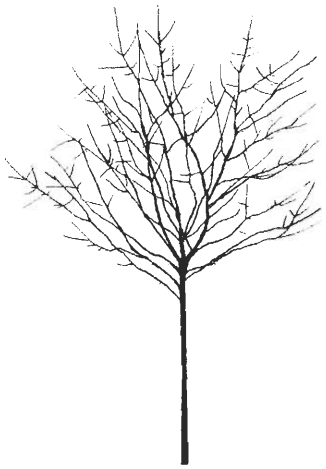
Scientific name: *Amelanchier spp.*
Common name: Serviceberry
Environmental characteristics:
Zone: 3b - 8a
Wet/dry: requires moist, well drained site
Salt: moderate tolerance
pH: 5.0 - 7.5
Other: prefers acid soil but adaptable to moderately alkaline soil
Insect/Disease factors: fireblight, mites and scale can be problematic if site requirements not met, 'Autumn Brilliance' resistant to leaf spot
Ornamental characteristics:
Height: 20' - 30'
Shape: oval
Other: early white flowers, edible fruit, good red to yellow fall color, clump or single stem
Cultivars: 'Autumn Sunset' (strong single trunk, pumpkin-orange fall color, , excellent heat and drought tolerance), 'Cumulus' (upright, yellow to orange-scarlet fall color), 'Robin Hill' (pink buds, white flowers, earliest to bloom, narrowest shape, yellow to red fall color), 'Tradition' (strong central leader, heavy fruiting, orange and red fall color)
Additional: transplant in spring

Carpinus caroliniana clump

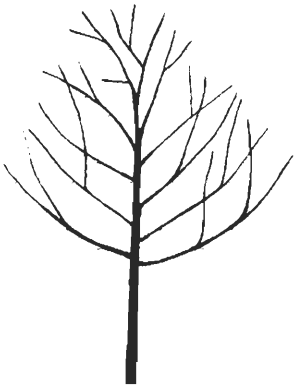
Scientific name: *Carpinus caroliniana*
Common name: American Hornbeam, Musclewood, Ironwood
Environmental characteristics:
Zone: 3b - 9a
Wet/dry: prefers moist soil but will tolerate some intermittent drought
Salt:
pH: 5.0 - 8.2
Other: prefers shaded, moist soils
Insect/Disease factors: relatively trouble free, little maintenance, ice storms can be a problem.
Ornamental characteristics:
Height: 30'
Shape: round, spreading
Other: "muscled" bark, good orange-red fall color, clumps or single stem
Cultivars:
Additional: transplant in spring, somewhat slower to establish



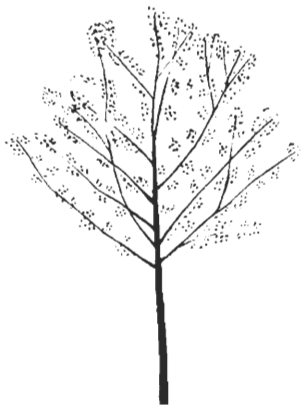
Scientific name: *Crataegus crus-galli inermis*
Common name: Thornless Cockspur Hawthorn
Environmental characteristics:
Zone: 4a - 6b
Wet/dry: tolerates drought
Salt: tolerant
pH: 5.0 - 8.2
Other: tolerant of a wide range of soils except poorly drained ones
Insect/Disease factors: resistant to cedar-hawthorn rust, leaf blight, lacebug
Ornamental characteristics:
Height: 20' - 25'
Shape: round
Other: white flowers, bright red persistent fruit, strongly horizontal branching pattern
Cultivars: 'Crusader' said to be very disease resistant
Additional: transplant B & B, somewhat slow to establish



Scientific name: *Crataegus phaenopyrum*
Common name: Washington Hawthorn
Environmental characteristics:
Zone: 4b - 8b
Wet/dry: tolerates drought
Salt: tolerant
pH: 5.0 - 8.2
Other: tolerant of a wide range of soils except poorly drained ones
Insect/Disease factors: resistant to cedar-hawthorn rust, less susceptible than other hawthorn to disease, susceptible to lacebug
Ornamental characteristics:
Height: 20' - 30'
Shape: round
Other: white flowers, thorny, reddish-purple fall color, bright, glossy red persistent fruit
Cultivars:
Additional: transplant in spring, somewhat slow to establish



Scientific name: *Crataegus punctata inermis* 'Ohio Pioneer'
Common name: Ohio Pioneer Hawthorn
Environmental characteristics:
Zone: 4a - 6b
Wet/dry: tolerates drought
Salt: tolerant
pH: 5.0 - 8.2
Other:
Insect/Disease factors:
Ornamental characteristics:
Height: 20' - 30'
Shape: round
Other: white spring flowers, purplish red fall color, thornless, horizontal branching pattern, dark red persistent fruit
Cultivars: 'Ohio Pioneer'
Additional: transplant in spring, somewhat slow to establish



Scientific name: *Crataegus viridis* 'Winter King'
Common name: Winter King Hawthorn
Environmental characteristics:
Zone: 5a - 9a
Wet/dry: tolerates drought
Salt: tolerant
pH: 5.0 - 8.2
Other:
Insect/Disease factors: resistant to cedar-hawthorn rust, less susceptible than other hawthorns to disease
Ornamental characteristics:
Height: 20' - 30'
Shape: oval
Other: thorny, white flowers, purple and scarlet fall color, bright red persistent fruit, outstanding for size and retention in winter
Cultivars: only cultivar available
Additional: transplant in spring, somewhat slow to establish

Scientific name: *Malus spp.*
Common name: Flowering Crabapple
Environmental characteristics:
Zone: 3 or 4 up to 8b
Wet/dry: tolerates drought
Salt: moderate salt tolerance
pH: 5.0 - 8.2
Other: easy to transplant
Insect/Disease: see below for information on specific disease resistant cultivars

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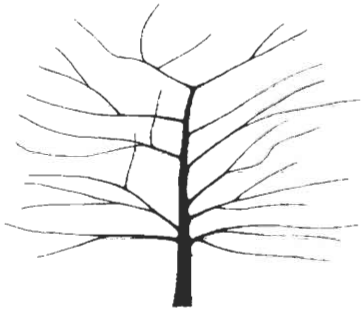

Cultivar: *Malus* 'Adams'
Zone: 4a - 7a
Ornamental characteristics:
Height: 20'
Shape: round
Flowers: deep pink, profuse
Fruit: red, persistent, 5/8"
Leaves: green with red tint
Other: buds deep pink
Insect/Disease: excellent resistant to cedar-apple rust and fireblight, good resistance to scab and mildew, moderately resistant to gypsy moth, cankerworm, eastern tent caterpillar

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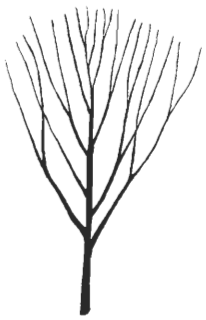

Cultivar: *Malus* 'Adirondack'
Zone: 4
Ornamental characteristics:
Height: 18'
Shape: vase
Flowers: white, heavily textured
Fruit: bright red, 1/2"
Leaves: dark green, leathery
Other: buds dark carmine
Insect/Disease: excellent resistance to cedar-apple rust, fireblight, scab and mildew

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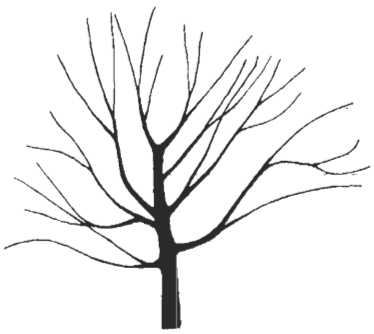

Cultivar: *Malus baccata* 'Jackii'
Zone: 3a - 7a
Ornamental characteristics:
Height: 20'
Shape: round
Flowers: white, fragrant, early
Fruit: deep red-purple, long stemmed, 3/8"
Leaves: glossy green
Other: buds white tinged pink, blooms as young tree
Insect/Disease: excellent resistance to cedar-apple rust, scab and mildew, fair resistance to fireblight

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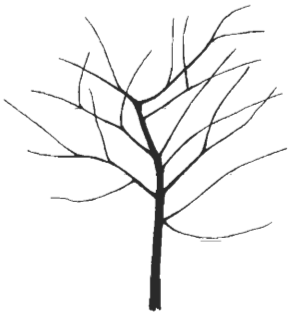

Cultivar: *Malus* 'Baskatong'
Zone: 4
Ornamental characteristics:
Height: 25'
Shape: oval
Flowers: red-purple
Fruit: dark red, 1"
Leaves: purple changing to bronze
Other: buds dark purple
Insect/Disease: disease resistant except for minor susceptibility to scab, good resistance to Japanese beetles

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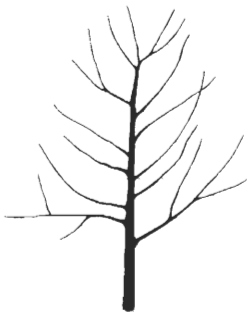

Cultivar: *Malus* 'Centurion'
Zone: 4
Ornamental characteristics:
Height: 20'
Shape: narrow oval
Flowers: rose red
Fruit: bright red, persistent, 5/8"
Leaves: reddish changing to green
Other: buds dark red
Insect/Disease: excellent resistance to cedar-apple rust, fireblight and mildew, good resistance to scab

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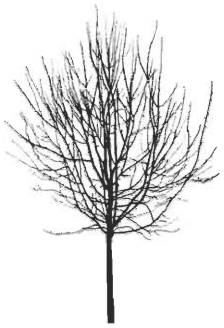
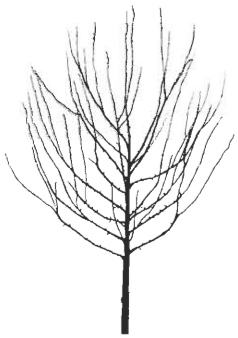
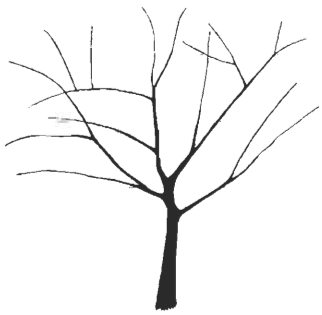


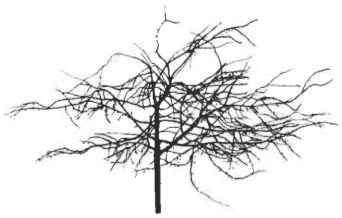
Cultivar: *Malus* 'Dolgo'
Zone: 3b - 7a
Ornamental characteristics:
Height: 30'
Shape: oval, spreading with age
Flowers: white
Fruit: bright red, edible, 1 1/2"
Leaves: glossy green
Other: white
Insect/Disease: excellent resistance to cedar-apple rust and mildew, good resistance to scab and fireblight, resistant to frog eye leaf spot



Cultivar: *Malus* 'Donald Wyman'
Zone: 4
Ornamental characteristics:
Height: 20'
Shape: round
Flowers: white, abundant
Fruit: glossy bright red, abundant, persistent, 3/8"
Leaves: dark green
Other: buds pink
Insect/Disease: excellent resistance to cedar-apple rust and mildew, good resistance to scab, fireblight and frog eye leaf spot



Cultivar: *Malus* 'Doubloons'
Zone: 4
Ornamental characteristics:
Height: 20'
Shape: dense oval, spreading with age
Flowers: white, double
Fruit: bright lemon-yellow, abundant, persistent, 3/8"
Leaves: deep green
Other: buds rich carmine, leaves have lemon-gold fall color
Insect/Disease: excellent resistance to cedar-apple rust and mildew, good resistance to scab and fireblight



Cultivar: *Malus floribunda*
Zone: 4b - 8b
Ornamental characteristics:
Height: 20'
Shape: round
Flowers: pink fading to white, profuse, 1 - 1 1/2"
Fruit: yellow/red, 3/8"
Leaves: dense, small, green
Other: buds carmine
Insect/Disease: excellent resistance to cedar-apple rust, good resistance to scab and mildew, fair resistance to fireblight, highly resistant to Japanese beetles

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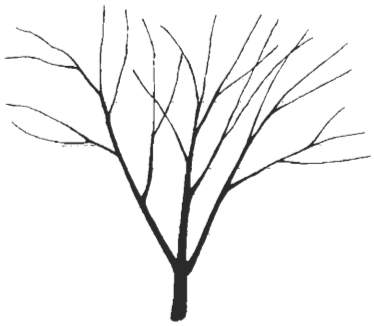

Cultivar: *Malus* 'Harvest Gold'
Zone: 4
Ornamental characteristics:
Height: 20'
Shape: oval
Flowers: white, double
Fruit: gold, abundant, persistent, 3/4"
Leaves: green
Other: buds rose red
Insect/Disease: resistant to scab, fireblight, rust, powdery mildew, good resistance to Japanese beetles

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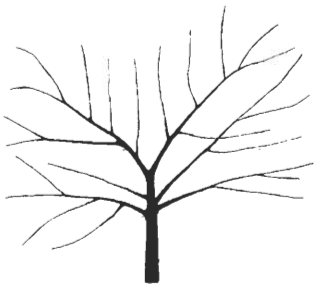
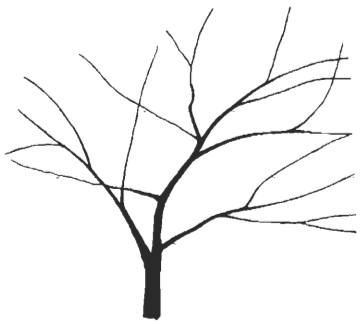


Cultivar: *Malus* 'Henry Kohankie'
Zone: 4
Ornamental characteristics:
Height: 20'
Shape: round
Flowers: pink-white
Fruit: glossy red, ellipsoid, persistent, edible, 1 1/4"
Leaves: dark green, large, lobed
Other: buds pink
Insect/Disease: reportedly disease free



Cultivar: *Malus* 'Indian Summer'
Zone: 4a - 8a
Ornamental characteristics:
Height: 18'
Shape: round
Flowers: rose red
Fruit: bright red, persistent, 5/8"
Leaves: bronze green
Other: buds purple
Insect/Disease: excellent resistance to cedar-apple rust, mildew and fireblight, good resistance to scab

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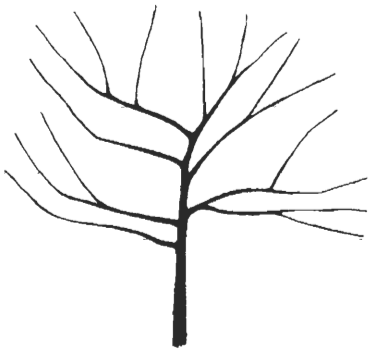

Cultivar: *Malus* 'Liset'
Zone: 4a - 7b
Ornamental characteristics:
Height: 15'
Shape: columnar
Flowers: pink-red, 1 1/2"
Fruit: dark red, 1/2"
Leaves: reddish aging to bronze green
Other: buds crimson, blooms as young tree
Insect/Disease: excellent resistance to cedar-apple rust, good resistance to scab and fireblight, fair resistance to mildew, resistant to frog eye leaf spot, very susceptible to Japanese beetles

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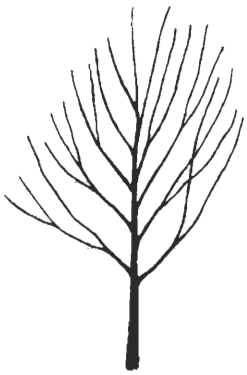

Cultivar: *Malus* 'Madonna'
Zone: 4
Ornamental characteristics:
Height: 20'
Shape: columnar
Flowers: white, large, double, early, fragrant
Fruit: gold-red, 5/8"
Leaves: bronze aging to dark green
Other: buds white, heavy bloomer
Insect/Disease: resistant to gypsy moth, fall cankerworm, eastern tent caterpillar, apple skeletonizer, apple aphid, rose chafer, disease resistant foliage

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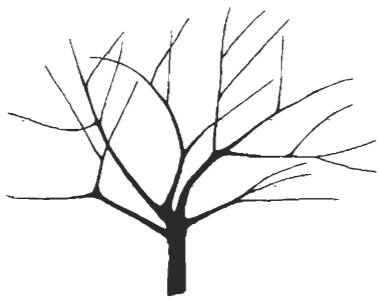

Cultivar: *Malus* 'Ormiston Roy'
Zone: 4a - 7a
Ornamental characteristics:
Height: 20'
Shape: oval
Flowers: white
Fruit: yellow-orange, persistent, 3/8"
Leaves: green
Other: buds rose-red turning pale pink
Insect/Disease: excellent disease resistance cedar-apple rust, scab, and mildew, good resistance to fireblight, resistant to frog eye spot, good resistance to Japanese beetle

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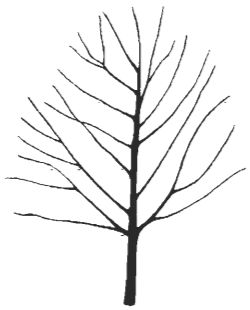

Cultivar: *Malus* 'Prairifire'
Zone: 4
Ornamental characteristics:
Height: 20'
Shape: oval
Flowers: pink-red
Fruit: orange-red, persistent, 3/8 - 1/2"
Leaves: reddish aging to reddish-green
Other: buds crimson
Insect/Disease: excellent resistance to cedar-apple rust, fireblight, scab and mildew, resistant to frog eye spot

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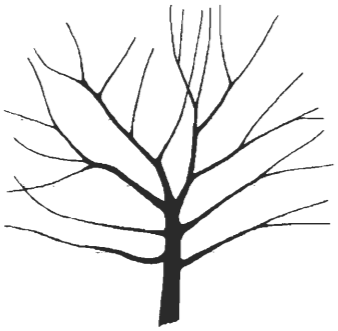

Cultivar: *Malus* 'Professor Sprenger'
Zone: 4
Ornamental characteristics:
Height: 20'
Shape: oval
Flowers: white, fragrant
Fruit: orange red, persistent, 1/2"
Leaves: green
Other: buds pink
Insect/Disease: excellent resistance to cedar-apple rust, fireblight, scab and mildew

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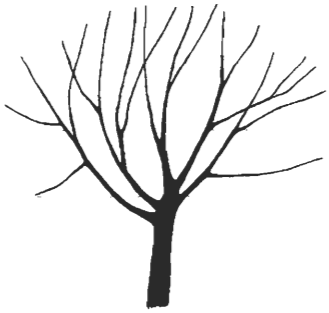

Cultivar: *Malus* 'Purple Prince'
Zone: 4
Ornamental characteristics:
Height: 20'
Shape: round
Flowers: rose red
Fruit: maroon, persistent, 3/8 - 1/2"
Leaves: purple aging to bronze green
Other: buds bright carmine red, heavy annual bloomer
Insect/Disease: excellent resistance to cedar-apple rust, fireblight, mildew and scab

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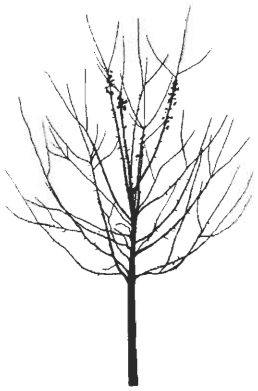
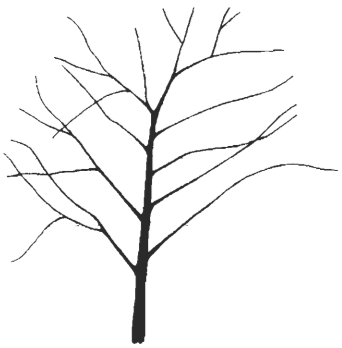
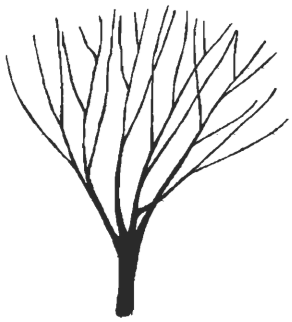


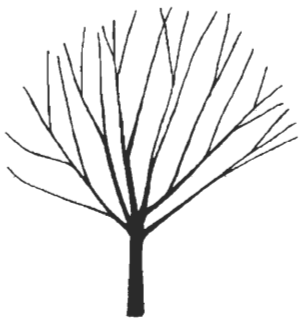
Cultivar: *Malus* 'Red Jewel'
Zone: 4
Ornamental characteristics:
Height: 15'
Shape: oval
Flowers: white
Fruit: brilliant red, persistent, 1/2"
Leaves: green
Other: buds pinkish to white
Insect/Disease: excellent resistance to cedar-apple rust, good resistance to scab and mildew, fair resistance to fireblight, resistant to frog eye leaf spot, gypsy moth, fall cankerworm, eastern tent caterpillar, apple skeletonizer, apple aphid, rose chafer



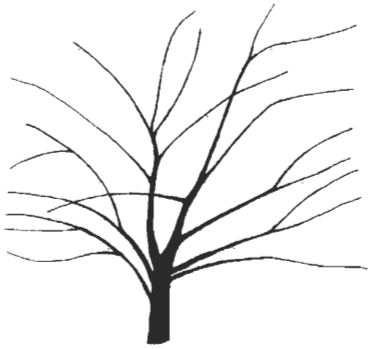
Cultivar: *Malus* 'Robinson'
Zone: 4
Ornamental characteristics:
Height: 25'
Shape: oval, spreading with age
Flowers: deep pink
Fruit: dark, glossy red, 3/8"
Leaves: reddish aging to bronze-green
Other: buds crimson, good fall color, foliage hangs on late
Insect/Disease: excellent resistance to cedar-apple rust, fireblight and mildew, good resistance to scab



Cultivar: *Malus* 'Sentinel'
Zone: 4
Ornamental characteristics:
Height: 20'
Shape: narrow oval
Flowers: pink/white
Fruit: bright red, persistent, 1/2"
Leaves: dark glossy green
Other: buds red
Insect/Disease: excellent resistance to cedar-apple rust and mildew, good resistance to scab and fireblight, resistant to frog eye leaf spot, very susceptible to Japanese beetle

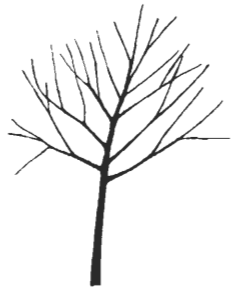


Cultivar: *Malus* 'Silver Moon'
Zone: 4
Ornamental characteristics:
Height: 20'
Shape: oval
Flowers: white, profuse, late
Fruit: deep red, persistent, 1/2"
Leaves: dark green
Other: buds white
Insect/Disease: resistant to scab, fireblight, rust, mildew, frog eye leaf spot, good resistance to Japanese beetle



Cultivar: *Malus* 'Strawberry Parfait'
Zone: 4
Ornamental characteristics:
Height: 20'
Shape: vase
Flowers: large pink, darker at edges
Fruit: yellow, 3/8"
Leaves: reddish aging to green
Other: buds red
Insect/Disease: excellent resistance to cedar-apple rust, scab and mildew, resistant to fireblight, frog eye leaf spot, highly resistant to Japanese beetle

Cultivar: *Malus* 'Sugartyme'
Zone: 4
Ornamental characteristics:
Height: 20'
Shape: oval
Flowers: white, fragrant
Fruit: red, persistent, 1/2"
Leaves: green
Other: buds pink
Insect/Disease: excellent resistance to cedar-apple rust and mildew, good resistance to scab, fair resistance to fireblight, resistant to frog eye leaf spot, gypsy moth, fall cankerworm, eastern tent caterpillar, apple skeletonizer, apple aphid, rose chafer



Cultivar: *Malus* 'White Angel'
Zone: 4a - 7a
Ornamental characteristics:
Height: 20'
Shape: oval
Flowers: white
Fruit: red-scarlet, glossy, 1/2"
Leaves: dark glossy green
Other: buds pink
Insect/Disease: resistant to scab, fireblight, rust, frog eye leaf spot

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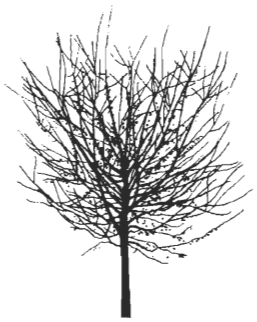

Cultivar: *Malus x zumi 'Calocarpa'*
Zone: 4a - 8a
Ornamental characteristics:
Height: 20'
Shape: round
Flowers: white
Fruit: bright red, persistent, 3/8"
Leaves: green, large
Other: buds deep red, dense canopy, birds relish fruit
Insect/Disease: excellent resistance to cedar-apple rust and scab, good resistance to mildew, fair resistance to fireblight

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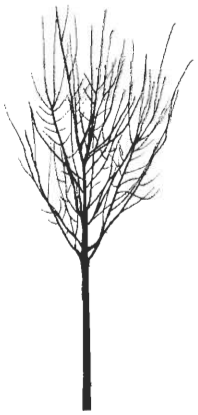
Scientific name: *Prunus* 'Accolade' (hybrid of *P. sargentii* and *P. subhirtella*)
Common name: Accolade Flowering Cherry
Environmental characteristics:
Zone: 5a
Wet/dry: requires moist, well drained soil
Salt:
pH: 5.0 - 7.5
Other: rapid grower for *Prunus*
Insect/Disease: potentially many pests, but apparently more resistant than most
Ornamental characteristics:
Height: 20' - 30'
Shape: round to vase shaped, spreading
Other: deep rose-pink bud, semi-double pink flowers, attractive bark
Cultivars:
Additional: transplant in spring

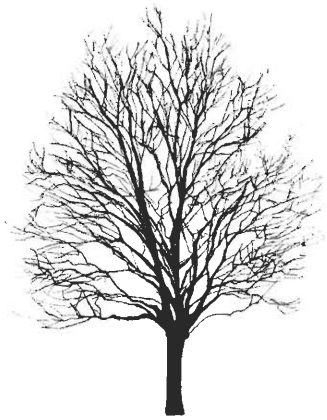


P. virginiana ' Canada Red'

Scientific name: *Prunus virginiana* 'Canada Red'
Common name: Canada Red Chokecherry
Environmental characteristics:
Zone: 2b - 7a
Wet/dry: tolerates moderate drought
Salt:
pH: 5.0 - 7.5
Other: rapid growth rate
Insect/Disease: potential problems for *Prunus*, but apparently more resistant than most, resistant to Japanese beetle
Ornamental characteristics:
Height: 20'
Shape: oval
Other: white flowers, new foliage green maturing to dark maroon, edible fruit
Cultivars: also known as 'Schubert'
Additional: transplant in spring or fall, easy to establish

Scientific name: *Sorbus intermedia*
Common name: Swedish Mountain Ash
Environmental characteristics:
Zone: 5 or 6a - 8a
Wet/dry: tolerates drought
Salt:
pH: 5.0 - 8.2
Other:
Insect/Disease factors: less susceptible to pests than European Mountain Ash (*Sorbus aucuparia*)
Ornamental characteristics:
Height: 25'
Shape: round
Other: orange-red fall color
Cultivars:
Additional: transplant in spring, easy to transplant

Scientific name: *Sorbus thuringiaca* (fastigiata)
Common name: Columnar Oakleaf Mountain Ash
Environmental characteristics:
Zone: 3b - 7b
Wet/dry:
Salt:
pH: 5.0 - 8.2
Other:
Insect/Disease factors:
Ornamental characteristics:
Height: 25'
Shape: upright
Other: orange fall color
Cultivars:
Additional: transplant in spring



Scientific name: *Syringa reticulata*
Common name: Japanese Tree Lilac
Environmental characteristics:
Zone: 3a - 7b
Wet/dry: intolerant of standing water, tolerates drought
Salt: moderate tolerance
pH: 5.0 - 8.2
Other:
Insect/Disease factors: resistant to powdery mildew, borers and scale may be problematic in warmer regions
Ornamental characteristics:
Height: 25'
Shape: oval
Other: large cream colored flowers in late June. suitable for large containers
Cultivars: 'Ivory Silk' (upright habit, dense, compact, 20' - 26', heavy flowering), 'Summer Silk' (round, compact, 16' - 20', heavy flowering)
Additional: transplant in spring or fall

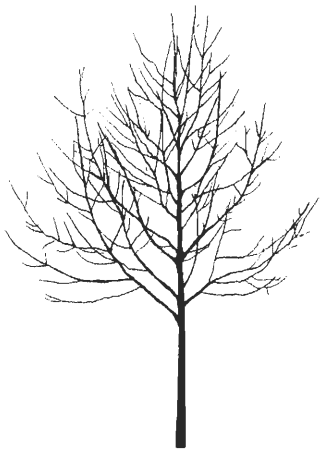
ORNAMENTAL CHARACTERISTICS OF SELECTED DISEASE RESISTANT CRABAPPLES

				Color			
Cultivar	Zone	Ht	Shape	Bud	Flower	Fruit	Leaf
Adams	4a	20'	round	deep pink	deep pink, profuse	red, persistent, 5/8"	green with red tint
Adirondack	4	18'	vase	carmine	white, textured	bright red, 1/2"	dark green, leathery
baccata Jackii	3a	20'	round	white	white, fragrant, early	deep red-purple, 3/8"	glossy green
Baskatong	4	25'	oval	dark purple	red-purple	dark red, 1"	purple changing to bronze
Centurion	4	20'	narrow oval	dark red	rose red	bright red, persistent, 5/8"	reddish changing to green
Dolgo	3b	30'	oval	white	white	bright red, edible, 11/2"	glossy green
Donald Wyman	4	20'	round	pink	white, abundant	bright red, persistent 3/8"	dark green
Doubloons	4	20'	dense oval	carmine	white, double	yellow, persistent, 3/8"	deep green
floribunda	4b	20'	round	carmine	pink-white, large	yellow/red, 3/8"	green, small
Harvest Gold	4	20'	oval	rose red	white	gold, persistent, 3/4"	green
Henry Kohankie	4	20'	round	pink	pink-white	red, persistent, 11/4"	dark green, large, lobed
Indian Summer	4a	18'	round	purple	rose red	bright red, persistent, 5/8"	bronze green
Liset	4a	15'	columnar	crimson	pink-red, large	dark red, 1/2"	reddish aging to bronze green
Madonna	4	20'	columnar	white	white, large, fragrant	gold red, 5/8"	bronze aging to dark green
Ormiston Roy	4a	20'	oval	rose to pink	white	yellow, persistent, 3/8"	green
Prairifire	4	20'	oval	crimson	pink-red	orange-red, persistent, 1/2"	reddish aging to reddish-green
Professor Sprenger	4	20'	oval	pink	white, fragrant	orange-red persistent, 1/2"	green
Purple Prince	4	20'	round	carmine	rose red	maroon, persistent, 3/8"	purple aging to bronze
Red Jewel	4	15'	oval	pink to white	white	bright red, persistent, 1/2"	green
Robinson	4	25'	oval	crimson	deep pink	dark glossy red, 3/8"	reddish aging to bronze green
Sentinel	4	20'	narrow oval	red	pink/white	bright red, persistent, 1/2"	dark glossy green
Silver Moon	4	20'	oval	white	white, profuse, late	deep red persistent, 1/2"	dark green
Strawberry Parfait	4	20'	vase	red	pink, large	yellow, 3/8"	reddish aging to green
Sugartyme	4	20'	oval	pink	white, fragrant	red persistent, 1/2"	green
White Angel	4a	20'	oval	pink	white	red-scarlet, glossy, 1/2"	dark glossy green
x zumi Calocarpa	4a	20'	round	deep red	white	bright red, persistent, 3/8"	green
Urban Horticulture Institute, Cornell University, Ithaca, NY February, 1998							

II. MEDIUM TO LARGE TREES THAT DO WELL IN CITY ENVIRONMENTS

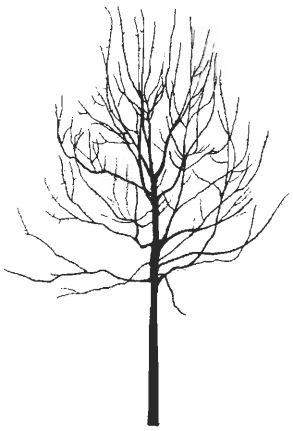
A. x freemanii 'Armstrong'

Scientific name: *Acer* x *freemanii*
Common name: Freeman Maple
Environmental characteristics:
Zone: 4
Wet/dry: tolerates intermittent wet sites as well as intermittent drought
Salt: moderate tolerance
pH: 5.0 - 7.4
Other:
Insect/Disease factors:
Ornamental characteristics:
Height: 45' -70'
Shape: see cultivars
Other: red/yellow fall color
Cultivars: 'Armstrong' (upright, fast grower), 'Autumn Blaze' (compact, oval, orange-red fall color), 'Celebration' (seedless, compact, upright, strong branching, golden-yellow fall color), 'Marmo' (broad columnar, excellent fall color, colors early), 'Morgan' (open, fast growing, outstanding orange-red to red fall color), 'Scarlet Sentinel' (columnar, fast growing, yellow-orange to orange red fall color)
Additional: transplant in spring or fall



A. platanoides 'Superform'

Scientific name: *Acer platanoides*
Common name: Norway Maple
Environmental characteristics:
Zone: 4a - 7b
Wet/dry: tolerates intermittent poor drainage as well as intermittent drought
Salt: tolerant
pH: 5.0 - 8.2
Other: may naturalize when planted next to open areas
Insect/Disease factors: 'Parkway' tolerant of verticuillium wilt; 'Summershade' tolerant of leaf hoppers
Ornamental characteristics:
Height: 40' - 50'
Shape: see below
Other: yellow fall color
Cultivars: many cultivars available, among them are:
Broad spreading: 'Emerald Queen' (golden fall color), Summershade' (zone 4b, heavy, leathery foliage, very heat tolerant), 'Superform' (very symmetrical)
Narrow upright: 'Cleveland' (narrow, oval, excellent golden-yellow fall color), 'Columnare' (narrower than 'Cleveland'), 'Parkway' (oval).
Additional: tends to heave sidewalks unless adequate rooting space is provided, easy to transplant in spring or fall



Scientific name: *Acer pseudoplatanus*
Common name: Sycamore Maple
Environmental characteristics:
Zone: 5b - 7b
Wet/dry: tolerates intermittent poor drainage and intermittent drought
Salt: very tolerant of soil or air-borne salt
pH: 5.0 - 8.2
Other: care should be taken when planting next to parks or natural areas as the species naturalizes freely
Insect/Disease factors:
Ornamental characteristics:
Height: 40' - 60'
Shape: upright spreading
Other: more leathery foliage than *A. platanoides*, orange brown scaly bark
Cultivars: 'Spaethii' (underside of leaves are purple)
Additional: popular street tree in Europe, transplant in spring

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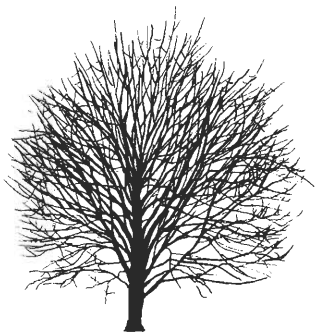
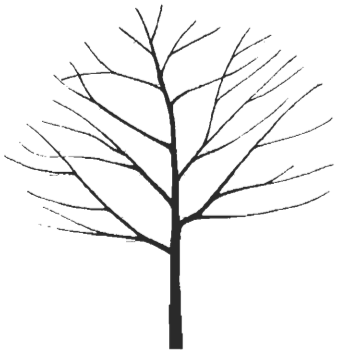
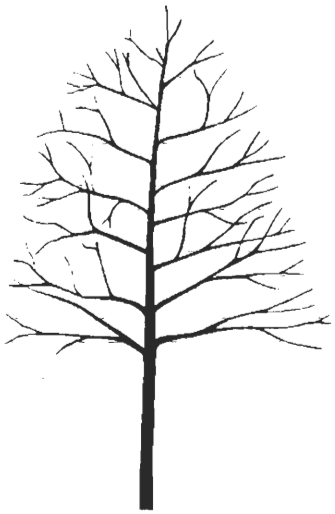


Scientific name: *Acer rubrum*
Common name: Red Maple
Environmental characteristics:
Zone: 3b - 9a
Wet/dry: moist soils necessary, flood tolerance of specific cultivars is listed below
Salt: sensitive
pH: 5.0 - 7.0
Other: should be used only in sites with little environmental stress
Insect/Disease factors:
Ornamental characteristics: good fall color
Height: 40' - 60'
Shape: see below
Other: should be specified as 'own-rooted' as graft incompatibility can be a problem
Cultivars:
Shape:
Round upright: 'Autumn Flame' (early, persistent red fall color, zone 3b), 'Northwood' (good orange-red fall color, zone 3b) 'October Glory' (excellent red fall color, zone 5a), 'Red Skin' (large, thick foliage, early reddish maroon fall color, zone 4), 'Red Sunset' (excellent orange to red fall color, zone 4)
Narrow upright: 'Bowhall' (orange fall color), 'Karpick' (dense, red twigs, yellow or red fall color)
Flood Tolerance:
High tolerance: 'Red Sunset', 'Bowhall'
Medium tolerance: 'Autumn Flame', 'October Glory'
Low tolerance: 'Karpick', 'Northwood'
Additional: transplant in spring



A. x carnea 'Briotti'

Scientific name: *Aesculus* x *carnea*
Common name: Red Horsechestnut
Environmental characteristics:
Zone: 5a - 8b
Wet/dry: requires moist, well drained sites
Salt:
pH: 5.0 - 8.2
Other:
Insect/Disease factors: less susceptible to leaf scorch and blotch than common horse chestnuts
Ornamental characteristics:
Height: 40' - 50'
Shape: round
Other: pink to red flowers in May, fruit may be a problem in some areas
Cultivars: 'Briotti' (large, bright red flowers, deep green foliage), 'O'Neill' (finer red flowers)
Additional: transplant in spring



Scientific name: *Alnus glutinosa*
Common name: Black Alder
Environmental characteristics:
Zone: 4a - 8b
Wet/dry: tolerates wet sites
Salt: moderate tolerance
pH: 5.0 - 7.5
Other: tolerates light shade, used for windbreaks, fixes own nitrogen
Insect/Disease factors: may have problems with leaf miners, tent caterpillars, woolly alder aphids
Ornamental characteristics:
Height: 40' - 60'
Shape: pyramidal to oval
Other:
Cultivars: 'Pyramidalis' (narrowly pyramidal, somewhat denser and lower branched), 'Fastigiata'
Additional: good tree for reclamation sites, transplants easily in spring, relatively short lived

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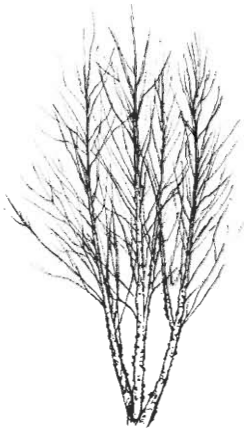
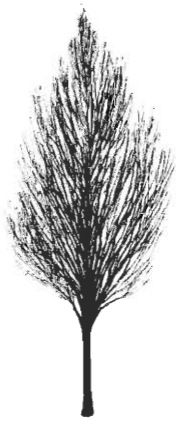


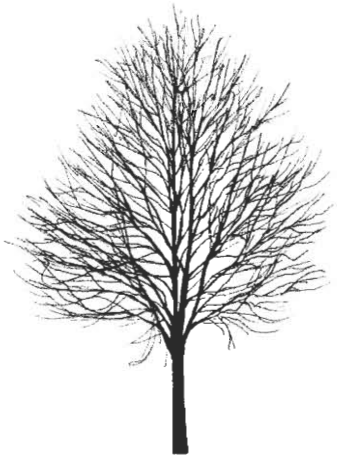
Betula nigra clump form

Scientific name: *Betula nigra* 'Heritage'
Common name: Heritage River Birch
Environmental characteristics:
Zone: 4b - 9a
Wet/dry: moist, well drained but adaptable
Salt:
pH: 5.0 - 7.0
Other:
Insect/Disease factors: resistant to birch leaf miner and bronze birch borer
Ornamental characteristics:
Height: 50' - 80'
Shape: oval
Other: peeling pinkish white bark when older
Cultivars: 'Heritage' strongly exfoliating, paler pink bark, vigorous grower
Additional: transplant in spring

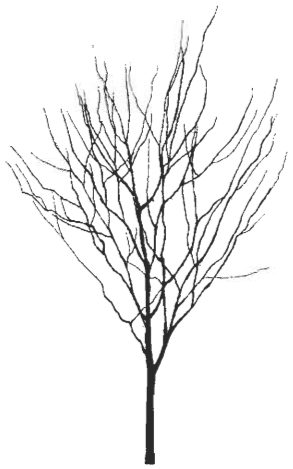


Scientific name: *Carpinus betulus* 'Fastigiata'
Common name: European Hornbeam
Environmental characteristics:
Zone: 5a - 7a
Wet/dry: tolerates drought, heavy soil
Salt: sensitive
pH: 5.0 - 8.2
Other:
Insect/Disease factors:
Ornamental characteristics:
Height: 40' - 60'
Shape: upright, oval
Other: narrow branching angles
Cultivars:
Additional: transplant in spring, somewhat slow to establish from bare root

Scientific name: *Celtis occidentalis*
Common name: Hackberry
Environmental characteristics:
Zone: 3b - 8b
Wet/dry: tolerates drought
Salt: sensitive
pH: 5.0 - 8.2
Other: tolerates light shade, wind, heat
Insect/Disease factors: may develop witches' broom
Ornamental characteristics:
Height: 40' - 60'
Shape: pyramidal when young, open, irregular when mature
Other: dark green, leathery leaves
Cultivars: 'Prairie Pride' (rapid compact grower, thick leathery foliage)
Additional: transplant in spring, somewhat slow to establish

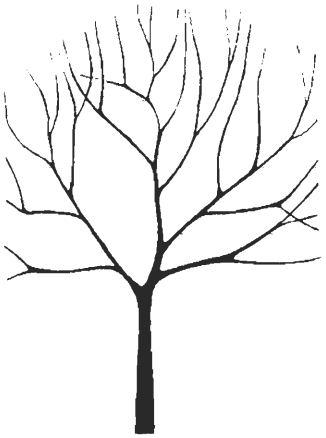


Scientific name: *Cercidiphyllum japonicum*
Common name: Katsura Tree
Environmental characteristics:
Zone: 5a - 9a
Wet/dry: requires evenly moist soils, not drought tolerant
Salt:
pH: 5.0 - 8.2
Other: does not tolerate compaction or heavy soils, tolerates light shade, protected site best
Insect/Disease factors: relatively pest free
Ornamental characteristics:
Height: 50' - 80'
Shape: round, upright
Other: new leaves bright red when unfolding, good yellow fall color, dry leaves have caramel scent, clump or single stem
Cultivars:
Additional: transplant in spring or fall

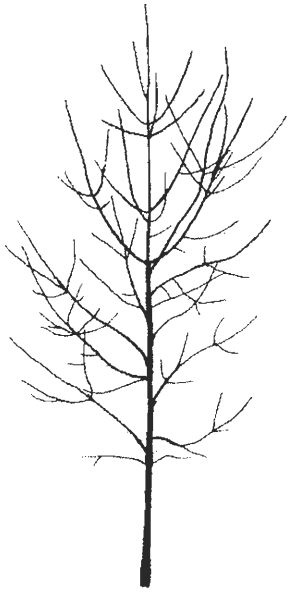


Scientific name: *Cladrastis kentukea*
Common name: Yellowwood
Environmental characteristics:
Zone: 4b - 8a
Wet/dry: best in moist, well drained soils, not drought tolerant
Salt:
pH: 5.0 - 8.2
Other:
Insect/Disease factors: relatively trouble free
Ornamental characteristics:
Height: 30' - 50'
Shape: round
Other: showy, fragrant flowers in late spring
Cultivars:
Additional: prune only in summer as profuse bleeding will occur at other times of the year, specify single leader, can be weak wooded with poor crotch angles that split out as the trees grow older, transplant in spring.

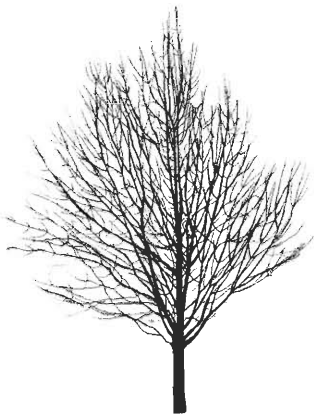
Scientific name: *Corylus colurna*
Common name: Turkish Filbert
Environmental characteristics:
Zone: 5a - 8b
Wet/dry: tolerates moderate drought once established
Salt:
pH: 5.0 - 8.2
Other: tolerates heat once established
Insect/Disease factors: fairly pest free
Ornamental characteristics:
Height: 50' - 70'
Shape: pyramidal
Other: soft, corky bark on new growth
Cultivars:
Additional: transplant in spring balled and burlaped or containerized only, do not transplant bare root



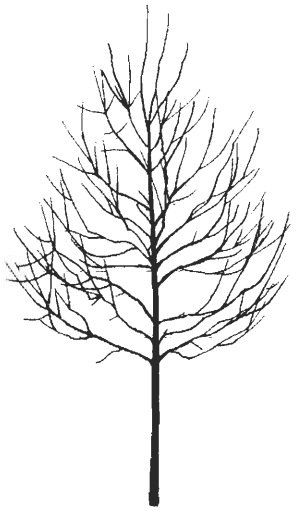
Scientific name: *Eucommia ulmoides*
Common name: Hardy Rubber Tree
Environmental characteristics:
Zone: 5b - 8b
Wet/dry: tolerates drought, intolerant of poor drainage
Salt:
pH: 5.0 - 8.2
Other: tolerates heat, needs full sun
Insect/Disease factors: pest free
Ornamental characteristics:
Height: 40' - 60'
Shape: round, wide spreading
Other: glossy green foliage
Cultivars:
Additional: transplants readily in spring or fall



Scientific name: *Fraxinus americana*
Common name: White Ash
Environmental characteristics:
Zone: 4a - 9a
Wet/dry: tolerates intermittent flooding
Salt:
pH: 5.0 - 8.2
Other: needs full sun
Insect/Disease factors: in some areas ash yellows and insect problems may be a hazard
Ornamental characteristics:
Height: 50' - 70'
Shape: oval
Other: good reddish to purple fall color
Cultivars: 'Autumn Applause', (long lasting maroon fall color), 'Autumn Purple' (non-fruiting, fast growing, good form and reddish purple fall color, zone 5a), 'Champaign County' (tight, dense crown, not much fall color), 'Rose Hill' (non-fruiting, good form, upright branching, red-purple fall color, resistant to frost cracking, zone 5b)
Additional: transplant in spring or fall

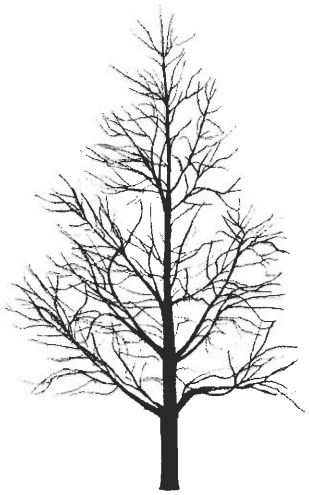


Scientific name: *Fraxinus excelsior* 'Hessei'
Common name: European Ash
Environmental characteristics:
Zone: 4b - 8b
Wet/dry: tolerates intermittent wet, flooding
Salt:
pH: 5.0 - 8.2
Other:
Insect/Disease factors: may be more resistant to borers than species
Ornamental characteristics:
Height: 60'
Shape: round
Other: very vigorous, leaves stay green long
Cultivars:
Additional: transplant in spring or fall

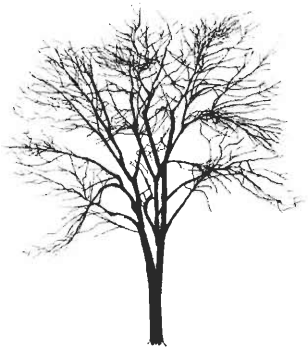


F. pennsylvanica 'Patmore'

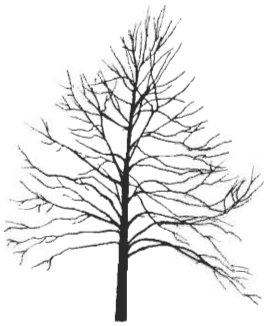
Scientific name: *Fraxinus pennsylvanica*
Common name: Green Ash
Environmental characteristics:
Zone: 2a - 9a
Wet/dry: tolerates intermittent flooding and moderate drought
Salt: tolerant
pH: 5.0 - 8.2
Other: adaptable to wide range of urban conditions
Insect/Disease factors: resistant to anthracnose, borers can be a problem in hot, dry environments
Ornamental characteristics:
Height: 50' - 60'
Shape: oval, pyramidal
Other: yellow fall color
Cultivars: 'Bergeson' (upright, rapid grower, zone 3b), 'Newport' (non-fruiting, good form, zone 3b), 'Patmore' (non-fruiting, upright, zone 3a), 'Summit' (upright, fine-textured foliage, excellent golden yellow fall color, zone 3b), 'Urbanite' (compact, pyramidal, thick, leathery foliage, bronze fall color, bark resistant to sun scald zone 5b)
Additional: transplant in spring or fall



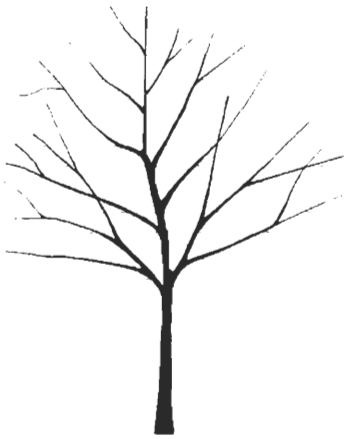
Scientific name: *Gingko biloba* (male only)
Common name: Gingko
Environmental characteristics:
Zone: 4b - 8b
Wet/dry: tolerates drought
Salt: moderate tolerance
pH: 5.0 - 8.2
Other:
Insect/Disease factors: pest free
Ornamental characteristics:
Height: 60' - 100'
Shape: irregular when young, pyramidal with age
Other: yellow fall color
Cultivars: 'Autumn Gold' (symmetrical, broad, outstanding fall color), 'Lakeview' and 'Princeton Sentry' (very narrow upright)
Additional: specify male trees only because of noxious fruit smell, all cultivars are male, transplant in spring or fall



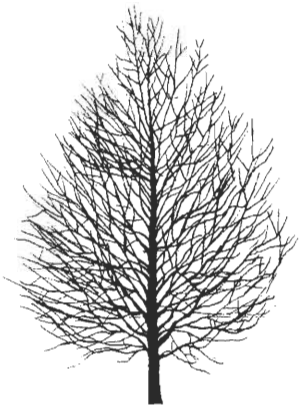
Scientific name: *Gleditsia triacanthos inermis*
Common name: Thornless Honeylocust
Environmental characteristics:
Zone: 4b - 9a
Wet/dry: tolerates wet and dry sites
Salt: high tolerance
pH: 5.0 - 8.2
Other:
Insect/Disease factors: over planting has encouraged severe insect problems in many areas (Honeylocust plant bug, spider mite, borer, webworm).
Ornamental characteristics:
Height: 40' - 100'
Shape: open, spreading
Other: yellow fall color
Cultivars: 'Halka' (essentially fruitless, zone 4a), 'Shademaster' (high vase shaped canopy, essentially fruitless, zone 3b), 'Skyline' (upright, pyramidal, strong central leader, good fall color, zone 3b)
Additional: transplants easily in spring



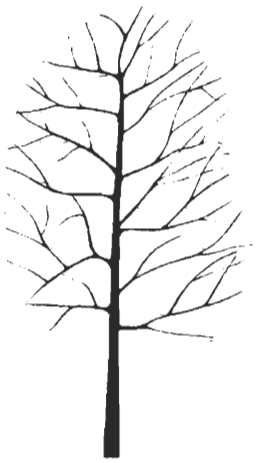
Scientific name: *Gymnocladus dioicus*
Common name: Kentucky Coffeetree
Environmental characteristics:
Wet/dry: tolerates drought
Zone: 4a - 9a
Salt:
pH: 5.0 - 8.2
Other:
Insect/Disease factors: pest free
Ornamental characteristics:
Height: 70' - 80'
Shape: oval, spreading
Other: use of male tree eliminates fruit litter, sparse branching when young
Cultivars: 'Espresso' (male fruitless form)
Additional: transplant in spring or fall



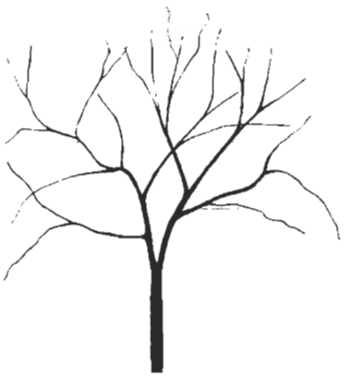
Scientific name: *Koelreuteria paniculata*
Common name: Goldenraintree
Environmental characteristics:
Zone: 5b - 9a
Wet/dry: tolerates drought
Salt: tolerant
pH: 5.0 - 8.2
Other: tolerates heat
Insect/Disease factors:
Ornamental characteristics:
Height: 30' - 40'
Shape: round
Other: yellow flower clusters in mid-summer, specify straight trunk and good branch structure or tag at nursery
Cultivars: 'September' (later flowering)
Additional: some what weak wooded, transplant in spring



Scientific name: *Liquidambar styraciflua*
Common name: Sweetgum
Environmental characteristics:
Zone: 5b - 9a
Wet/dry: tolerates intermittent flooding, moderate drought
Salt:
pH: 5.0 - 7.5
Other: best on moist, sunny sites
Insect/Disease factor: relatively pest free
Ornamental characteristics:
Height: 70' - 100'
Shape: pyramidal when young, round with age
Other: excellent fall color, fruit litter may be objectionable
Cultivars: 'Moraine' (most cold hardy, zone 4b, bright red fall color), 'Rotundaloba' (fruitless, not as hardy)
Additional: northern seed source recommended, transplant in spring



Scientific name: *Liriodendron tulipifera*
Common name: Tulip Tree
Environmental characteristics:
Zone: 5a - 9a
Wet/dry: requires evenly moist soils
Salt: sensitive
pH: 5.0 - 8.2
Other: does not tolerate poor drainage
Insect/Disease factors: relatively pest free
Ornamental characteristics:
Height: 80' - 120'
Shape: broad pyramidal
Other: needs adequate space, yellow fall color
Cultivars:
Other: northern seed source recommended, somewhat weak wooded, transplant in spring

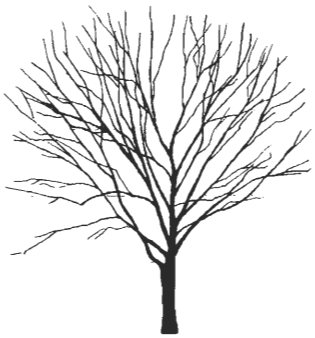


Scientific name: *Maclura pomifera inermis* (male)
Common name: Osage Orange
Environmental characteristics:
Zone: 5b - 9a
Wet/dry: tolerates drought and wet sites
Salt: tolerant
pH: 5.0 - 8.2
Other: adaptable to wide range of soils
Insect/Disease factors: pest free
Ornamental characteristics:
Height: 30' - 50'
Shape: irregular
Other: useful as a wind break, spiny branches may be a litter problem, specify male plants only
Cultivars: 'Park' (nonspiny male), 'Wichita'
Additional: transplant in spring or fall

Scientific name: *Metasequoia glyptostroboides*
Common name: Dawn Redwood
Environmental characteristics:
Zone: 5b - 9a
Wet/dry: requires moist sites, will not tolerate dry sites
Salt: sensitive
pH: 5.0 - 7.5
Other:
Insect/Disease factors: relatively pest free
Ornamental characteristics:
Height: 70' - 100'
Shape: pyramidal
Other: lower branches need to be removed for street side use, fast growing
Cultivars:
Additional: transplant in spring or fall

Scientific name: *Nyssa sylvatica*
Common name: Tupelo
Environmental characteristics:
Zone: 5a - 9a+
Wet/dry: tolerates wet sites, intermittent drought
Salt: relatively tolerant
pH: 5.5 - 7.0
Other:
Insect/Disease factors: pest free
Ornamental characteristics:
Height: 40' - 70'
Shape: pyramidal
Other: bright red fall color
Cultivars:
Other: difficult to transplant - use small sizes, balled and burlaped, only, slow to recover from transplanting, transplant in spring

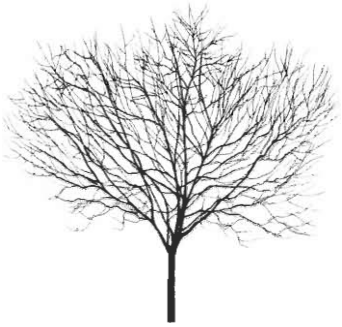
Scientific name: *Ostrya virginiana*
Common name: American Hophornbeam
Environmental characteristics:
Zone: 3b - 9a
Wet/dry: prefers moist but will tolerate moderately dry soils once established
Salt: very sensitive
pH: 5.0 - 8.2
Other: tolerates light shade
Insect/Disease factors: pest free
Ornamental characteristics:
Height: 30' - 50'
Shape: oval
Other: slow growing
Cultivars:
Additional: slow to recover from transplanting, transplant in spring



Scientific name: *Phellodendron amurense*
Common name: Amur Corktree
Environmental characteristics:
Zone: 4b - 7b
Wet/dry: favors moist, well drained sites, tolerates intermittent drought
Salt:
pH: 5.0 - 8.2
Other: does not do well in restricted root zone areas
Insect/Disease factors: pest free
Ornamental characteristics:
Height: 30' - 40'
Shape: round, open with massive branches
Other: corky, furrowed bark
Cultivars: 'Macho' (vigorous male, thick leathery leaves, fruitless)
Additional: transplant in spring

P. x *acerifolia* 'Bloodgood'

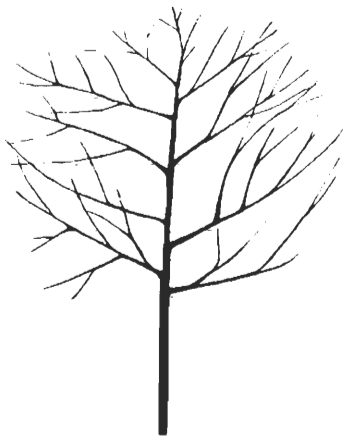
Scientific name: *Platanus* x *acerifolia*
Common name: London Planetree
Environmental characteristics:
Zone: 5b - 9a
Wet/dry: tolerates wet and intermittently flooded sites, drought tolerant
Salt: tolerant
pH: 5.0 - 8.2
Other:
Insect/Disease factors: over planting has encouraged disease and insect problems in NYC, 'Columbia' & 'Liberty' resistant to anthracnose & powdery mildew, 'Bloodgood' moderately resistant, Cankerstain may be a problem
Ornamental characteristics:
Height: 70' - 100'
Shape: pyramidal when young, open, spreading with age
Cultivars: 'Bloodgood' (tolerates severe pruning, rapid grower), 'Columbia', 'Liberty'
Additional: transplant in spring or fall



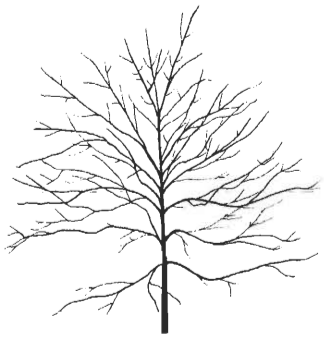
Scientific name: *Prunus sargentii*
Common name: Sargent Cherry
Environmental characteristics:
Zone: 4b - 9a
Wet/dry: requires moist, well drained soil, will tolerate intermittent drought
Salt: tolerant
pH: 5.0 - 7.5
Other:
Insect/Disease factors: none incapacitating
Ornamental characteristics:
Height: 40' - 50'
Shape: vase, round with age
Other: hardy flower buds, early pink flowers, attractive bark, bronze red fall color
Cultivars: 'Columnaris' (narrower form)
Additional: transplant in spring

P. calleryana
'Autumn Blaze'

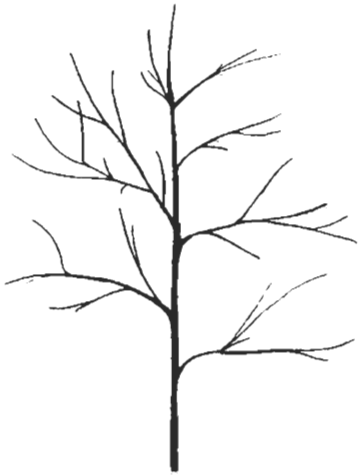
Scientific name: *Pyrus calleryana*
Common name: Callery Pear
Environmental characteristics:
Zone: 5a - 9a
Wet/dry: tolerates drought and intermittent poor drainage
Salt: tolerant
pH: 5.0 - 8.2
Other: tolerates heavy soils
Insect/Disease factors: 'Autumn Blaze' 'Cleveland Select', 'Fauriei' & 'Whitehouse' tolerant to fireblight, 'Aristocrat' susceptible to fireblight
Ornamental characteristics:
Height: 30' - 50'
Shape: round, pyramidal
Other: white flowers in April, graft incompatibility can be a problem, cultivar 'Bradford' is no longer recommended because of tendency for severe limb breakage
Cultivars: 'Aristocrat' (upright, vigorous, good branching angles, later blooming, good fall color), 'Autumn Blaze' (good branching angles, early bright red fall color, most cold hardy), 'Chanticleer' ('Cleveland Select') (narrow pyramidal, early gold-red to plum fall color, heavy flowering), 'Fauriei' (showy flowers), 'Whitespire' (small)
Additional: transplant in spring



Scientific name: *Quercus acutissima*
Common name: Sawtooth Oak
Environmental characteristics:
Zone: 5b or 6a - 9a
Wet/dry: tolerates moderately dry soils
Salt: moderate tolerance
pH: 5.0 - 7.5
Other: good growth rate in moist sites
Insect/Disease factors: reasonably pest free, preferred by orange-striped oakworm
Ornamental characteristics:
Height: 40' - 50'
Shape: broad oval
Other:
Cultivars:
Additional: transplant in spring

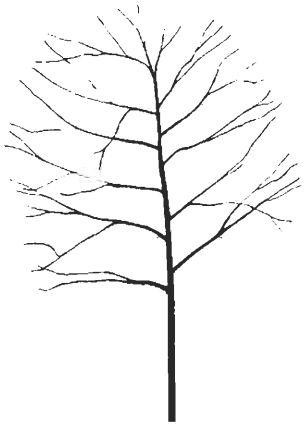


Scientific name: *Quercus bicolor*
Common name: Swamp White Oak
Environmental characteristics:
Zone: 4a - 8b
Wet/dry: tolerates temporary flooding, wet soils and somewhat dry soils
Salt: sensitive
pH: 5.0 - 7.0
Other: variable susceptibility to iron chlorosis
Insect/Disease factors: susceptible to anthracnose, intermediate preference by orange-striped oakworm
Ornamental characteristics:
Height: 50' - 60'
Shape: broad oval with round top
Other:
Cultivars:
Additional: transplant in spring

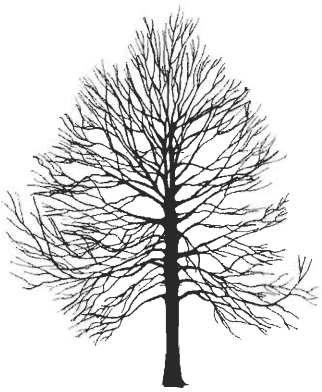


Scientific name: *Quercus imbricaria*
Common name: Shingle Oak
Environmental characteristics:
Zone: 5a - 9a
Wet/dry: prefers moist but will tolerate intermittent drought
Salt:
pH: 5.0 - 7.5
Other:
Insect/Disease factors: anthracnose, canker, powdery mildew, rust, wilt, galls, scales, borers, miners, etc. may be a problem
Ornamental characteristics:
Height: 40' - 60'
Shape: round
Other:
Cultivars:
Additional: slow to recover from transplanting, transplants well in spring

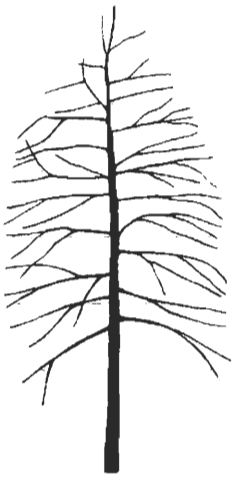
Scientific name: *Quercus macrocarpa*
Common name: Bur Oak
Environmental characteristics:
Zone: 3a - 9a
Wet/dry: tolerates drought and intermittent flooding
Salt:
pH: 5.0 - 8.2
Other:
Insect/Disease factors: susceptible to anthracnose, intermediate preference by orange-striped oakworm
Ornamental characteristics:
Height: 60' - 80'
Shape: round
Other: slow growing massive trees needing adequate space, corky bark
Cultivars:
Additional: transplant small sizes in spring



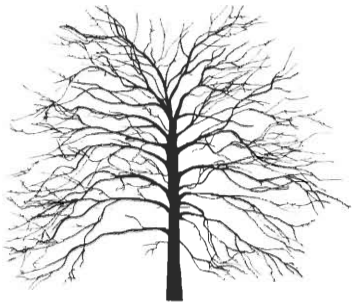
Scientific name: *Quercus muehlenbergii*
Common name: Chinkapin Oak
Environmental characteristics:
Zone: 5a - 8b
Wet/dry: tolerates moderate drought
Salt:
pH: 5.0 - 8.2
Other: extremely tolerant of alkaline soil
Insect/Disease factors: no serious pests
Ornamental characteristics:
Height: 30' - 50'
Shape: round
Other:
Cultivars:
Additional: transplant in spring



Scientific name: *Quercus palustris*
Common name: Pin Oak
Environmental characteristics:
Wet/dry: tolerates wet soils and intermittent drought
Zone: 5a - 8b
Salt: moderate to poor tolerance
pH: 5.5 - 6.0
Other: iron chlorosis on high pH soils
Insect/Disease factors: over planting has encouraged insect problems, resistant to anthracnose, preferred by orange-striped oakworm
Ornamental characteristics:
Height: 50' - 70'
Shape: pyramidal, oval with age
Other: scarlet fall color
Cultivars: 'Crownright' (upright), 'Sovereign' (lower branches do not weep)
Additional: transplant in spring

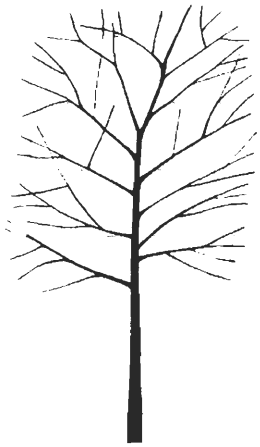


Scientific name: *Quercus phellos*
Common name: Willow Oak
Environmental characteristics:
Zone: 6a - 9a
Wet/dry: tolerates temporary flooding and moderately dry soils
Salt:
pH: 5.0 - 7.0
Other: iron chlorosis on high pH soils
Insect/Disease factors: resistant to anthracnose, preferred by orange-striped oakworm
Ornamental characteristics:
Height: 40' - 60'
Shape: pyramidal, oval with age
Other: strong central leader
Cultivars:
Additional: transplant in spring

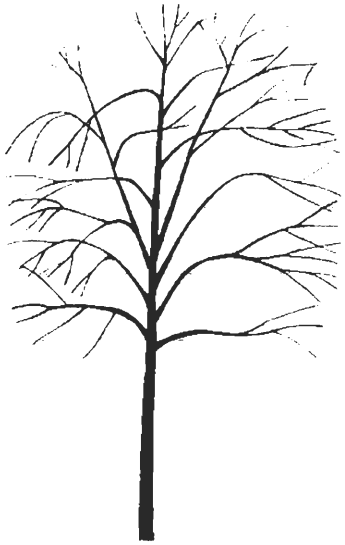


Scientific name: *Quercus robur*
Common name: English Oak
Environmental characteristics:
Zone: 5b - 9a
Wet/dry: tolerates drought once established
Salt: good tolerance
pH: 5.0 - 8.2
Other:
Insect/Disease factors: powdery mildew can be a problem, susceptible to anthracnose
Ornamental characteristics:
Height: 50' - 60'
Shape: round
Other:
Cultivars: 'Attention' (columnar form, mildew resistant 'Skymaster' (oval, purportedly mildew resistant), 'Fastigiata' (not recommended due to chlorosis on high pH soils)
Additional: transplant in spring

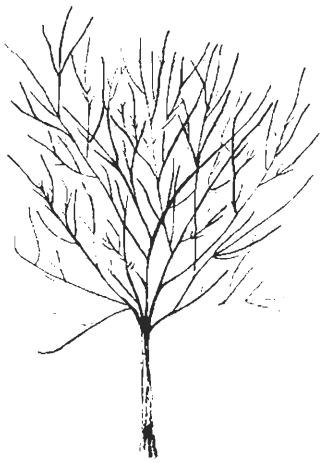
Scientific name: *Quercus rubra*
Common name: Northern Red Oak
Environmental characteristics:
Zone: 3b - 9a
Wet/dry: tolerates moderately dry sites once established
Salt: tolerant
pH: 5.0 - 7.4
Other:
Insect/Disease factors: oak wilt is a serious problem in more southern areas, resistant to anthracnose, preferred by orange-striped oakworm
Ornamental characteristics:
Height: 60' - 75'
Shape: round
Other:
Cultivars:
Additional: transplant in spring



Scientific name: *Quercus schumardii*
Common name: Shumard Oak
Environmental characteristics:
Zone: 5b or 6a - 9a
Wet/dry: tolerates intermittent drought
Salt:
pH: 5.0 - 7.5
Other:
Insect/Disease factors:
Ornamental characteristics:
Height: 60' - 80'
Shape: round, oval
Other: easier to transplant than some oaks, russet red to red fall color
Cultivars:
Additional: transplant in spring



Scientific name: *Robinia pseudoacacia*
Common name: Blacklocust
Environmental characteristics:
Zone: 4b - 9a
Wet/dry: tolerates intermittent flooding and drought
Salt: tolerant
pH: 5.0 - 8.2
Other: good in very difficult reclamation sites, fixes own nitrogen
Insect/Disease factors: borers can be a serious problem, leaf miners may also be problematic
Ornamental characteristics:
Height: 40' - 70'
Shape: open irregular
Other: white, fragrant flowers in late spring, dark gray ropy bark
Cultivars: 'Bessoniana' (small, compact, well branched, oval, spineless), 'Globe' (small, spineless), 'Pyramidalis' (narrow, spineless)
Additional: widely used in Europe as a street tree, transplant in spring or fall



Scientific name: *Sorbus alnifolia*
Common name: Korean Mountain Ash
Environmental characteristics:
Zone: 4b - 7b
Wet/dry: requires moist, well drained soils
Salt:
pH: 5.0 - 8.2
Other:
Insect/Disease factors: susceptible to fireblight
Ornamental characteristics:
Height: 40' - 50'
Shape: pyramidal-round
Other: attractive flowers and persistent red-orange fruit, orange-red fall color
Cultivars:
Additional: transplant in spring or fall.

Styphnolobium japonicum
'Regent'

Scientific name: *Styphnolobium japonicum (Sophora japonica)*
Common name: Scholar Tree
Environmental characteristics:
Zone: 5b - 9a
Wet/dry: tolerates drought
Salt: tolerant
pH: 5.0 - 8.2
Other: fixes own nitrogen.
Insect/Disease factors: 'Regent' resistant to leafhoppers, twig dieback and stem canker in colder zones
Ornamental characteristics:
Height: 50' - 70'
Shape: dense, round
Other: attractive cream colored flowers in late July
Cultivars: 'Princeton Upright' (upright), 'Regent' (rapid growth, profuse flowering, resistant to leaf-chewers)
Additional: transplant in spring or fall, somewhat weak wooded

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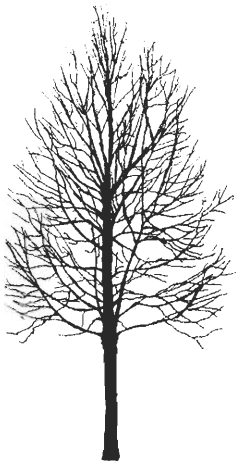
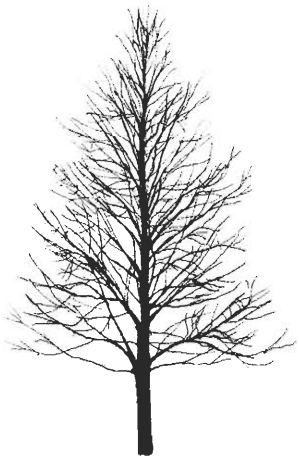
Scientific name: *Taxodium distichum*
Common name: Baldcypress
Environmental characteristics:
Zone: 5a - 9a
Wet/dry: tolerates wet soils, intermittent flooding and moderate drought once established
Salt: moderate tolerance
pH: 5.0 - 7.4
Other:
Insect/Disease factors: generally free of problems
Ornamental characteristics:
Height: 50' - 70'
Shape: columnar when young wide spreading, open with age
Other: late to leaf out
Cultivars: 'Shawnee Brave' (narrower, reportedly tolerates high pH soils. zone 5b)
Additional: transplant in spring, slow to recover from transplanting

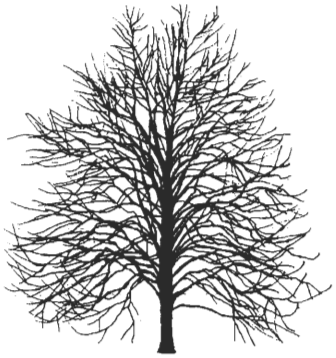


Scientific name: *Tilia americana*
Common name: Basswood
Environmental characteristics:
Zone: 3a - 8a
Wet/dry: requires moist, well drained sites but will tolerate intermittent drought once established
Salt: sensitive
pH: 6.5 - 8.2
Other:
Insect/Disease factors: very susceptible to Japanese beetles, mites, aphids, borers, leaf miners & scale may also be problematic
Ornamental characteristics:
Height: 60' - 80'
Shape: pyramidal
Other: fragrant flowers in June
Cultivars: 'Redmond' (pyramidal)
Additional: transplant in spring or fall

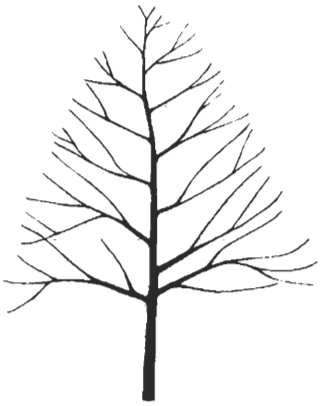


T. cordata 'Glenleven'

Scientific name: *Tilia cordata*
Common name: Littleleaf Linden
Environmental characteristics:
Zone: 3b - 8a
Wet/dry: requires moist, well-drained soils, intolerant of poor drainage, will tolerate intermittent drought once established but prolonged drought will lead to leaf scorch.
Salt: sensitive
pH: 5.0 - 8.2
Other: tolerates moderate compaction
Insect/Disease factors: highly susceptible to aphids and Japanese beetles especially 'Greenspire'
Ornamental characteristics:
Height: 60' - 80'
Shape: dense, pyramidal
Other: fragrant flowers in June
Cultivars: many good cultivars including 'Chancellor' (narrower, fast growing), 'Glenleven' (broad columnar, very cold hardy), 'Greenspire' (pyramidal, readily available), 'Rancho' (upright, vigorous, partially resistant to Japanese beetle)
Additional: transplant in spring or fall

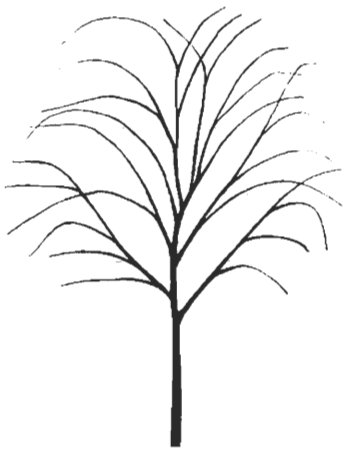


Scientific name: *Tilia euchlora*
Common name: Crimean Linden
Environmental characteristics:
Zone: 5a - 8a
Wet/dry: tolerates intermittent drought, but best on moist, well drained sites
Salt: sensitive
pH: 5.0 - 8.2
Other: reported more drought resistant than *T. cordata.*
Insect/Disease factors: more resistant to aphids than *T. cordata*
Ornamental characteristics:
Height: 50'
Shape: round
Other: vigorous compact growth. basal suckering on grafted trees
Cultivars: 'Laurelhurst' (compact, pyramidal, straight trunk)
Additional: transplant in spring or fall



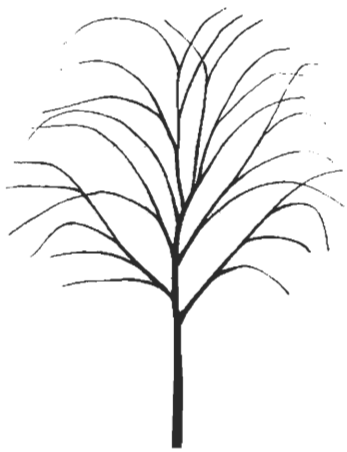
T. tomentosa 'Sterling Silver'

Scientific name: *Tilia tomentosa*
Common name: Silver Linden
Environmental characteristics:
Zone: 5a - 8a
Wet/dry: tolerates moderate drought
Salt: sensitive
pH: 5.0 - 8.2
Other: tolerates drought and heat better than *T. cordata*
Insect/Disease factors: less susceptible to Japanese beetles than other lindens
Ornamental characteristics:
Height: 60' - 80'
Shape: pyramidal
Other: fragrant flowers, attractive white pubescence on underside of leaves
Cultivars: 'Sterling Silver' (vigorous grower, resistant to Japanese beetles), 'Green Mountain' (symmetrical, dense canopy)
Additional: transplant in spring, slower to recover from transplanting than other lindens



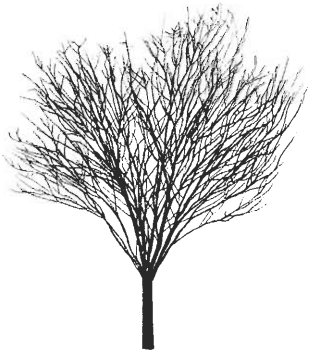
Ulmus 'Homestead'

Scientific name: *Ulmus spp.*
Common name: Elm Hybrids
Environmental characteristics:
Zone: various
Wet/dry: tolerates intermittent flooding and drought once established
Salt:
pH: 5.0 - 8.2
Other:
Insect/Disease factors: cultivars reportedly resistant to Dutch Elm Disease: 'Delaware #2', 'Homestead', 'Pioneer', 'Sapporo Autumn Gold', 'Urban', 'Washington', cultivars resistant to elm yellows: 'Homestead', 'Pioneer', 'Sapporo Autumn Gold', 'Urban'
Ornamental characteristics:
Height: 40' - 50'
Shape: upright, vase
Other:
Cultivars:
Zone 3b: 'Delaware #2' (vigorous, broad crown), 'Washington'
Zone 4: 'Patriot', 'Prospector'
Zone 5a: 'Frontier' 'Homestead' (symmetrical), 'Pioneer' (rapid grower, good fall color), 'Sapporo Autumn Gold' (upright vase, golden yellow fall color), 'Urban' (tolerant of drought, soil compaction, restricted root space)
Additional: new group of cultivars with good resistance to Dutch Elm disease, elm leaf beetle and elm yellows available for testing include: 'Frontier', 'New Harmony' 'Patriot', 'Prospector', 'Valley Forge', transplant in spring



U. parvifolia 'Dynasty'

Scientific name: *Ulmus parvifolia*
Common name: Chinese Elm
Environmental characteristics:
Zone: 5b - 9a
Wet/dry: tolerates drought
Salt:
pH: 5.0 - 8.2
Other:
Insect/Disease factors: resistant to Dutch Elm disease, elm yellows and other insect problems
Ornamental characteristics:
Height: 40' - 75'
Shape: round, vase
Other:
Cultivars:
Additional: new group of cultivars with good resistance to Dutch Elm disease, elm leaf beetle and elm yellows available for testing include: 'Ohio', 'Dynasty', 'Emerald Isle', 'Emerald Vase', 'King's Choice', Pathfinder. transplant in spring or fall



Z. serrata 'Green Vase'

Scientific name: *Zelkova serrata*
Common name: Japanese Zelkova
Environmental characteristics: needs full sun
Zone: 5b - 9a
Wet/dry: drought tolerant once established
Salt: moderate
pH: 5.0 - 8.2
Other:
Insect/Disease factors:
Ornamental characteristics:
Height: 60' - 80'
Shape: vase
Other: narrow crotch angles and poor branch attachment can give rise to splitting and form damage when older
Cultivars: 'Green Vase' (upright vase, fast grower, golden-orange fall color), 'Halka' (upright vase, most elm like, better branch attachment, yellow fall color), 'Village Green' (vase, shorter than other cultivars, fast grower, rusty red fall color)
Additional:. transplant in spring

TREES FOR VARIOUS SITE CONDITIONS

MOISTURE:

Tolerates Poorly Drained or Intermittently Flooded Soils:

Acer x freemanii	Freeman Maple
Acer rubrum	Red Maple
Alnus glutinosa	Black Alder
Betula nigra	River Birch
Fraxinus americana	American Ash
Fraxinus pennsylvanica	Green Ash
Liquidambar styraciflua	Sweetgum
Maclura pomifera inermis	Osage Orange
Nyssa sylvatica	Tupelo
Platanus x acerifolia	London Planetree
Quercus bicolor	Swamp White Oak
Quercus macrocarpa	Bur Oak
Quercus palustris	Pin Oak
Quercus phellos	Willow Oak
Robinia pseudoacacia	Blacklocust
Taxodium distichum	Baldcypress

Requires Moist but Well Drained Soils:

Aesculus x carnea	Red Horse Chestnut
Amelanchier spp.	Serviceberry
Cercidiphyllum japonicum	Katsura Tree
Liriodendron tulipifera	Tulip Tree
Metasequoia glyptostroboides	Dawn Redwood
Phellodendron amurense	Amur Corktree
Sorbus alnifolia	Korean Mountain Ash

Tolerates Moderate Drought:

Acer truncatum	Shantung Maple
Acer x freemanii	Freeman Maple
Carpinus betulus	European Hornbeam
Carpinus caroliniana	American Hornbeam
Celtis laevigata	Sugar Hackberry
Corylus colurna	Turkish filbert
Ostrya virginiana	American Hophornbeam
Platanus x acerifolia	London Planetree
Quercus acutissima	Sawtooth Oak

Quercus palustris	Pin Oak
Quercus robur	English Oak
Quercus rubra	Northern Red Oak
Quercus schumardii	Shumard Oak
Quercus imbricaria	Shingle Oak
Quercus muehlenbergii	Yellow Chestnut Oak
Tilia americana 'Redmond'	Redmond Basswood
Tilia cordata	Littleleaf Linden
Tilia euchlora	Crimean Linden
Tilia tomentosa	Silver Linden
Tolerates More Severe Drought:	
Acer campestre	Hedge Maple
Celtis occidentalis	Hackberry
Crataegus spp.	Hawthorn
Eucommia ulmoides	Hardy Rubber Tree
Fraxinus pennsylvanica	Green Ash
Ginkgo biloba	Ginkgo
Gleditsia triacanthos inermis	Honeylocust
Gymnocladus dioicus	Kentucky Coffeetree
Koelreuteria paniculata	Goldenraintree
Maclura pomifera inermis	Osage Orange
Malus spp.	Crabapple
Quercus macrocarpa	Bur Oak
Robinia pseudoacacia	Blacklocust
Styphnolobium japonicum (Sophora japonica)	Scholar Tree
Sorbus intermedia	Swedish Mountain Ash
Syringa reticulata	Japanese Tree Lilac
Ulmus parvifolia	Chinese Elm
Zelkova serrata	Japanese Zelkova

pH

Requires Acid Soil pH 5.0 - 7.0	
Acer buergeranum	Trident Maple
Acer rubrum	Red Maple
Betula nigra	River Birch
Quercus bicolor	Swamp White Oak
Quercus palustris	Pin Oak
Quercus phellos	Willow Oak

Can Tolerate Acid to Neutral Soil pH 5.0 - 7.4

Acer x freemanii	Freeman Maple
Alnus glutinosa	Black Alder
Amelanchier spp.	Serviceberry
Liquidambar styraciflua	Sweet Gum
Metasequoia glyptostroboides	Dawn Redwood
Nyssa sylvatica	Tupelo
Prunus 'Accolade'	Accolade Flowering Chery
Prunus sargentii	Sargent Cherry
Quercus acutissima	Sawtooth Oak
Quercus imbricaria	Shingle Oak
Quercus rubra	Northern Red Oak
Quercus schumardii	Shumard Oak
Taxodium distichum	Baldcypress

Can Tolerate Acid to Alkaline Soil pH 5.0-8.0

Acer campestre	Hedge Maple
Acer pseudoplatanus	Sycamore Maple
Acer truncatum	Shantung Maple
Acer platanoides	Norway Maple
Aesculus x carnea	Red Horse Chestnut
Carpinus betulus	European Hornbeam
Carpinus caroliniana	American Hornbeam
Celtis laevigata	Sugar Hackberry
Celtis occidentalis	Hackberry
Cercidiphyllum japonicum	Katsura Tree
Cladrastis kentukea	Yellowwood
Corylus colurna	Turkish Filbert
Crataegus phaenopyrum	Washington Hawthorn
Crataegus crus-galli inermis	Hawthorn
Crataegus viridis 'Winter King'	Winter King Hawthorn
Eucommia ulmoides	Hardy Rubber Tree
Fraxinus americana	White Ash
Fraxinus excelsior	European Ash
Fraxinus pennsylvanica	Green Ash
Ginkgo biloba	Ginkgo
Gleditsia triacanthos inermis	Honeylocust
Gymnocladus dioicus	Kentucky Coffeetree
Koelreuteria paniculata	Goldenraintree
Maclura pomifera inermis	Osage Orange
Malus spp.	Crabapple
Ostrya virginiana	American Hophornbeam

Phellodendron amurense	Amur Corktree
Platanus x acerifolia	London Planetree
Pyrus calleryana	Callery Pear
Quercus macrocarpa	Bur Oak
Quercus muehlenbergii	Yellow Chestnut Oak
Quercus robur	English Oak
Robinia pseudoacacia	Blacklocust
Sorbus alnifolia	Korean Mountain Ash
Sorbus intermedia	Swedish Mountain Ash
Sorbus thuringiaca fastigiata	Columnar Oakleaf Mountain Ash
Styphnolobium japonicum (Sophora japonica)	Scholar Tree
Syringa reticulata	Japanese Tree Lilac
Tilia americana 'Redmond'	Redmond Basswood
Tilia cordata	Littleleaf Linden
Tilia euchlora	Crimean Linden
Tilia tomentosa	Silver Linden
Ulmus parvifolia	Chinese Elm
Ulmus spp.	Elm
Zelkova serrata	Japanese Zelkova

SALT TOLERANCE:

Tolerates Salt:	
Acer buergeranum	Trident Maple
Acer campestre	Hedge Maple
Acer pseudoplatanus	Sycamore Maple
Acer platanoides	Norway Maple
Alnus glutinosa	Black Alder
Crataegus spp.	Hawthorne
Fraxinus pennsylvanica	Green Ash
Ginkgo biloba	Ginkgo
Gleditsia triacanthos inermis	Honeylocust
Koelreuteria paniculata	Goldenraintree
Maclura pomifera	Osage Orange
Platanus x acerifolia	London Planetree
Prunus sargentii	Sargent Cherry
Pyrus calleryana	Callery Pear
Quercus robur	English Oak
Quercus rubra	Northern Red Oak
Robinia pseudoacacia	Blacklocust
Styphnolobium japonicum (Sophora japonica)	Scholar Tree
Taxodium distichum	Baldcypress

Sensitive to Salt:	
Acer rubrum	Red Maple
Carpinus betulus	European Hornbeam
Liriodendron tulipifera	Tulip Tree
Ostrya virginiana	Hophornbeam
Quercus bicolor	Swamp White Oak
Quercus palustris	Pin Oak
Tilia americana 'Redmond'	Redmond Basswood
Tilia cordata	Littleleaf Linden
Tilia euchlora	Crimean Linden

Resource Guide

Grouped first by subject matter and then by format. Pertinent organizations are listed at the end.

GENERAL

Websites:

Forestry Library of the University of Minnesota in Saint Paul. "American Forestry Bibliography." <http://forestry.lib.umn.edu/bib/urban.html>. This website is comprised of a searchable database of resources dating from 1982-present. The indexed publications range in topic from urban forest legislation to tree selection.

Magazines:

American Forests. Quarterly magazine published by American Forests. Generally contains articles concerned with the state of urban and non-urban forests within the United States. Often features citizen activism.

TREE IDENTIFICATION

Books:

Collingwood, G.H. & Brush, Warren D. Knowing your Trees. Washington, DC: The American Forestry Association, 1970. Extensive encyclopedia of North American trees. Entries include growing habitat, physical description, as well as strengths and weaknesses of each species. Aimed to an audience with more advanced science knowledge.

Elias, Thomas S. The Complete Trees of North America: Field Guide and Natural History. New York, NY: Van Nostrand Reinhold Company, 1980. An in-depth study covering all the trees native and introduced to North America. Each description includes range, and preferred environment, identifying features, history, fruits and seeds, and type of growth.

Petrides, George A.. Peterson Field Guides: Trees and Shrubs. Boston, MA: Houghton Mifflin Company, 1972. This is an extensive identification guide describing leaves and fruit. Interesting silohuettes of trees present in the beginning of the book showing crown shape.

Plotnik, Arthur. The Urban Tree Book: An Uncommon Field Guide For City and Town. New York, NY: Three Rivers Press, 2000. This unique tree identification guide discusses more than 200 North American species. It covers history, lore, and specific growth of each tree. It also shortly discusses tree care & pruning and site selection for plantings as well as having an extensive glossary.

Sargent, Charles Sprague. Manual of the Trees of North America. New York, NY: Dover Publications, Inc, 1965. This book is an encyclopedia of all North American trees for arborists and other parts of the scientific community. Entries are terse but very specific and terminology is scientific.

Symonds, George W. D. The Tree Identification Book. New York, NY:
Quill, 1958. An identification book which explains how to recognize North American trees through leaves, buds, branches, thorns, flowers, bark, and fruit. Extensive pictures on each characteristic of each tree.

TREE CARE & MAINTENANCE

Books:
Crockett, James Underwood. Trees: The Time-Life Encyclopedia of Gardening. New York, NY: Time Life Books, 1972. A very basic explanation of the anatomy and inner-workings of a tree aimed at an audience with very basic science knowledge. The encyclopedia section contains a small listing of species with one to two paragraph entries. Appendices contain listings and descriptions of pests and diseases.

Li, Hui-Lin. The Origin and Cultivation of Shade and Ornamental Trees. Philadelphia: University of Pennsylvania, 1963. This book provides historical and aesthetic information about shade trees. It would be useful to those interested in determining why having shade trees is good for a city.

Murphy, Richard C., and William E. Meyer. Care & Feeding of Trees. New York, NY: Crown Publishers, 1983. This is an informational guide for proper care and raising of trees for the private citizen. It is easy to understand and explains pruning, feeding, and protecting trees so they can provide shade and beauty for a lifetime.

Pirone, P. P., et al. Tree Maintenance. New York, NY: Oxford University Press, 1988. This sixth edition covers topics ranging from tree selection to structure, soil, site selection, feeding, pruning, repair, pests and diseases. Using the collected knowledge of fifty plus years studying trees Dr. Pirone shares with us the value and imprtance of maintaining trees.

Platt, Rutherford, Rowan Rowntree, and Pamela Muick, ed. The Ecological City: Preserving and Restoring Urban Biodiversity. Amherst, MA: University of MA, 1994. This is a general guidebook on fostering and improving biodiversity in an urban setting. It contains a good overview of the material as well as enough specifics to be useful.

Tatter, Terry. Diseases of Shade Trees. Academic Press: New York, 1978. This book contains descriptions of many of the things that can go wrong and cause shade trees to become sick and die. It also contains information about how to handle most of these problems or how to avoid them when possible.

URBAN FORESTRY

Books:

Arnold, Henry. Trees in Urban Design. New York: Van Nostrand Reinhold Co, 1980. This book is aimed at those hoping to improve the aesthetics of a city by planting or improving an urban forest. It contains information on the history and aesthetics of tree placement as well as a guide for which kinds of trees will grow in which locations while looking the best as they do so. This book gives reasons and explanations for why having a healthy and flourishing urban forest is good for a city.

Ginsburg, Janet. The City of Chicago's Guide to Urban Tree Care. Chicago, IL: City of Chicago, 1994. Those interested in improving the condition and size of urban forests will find much useful information in this work. It contains useful guidelines for choosing locations to plant trees, choosing which trees to plant and caring for trees once they have been planted.

Grey, Gene, and Frederick Deneke. Urban Forestry. New York: John Wiley and Sons, 1978. This book is a general guide to urban forestry. It contains useful information such as the history, condition and benefits of urban forests. It also contains information about managing these resources.

Miller, Robert. Urban Forestry: Planning and Managing Urban Greenspaces. 2nd ed. New Jersey: Prentice Hall, 1997. Anyone interested in urban forestry will benefit from the information available in this book. It includes instructions and guidelines for planning and managing urban forests, as well as information on how urban forests are useful to society. This book also contains several appendices that contain sample laws and management schemes from other cities, which may interest people in the position to make decisions about urban forests.

Moll, Gary, and Sara Ebenreck, ed. Shading Our Cities: A Resource Guide for Urban and Community Forests. Washington, D.C.: Island Press, 1989. Those interested in maintaining or contributing to urban forests will find this book to be full of useful information. This work includes information about how trees function on their own as well as in relation to cities, and it even goes into some ethical and philosophical issues regarding urban forests.

Phillips, Leonard. Urban Trees: A Guide for Selection, Maintenance, and Master Planning. Washington, D.C.: McGraw-Hill, 1993. Anyone interested in coming up with a master street tree plan will find this book to contain an abundance of related information. This book contains information on planning tree policy, planting and caring for trees, deciding public relations policies and most every other aspect of managing urban forests. This book also contains an appendix which contains vital statistics about most common types of trees.

Journals & Reports:
Cooperative Extension Service. Universtity of MA, US Dept. of Agriculture and County Extension Services Cooperating. Trees and Forests in an Urbanizing Environment. University of MA Amherst, 1970. This report describes the social value of trees in an urban environment and then describes processes for managing these trees. This report would be of interest to those interested in researching the role of or maintenance of urban trees.

Websites:
"American Forests." <http://www.americanforests.org> This site contains propaganda towards environmentalist causes specifically tree planting. A program, "Global ReLeaf," is mentioned extensively. This program offers grants to groups planting trees. Application and grant criteria are listed at this site. There is a climate change calculator which measures the amount of carbon dioxide created by a person or household depending on their specific data .

"Center for Urban Forestry at Morris Arboretum" <http://www.upenn.edu/morris/uf> This is the site for the Center for Urban Forestry at Morris Arboretum. It contains information about initiatives in Pennsylvania very similar to what Worcester is trying to do.

LAW AND ENVIRONMENTAL CONCERNS

Books:
Arendt, Randall. Growing Greener: Putting Conservation into Local Plans and Ordinances. Washington, D.C.: Island Press, 1999. This book is guide to conservationism and the process of making conservation law. The reader of this book should be aware that it has heavily environmentalist leanings, so it may not present both sides to conservation law fully or accurately.

Beatley, Timothy, and Kristy Manning. The Ecology of Place: Planning for Environment, Economy, and Community. Washington, D.C.: Island Press, 1997. This book contains general guidelines for integrating environmental health into urban planning. This work might be especially useful for its vast list of resources at the end of each chapter.

Burgess, Rod, Marisa Carmona and Theo Kolstee, ed. The Challenge of Sustainable Cities: Neoliberalism and Urban Strategies in Developing Countries. New Jersey: Zed Books, 1997. This book would be of interest to city planning boards and those proposing processes to city officials. Part 2 of this book is about Environmental strategies, and may be of especial interest to those interested in the role of the environment in city planning.

Fernandes, Edesio, ed. Environmental Strategies for Sustainable Development in Urban Areas: Lessons from Africa and Latin America. Ashgate Publishing Company: Brooksfield, USA, 1998. This book provides useful environmental information for those interested in ecology and nature. This book gives simple examples of how to develop successful environmental strategies based on examples from Africa and Latin America.

Firestone, David B., Frank C. Reed. Environmental Law for Non-Lawyers. Ann Arbor, Mi.: Ann Arbor Science Publisher, 1983. This book is a simplification of environmental law. Its goal is to allow those who are in non-law professions who have need for contact with environmental laws to understand and deal with it. Firestone and Reed outline in an easily understandable form the hows and whys of environmental law and then apply these to situations. Such as: Pesticides, Air pollution, and Solid Waste.

Honachefsky, William. Ecology Based Municipal Land Use Planning. New York, NY: Lewis Publishers, 2000. This book provides a guide to planning municipal land use based on ecological principals. Those interested in ecology's role in city land use planning will benefit from this book. It has good illustrations to demonstrate its descriptions.

Lerner, Steve. Eco-Pioneers. Cambridge, MA: The MIT Press, 1997. This book is a compilation of case studies describing the work of many pioneers in their fields who choose to sustainably harness the environment while meeting human needs. Such applicable examples include; providing inner-city jobs while cleaning up the urban environment, transforming Chatanooga into and Environmental City, and urban rooftop agriculture.

Websites:
"Worcester, MA - City Governmental Site for the Internet" <http://www.ci.worcester.ma.us> This site is the Worcester City homepage and here one can find links to the Parks, Recreation and Cemetery department.

"Official website of the Commonwealth of Massachusetts" <http://www.state.ma.us> This site contains links to governmental agencies and commonwealth policy listed online.

Journals & Reports:
Nowak, David J. "Atmospheric Carbon Reduction by Urban Trees": Journal of Environmental Management Vol 37 NO 3. March 1993. This article by David Nowak, an employee of the USDA A Forest Service, explores how effective urban trees are at the removal and sequestering of atmospheric carbon in urban environments. The article includes analysis of major metropolitan areas such as Oakland, Ca.. This journal article also demonstrates the positive aspects and limiting factors of utilizing urban trees to reduce atmospheric carbon.

Sampson, R., Gary Moll, and J. Kielbaso. "Urban Forests, Carbon Storage, and Energy Conservation". Washington, D.C.: American Forestry Association, 1991. Those interested in planning or managing urban forests will find this report describes many of the benefits of urban forestry including atmospheric cleaning and energy conservation.

Appendix D: Other Educational Materials

This appendix contains two doorknockers and a pamphlet that we developed for the City of Worcester. The Door Knockers are each included on their own page. The pamphlet was meant to be printed as a two-sided document, and folded in thirds. However, to facilitate being included it in this bound document, it has been shrunk down and had each side printed on a single page, with portrait page alignment rather than landscape. The first page contains the outside of the brochure, the second contains the inside.

Date: _____

Address: _____

Tree Problem: _____

_____

Tree Assessment: _____

_____

_____

Action to be Taken: _____

_____

_____

_____

_____

If this tree needs to be removed due to the problems the forester has found and you are interested in replacing it, please contact the Forestry Division to learn about the Worcester Neighborhood Tree Planting Program.

Worcester Parks, Recreation, and Cemetery Department
Forestry Division
119 Webster Street
Worcester, MA 01603
Phone: 1-508-799-1300
Fax: 1-508-799-1253

WPI Developed by students at Worcester Polytechnic Institute

Address: _____

Tree Species: _____

Congratulations! A new city tree has been planted in front of your property and we hope it can live to provide shade and beauty in your neighborhood for years to come. We are counting on you to read on and find out how you could help us give this tree the best chance at survival.

Watering Instructions: A young tree needs 5-10 gallons of water every week while it is getting established. From April until October your new tree will need to be watered. Most tree health issues can be traced back to lack of watering so please do this favor for your neighborhood and keep your tree healthy and strong.

Worcester Parks, Recreation, and Cemetery Department
Forestry Division
119 Webster Street
Worcester, MA 01603
Phone: 1-508-799-1300
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WPI Developed by students at Worcester Polytechnic Institute

Reasons to plant trees locally for a global impact...

Our earth can support life because of its hospitable temperatures. The planet keeps temperatures comfortable by keeping some of the radiative heat of the sun like a greenhouse and releasing the rest. The gases in the atmosphere of the earth are responsible for controlling the heat absorbed and released.

Many organizations formed to watch over the environment have found trends that indicate that the rising level of carbon dioxide (what trees take in and release as oxygen) in the earth's atmosphere is at least partially responsible for global warming. Global warming causes the water cycle to speed up. This means extreme weather in the form of droughts and floods. Global warming is also responsible for the rising sea level and shrinking glaciers.

Planting new trees remains one of the cheapest, most effective means of drawing excess carbon dioxide from the atmosphere. An average tree uses a third of a ton of carbon dioxide in its life and an average family produces thirty tons of carbon dioxide in a year so one tree in your neighborhood is a start in the right direction...

Water a tree today! *To guarantee healthy trees in your area give them a bucket or two full of water slowly drained onto the ground around their trunk once every seven to ten days. Thorough soakings are better than light sprinklings, which only draw the roots up to the surface where they lift sidewalks and trip pedestrians.*

City of Worcester—
Worcester Parks, Recreation, and Cemetery Department,
Forestry Division

Administration:
50 Skyline Drive
Worcester, MA 01605

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City of Worcester—
Worcester Parks, Recreation, and Cemetery Department,
Forestry Division

WORCESTER'S PLAN TO BEAUTIFY YOUR NEIGHBORHOOD

Since the 1870s Worcester's trees have depended upon a strong public-private partnership but in the 1980s—over one hundred years later—that partnership has broken down. Now, it has become apparent that the city cannot reforest itself alone and the city is unwilling to lose its urban forest, so it has asked the citizens of Worcester to come back into the process of tree planting and care.

Find out how to join us inside...

WPI Developed by students at Worcester Polytechnic Institute

What makes a street beautiful and a neighborhood welcoming?

What can provide stress relief and raise property values? What has the ability shade a city, bring down summer temperatures as well as block wind, and make winter heating bills less? What keeps storm drains from overflowing and your front yard from washing away? If your answer for any one of these questions was a tree, you are right. Trees are a vital part to any healthy city. They have for centuries battled the wind and sun to make this world more hospitable to live on. Cities must have trees as their allies as we march towards larger urban developments and more extreme and changing climates.

Not only can trees protect city residents from harsh winds and the hot sun but also undue noise, solar glare, and air pollution. With all of these benefits trees belong on our streets and should be cared for to maintain their health and usefulness. For these reasons, many cities have established Urban Forestry Departments to maintain a beautiful and healthy urban forest. This dedicated department is composed of foresters and municipal arborists who are responsible for the health of all public shade trees. Here in Worcester, the Department of Parks, Recreation, and Cemetery is responsible for these tasks. They are responsible in Worcester for the trimming of live trees, removal of dead trees and stumps, inspection of public trees, and the clean-up of all storm damaged trees during the year in all parks, public streets, and Hope Cemetery.

The only way to ensure a healthy urban forest is if we all work together. With that in mind,

The Public-Private Partnership

the forestry department has a few options for citizens who want to help our urban forest:

A single tree donation. The city will send you the appropriate forms so you can donate a tree with a plaque as a memorial either in a park or as part of a street tree planting already planned.

A neighborhood street tree planting. Your neighborhood association, service club, or gardening society can get together and sponsor twenty or more trees in a neighborhood and care for them for three years.

Planting in your own backyard. The city will send you the information so you have the knowledge to plant and keep a healthy tree on your own property with no commitment to the city.

These three options can bring Worcester's declining urban forest back to the healthy and vital resource that it should be. With your help Worcester will be more livable and beautiful for the next thirty to fifty years—because trees are a lasting investment.

To help the WPRC Department bring this more beautiful Worcester to you, all you need to do is contribute some time and effort and sponsor a tree. Seeing the result of diligent watering and responsible care in the form of healthy street trees can be very rewarding especially when they fill your neighborhood making it more beautiful, private, and peaceful.

The first step for each of these processes is to call the city and get the information available regarding these programs. The Worcester Parks, Recreation, and Cemetery Department is dedicated to bringing a more beautiful and Worcester back into being but they need the community's help and support. Call today to find out about how your neighborhood can become more beautiful and environmentally sustainable before your eyes.

Appendix E: Interview Transcripts

Interviews with model cities

Chicago, IL:

Interview with John Lough.
Wednesday November 29, 2000.

Jes: How much of a role does community involvement play in your urban forestry program?

John: It's hard to cut it down to a percentage. It depends on what you consider community involvement. We do work with an environmental group the Open Lands Project, Tree Keepers. And they work in cooperation with us and our park district doing tree trimming and tree care.

Jes: Do you feel that this group has made a difference, or any of the other community groups that you've worked with?

John: Oh, definitely. They've helped, not only in the physical work, pruning small trees, but they also work in spreading the word so to speak, letting other people know, training them about trees, tree care.

Jes: Does your program have a system set up to handle community members who are interested in planting or donating trees.

John: I don't think we have anything set up in terms of donating. Our department specifically doesn't. We do have in the city of Chicago, there is a green clubs program. There's a department of environments, and they do a number of community projects where they go into areas and get community assistance. I think they let the community help plant at that time also.

Jes: Do the community members actually get to do hands on work?

John: Right, they get to do work.

Jes: What do you feel are the strengths of your urban forestry program?

John: I think the strengths are that we try to diversify in as many areas as possible. We work on integrated pest management, we work on tree care in terms of trimming. We do a lot with new tree planting. Our city plants a huge number of trees. Forestry alone plants around 10,000 trees a year. With the other agencies it probably goes up, more like 17,000 trees a year. And of course, that's because our mayor is a tree fanatic, self proclaimed. He loves trees. But we also work extensively on tree protection. We try to

protect trees from new construction or reconstruction project. We try to cover all bases as much as possible.

Jes: That's great. Have there been any obstacles that you've had overcome in the development of your project?

John: The biggest obstacle generally is budget constraints, at least initially. But like I said, we have a tree loving mayor, so he's allowed our budget to increase, so we can devote more time and training, more tree pruning, protective measures as well as tree planting. It's a continual battle to get interagency cooperation with other city agencies sometimes.

Jes: It appears to be a common problem.

John: But that's the hardest thing. Trying to coordinate different projects like sewer jobs for instance, and the utilities companies and stuff like that, getting them into the right mindframe where they're more tree oriented and working around the trees rather than just assuming they can come in and remove the trees and replace them. We're working more towards preservation.

Jes: Okay, I'm not sure that you know this, but if a community member wanted to plant a tree, are they required to sign a maintenance or a contract agreeing to care for the tree.

John: Actually, no. If a community member wants to plant a tree, we require that they get a permit from us, and on the permit it requires the tree meet certain specificiation in terms of size and species, because we do have an approved species list, but other than that, generally those are the only limitations. Maybe they have insurance in case something happens. In terms of maintenance usually it's not a problem. We feel that is someone wants to plant a tree, they generally will take care of it. Now, to go into a little more detail, on some sites where you have a hotel or a commercial business, and they want to put out things like tree planters, for instance, or flower boxes, then they do have to enter into an agreement because that's something that once it's been place, if it's not cared for it sort of becomes a liability. But generally for tree planting, no we don't require that, although it's not a bad idea.

Jes: What percentage of your program is just response to inquiries and what percentage is community outreach programs.

John: It's hard to say. We are constantly responding to inquiries, because we get questions about everything. I don't know how we would break it down. Every aspect of what we do comes into question. People want to know about the gypsy moth or the Asian Longhorn beetle or about their new tree in front of their house, or when can they get their tree trimmed. I would say, at least from a forester's prospective, more on the administrative side, probably 20, 25 percent is just responding to inquiries, but that's hard to quantify.

Jes: My last question for you is does your program utilize any sort of printed educational materials?

John: We do. We try to get as much of that out as we can. At the same time, we try to make sure we're not printing something that's going to be out of date in a relatively short time, but we do have a tree planting and tree care guide for newly planted trees. I'm not sure if we have any printed right now. We also have it on the web site. The department of environment has it. We've done some printed materials on the asian beetle and we're working on something with gypsy moths right now.

Jes: If you have any of these materials on hand, would you be willing to send us a copy of them?

John: Sure.

Jes: That would be very helpful.

Newton, MA:

New York, NY:
Interview with Doug Stills.
Wednesday, November 29, 2000.

Jes: Can I ask what your title is?

Doug: Assistant Deputy Director of Street Tree Planting.

Jes: I think I have the right person then. I just need to write that down, I'm sorry. To begin I'd like to ask, "How much of a role does community involvement play in your urban forestry program?"

Doug: Well, all of our requests for street tree planting are request driven, meaning we answer requests. People call in to us or write to us to have trees planted. We don't just go out and decide where trees should go. We'd like to know where we plant the trees that they're wanted and that there's somebody there to take care of them. So, it's a pretty large role actually. We're just really responding to their requests for trees, private citizens or neighborhood groups.

Jes: Okay, great. How does the program handle community members who call up and are interested in the planting or donating?

Doug: Our process is soft of unique. New York City, each burrow is divided into community boards which is like a political entity with boundaries. Basically,

Jes: Yeah, I saw that on the website.

Doug: For example, Manhattan has 12 community boards. And they have an office, and they facilitate the tree requests. Occasionally we do take some requests directly, but usually they go through the community board. The community board issues them a tree request form. We prefer that they be the property owner and not just a tentant or a store owner or somebody who lives down the street, because it directly impacts the person who owns the building and has to take care of their sidewalk and pay fines, et cetera. So we get a signature from the property owner and they send it back to the community board, and the community board sends it to us.

Jes: Okay.

Doug: That's the general process to request a free city tree.

Jes: Okay, so the trees are free?

Doug: Yes they are.

Jes: Oh, that's great. Does the city require community members who request the trees to sign maintenance agreements or contracts ensuring that they'll care for the tree?

Doug: No we don't.

Jes: Okay.

Doug: It's just, New York City, We plant over 15,000 trees per year, we'd never be able to.

Jes: Keep up with them?

Doug: realistically monitor that or just. I suppose we could ask them to pledge to do that. I think that's probably a good idea, but we don't.

Jes: Okay, what do you feel are the greatest strengths of your program?

Doug: Greatest Stength of our program? That's a good question. I think that we are. It's probably our staff at this point. We're trying to recruit people who bring in new ideas about planting, the latest techniques or innovations regarding survival of trees and tree plantings. And for the past couple of years, we've revised a specification , just to take in the latest knowledge coming out of universities. So I think right now our strength is our willingness to reevaluate what's been successful and what hasn't and come up with new techniques.

Jes: Are there any obstacles that you've overcome in the development in the program?

Doug: Many obstacles.

Jes: Anything you'd like to talk about?

Doug: One is the sheer size of what we have to do. We have a staff of about 9 people now who supervise the planting, inspect all the sites, they put the contracts together, supervise them. But spread out through 15,000 trees a year, that's a lot to handle. We're really stretched to the limit in what we're able to do. Probably one of the biggest things is staffing.

Jes: Yeah, it seems to be a problem everywhere. Do the programs go out and do community involvement, stuff like you go out into the community? Outreach programs?

Doug: No, we haven't before. Just lack of time. We're interested in doing that. We just hired somebody, I think he started maybe the end of the summer, or mid summer. As a community stewardship person, I forget what his exact title is. What he's doing is he's developing volunteers to. He's developing a program called stewards for young trees. Newly planted trees, or young trees, are the ones that require the most care, it's important to give them the opportunities to grown into mature trees. There are also normal citizens who can receive a brief training, they can easily take care of young trees.

Jes: Yeah.

Doug: He's working on that. He's reaching out to various community groups throughout the city and setting up a training program both in a classroom and then also on site. We haven't done it yet, but we're going to have a core of Urban Forestry professionals who will go to a lock or somebody's street where there's some new trees and do a quick demonstration of how to take care of the tree.

Jes: That's a good idea.

Doug: It's just getting off the ground.

Jes: That's great. My last question for you is do your programs utilize any sorts of printed educational material?

Doug: Well, when we plant a tree, we leave what we call a door hanger, which has basic tree care instruction, the name of the tree, our agencies name, so they know who planted the tree. So that's one thing that we do. Let me think. We don't really have too much. We have a list of trees that we plant. We were developing a brochure, I think we do have a tree care brochure that we send out. We were developing a brochure about tree gaurds which are perimeter iron fences that go around the edge of the pit. One of the big problems we have in New York City is cars

Jes: Hitting the trees?

Doug: hitting trees, and compacting the soil, people walking on it, dogs, et cetera. So the tree gaurds are really helpful, and we wanted to put out an educational brochure about that and we ran into conflict with the department of transportation. They don't really like the tree gaurds because it blocks the sidewalk.

Jes: Oh.

Doug: So, it's sort of an agency dispute about what we can do, so we didn't actually put those out yet. But in New York, we also have a couple community groups. One is actually a nonprofit tree care organization. They're called Trees New York. They offer classes on tree care, tree pruning, basic tree biology, twice a year in every borough. And they have a whole manual on how to take care of trees. It costs 80 dollars now I think, and they've graduated I think somewhere around 6,000 people in the last 15 years or so. 20 years maybe. And they get certified by the Parks Department as well as Trees New York to care for city trees, trees in the city right of way, and to do some basic level pruning.

Jes: That's great, it's a really good idea too.

Doug: So there's that, and there's also New York Relief which is a group sponsored by the state DEC to offer educational programs. They put on a workshop once a year. So we have other, private, groups stepping in in that role. Of course, we should probably do more.

Jes: Okay. Any of the materials that you might have on hand, would you be willing to send them?

Doug: Sure.

Toledo, OH:
Interview with Pat O'Brien.
3:00 p.m. 11/28/2000.

Pat: ...several natural resource positions. There's a director of natural resources. There is, each department has a commissioner,

Jes: uh huh

Pat: Like there would be a commissioner of recreation. There's a commissioner of parks are forestry. I'm under that.

Jes: Okay.

Pat: Then there's a forestry division section and a parks section.

Jes: All right.

Pat: Okay, so that's kind of a little rough diagram of ...

Jes: the hierarchy

Pat: ... where we're at.

Jes: Okay, great, that helps a real lot. I would like to interview you about your involvement, community involvement, in your urban forestry program, specifically street trees, because that is what our project is dealing with. Okay, can I ask how much of a role do you feel that community involvement plays in your urban forestry program?

Pat: Well, we're. Since we have a department of forestry itself, we tend, while not discouraging community involvement, as far as the actual hands on maintenance and planning of the material itself, that is something that's handled in house.

Jes: Yeah, okay.

Pat: It's a union shop. The thought is try to keep the professionalism of the department by doing that. It's fine to encourage volunteer tree programs, but as long as you keep in mind that the people that are planting them may not necessarily have the expertise of the people that are trained in forestry would.

Jes: Okay, and keeping that in mind, how do your program handle community members that are interested in planting or donating trees to your city?

Pat: Well we have an urban forestry commission which is one avenue that the community can get involved in. Now that panel is appointed by the mayor, but it certainly invites people from the community to go ahead and get involved in projects that would relate to tree planting in specific neighborhoods or possibly getting involved with information or bulletin boards that are circulated, in a little library, things like that. The urban forestry commission is basically a support group that assists us in getting the word out that tree planting is good for a community. Certainly another way that communities get involved in forestry, although not necessarily supportive are blockwatch groups.

Jes: Okay

Pat: Very often we hear about community, we get community input from blockwatch groups. They meet, and maybe they're concerns are related to lighting and safety, so we help them out with trimming and that.

Jes: Okay.

Pat: There also is an avenue for citizens to go ahead and call into our office to request that we do something about specific trees, specifically their trees, or trees that are in a park or trees that are in a cemetery.

Jes: Okay. What do you feel are the specific strengths of your tree program?

Pat: The strengths?

Jes: Yup, the strengths of you program.

Pat: I think you can notice it in communities that have trees versus not having trees. I think it's the textures, the lines of the city themselves as you drive through it are a lot more fine in a program or a city or community that has trees. Things seems to be a little bit softer than an area where there are no trees at all and just a lot of industrial development.

Jes: yeah

Pat: Certainly when you do have trees in a community, it's important to maintain them.

Jes: Yup, definitely.

Pat: If you have a department that is, where the exclusive role of that department is to plant and maintain trees, then there is no question if something goes wrong, lets say you have a storm that will sweep through an area, whether it be an icestorem, windstorm, whatever, and you have a material that is down.

Jes: uh huh

Pat: our particular department provides 24 hour emergency protection to citizens.

Jes: Oh, that's great.

Pat: So if you have material that's laying down in the road, the supervisor is called, the crew is dispatched, the material's gotten out of the road.

Jes: Oh, okay.

Pat: So certainly that's a benefit.

Jes: Definitely.

Pat: I think also since you have professional people that are employed in the forestry department that have training in forestry, you can work towards things such as diverity of the street tree population.

Jes: Yeah, that's very important.

Pat: Ideally you're looking at 10 to 15 percent of any one given species. I don't whether you ever really get that goal, I know we're not there in this community at all, but certainly I think if you've got people that are working towards that, it's better than just arbitrarily selecting trees for planting that may or may not get you that diversity goal you're looking for.

Jes: Yeah.

Pat: and then, I also think that there are certain site constraints too. Are you planting species that are not going to interfere with infrastructure down the road? Say are you planting large trees underneath utility lines? You don't want to do that; you want to match the tree to the site that you're planting it. Are you going to have problems with displaced sidewalks or displaced aprons.

Jes: Yeah.

Pat: So I guess the classic example there would be to plant, if you have a four foot tree lawn, you want to put something in there like a service barrier that is not going to displace the sidewalk or stands, or runs less of a risk of displacing the sidewalk than an say putting in an oak which at maturity could be 36 inches or so in diameter, and you've got the gape in the sidewalk, and the tree's also in the wires too. I think with a professional staff you can look at those types of issues.

Jes: Yeah, definitely. What percentage of your program is just response to inquiries, and what percentage is community outreach programs.

Pat: Most of ours is a response. I would say 90 to 95 percent of our program is response. But there is a department that isn't. Our nature education department, which is not really a forestry program, it's under recreation. But that's very community based in terms of educating kids with not only trees, that would exist in the parks around the street, but also the animals that would live in them. That directly educates the public. That's 100 percent what they do.

Jes: Ok. Have there been any obstacles that you've overcome in the development of your program?

Pat: One of the biggest obstacles that was overcome in the late 70's, early 80's was the establishment of a front foot assessment for forestry. Now funding for municipalities generally comes two ways. It either comes through an income tax which is levied on anybody who works within the city, and a property tax which comes from a front foot assessment. Generally the property taxes are more stable. And since that's assessed every year, you get a constant amount. It comes in no matter what. It tends to make your department more permanent. In the case of a payroll tax system, the police and fire generally come out of that and they have the priority. In any community, the two top

things are police and fire protection, and if you're also, if your funding basically comes out of that one piece of pie, if for some reason the payroll taxes are lower than normal, guess what gets cut.

Jes: Yeah definitely.

Pat: I guess from that standpoint, that would be one of the major obstacles.

Jes: Okay.

Pat: And then, once you have the assessment, it sometimes becomes necessary to increase that in order to put on additional crews or ...

Jes: Yeah.

Pat: So that would be something that your urban forestry commission or community groups could be an advocate of.

Jes: Yeah, we're definitely dealing with that right now. Have any of the parts of your program not gotten the desired results? Did they not reap what it was used for?

Pat: Not achieved the desired, what do you mean by that?

Jes: Did you have any goals that your program didn't quite meet, anywhere along the line? Any trouble meeting what the program was designed for?

Pat: I would say that we don't always. People expect more from the program than what the program actually is. Like right now, there's 21 people employed in forestry, and there are 99,000 street trees.

Jes: Wow.

Pat: This is a community of about 325,000 people. With that volume of work out there, and that level of staffing, you can't satisfy everybody's request. In other words, somebody may go ahead and request that their tree be trimmed, and we may or may not get to it in a quick period of time. Very often, they have to wait. That could be up to 2, 3, maybe even 4 years depending upon the level of activity in that particular area. If we have removals that are on the street, which are our top priority, then maybe we will get trims that are associated with that.

Jes: Okay.

Pat: In general there is a waiting period that occurs, and I suppose that would be viewed as, I don't know a failure, but certainly a disappointment of people that would be beneficiaries of the program.

Jes: I was just asking because we need to know for the development of our program. We just want to make sure that we tweak out all these issues before we implement this.

Pat: Smaller cities have a better chance of satisfying people's needs. I think the bigger the city gets, the more difficult it gets to really deliver services.

Jes: My last question for you is does your program utilize any printed educational material.

Pat: We made a door knocker a few years ago. Again, through the urban forestry commission, which was intended to educated people on how they would go ahead and take care of the tree that was just put in. Tell them a little bit about the type of tree that was put in and then how to take care of it. There's that, there are handouts in the ISA which are available, which sometimes we make available for people that get permits for planting trees. We're thinking about purchasing some to put on the bulletin board display that the commission has that goes around to the different libraries. I've written some articles in some of the journals and I know Denny who's in charge of the nature education program, each year publishes a teacher's resource packet. And it's on a different subject. One time they did it on trees. Another time they do it on urban wild life. Another time they do it on just regular wild flowers. It's on a different subject each year, and that is made available to the public.

Jes: Would it be possible to get a copy of these materials, or any of the materials that you mentioned?

Pat: Well it's probably possible to get a copy of all of them, it just depends on what you want.

Jes: Well would you like to know a little bit more about our project.

Pat: That would be fine. If you want copies of all of them I can probably round up most of it.

Jes: That would be great. We're trying to recommend a process for handling community members to our forestry department and we're trying to create educational materials for distribution and just looking at different things that people in other cities have done.

Pat: Some of the nicest materials you can get come from the ISA. Their website probably would be a good thing to check out.

Jes: Okay, those are all the questions that I had.

Pat: Let me give you this website. It's called ISA dash arbor dot com. And if you go in there, you can look at their catalog of material and they produce these little pamphlets, and they're on selecting a contractor, or mature tree care or tree planting, and there must be probably 24 different pamphlets that are available, and you can purchase these, and

then if you have a rubber stamp, you can rubber stamp your community's name on the back of these.

Jes: Oh, that's a great idea.

Pat: I think there's something fairly important to not reinventing the wheel. If something's already written on it, you're better off getting a copy of that, and putting your letter head on it and sending it out rather than going ahead and expending the time to write all new stuff on material that's currently available, the rest of it I could probably get copies of for you.

Jes: I appreciate that very much. I want to thank you very much for your time. These questions will be very helpful for evaluating what we're doing.

Interview with Brian Breveleri:

City of Worcester Urban Forester
Conducted on 12/14/2000 by Erin Sullivan.

Erin: We want some insight as to what the city wants, because we have the broad idea that we need a handbook, but the details of what we are supposed to be telling people are completely up in the air. We can read the books and learn all of that stuff, but we don't know what the city wants.

Brian: Okay. What we're looking for, I can give you a short synopsis, is to be able to, like Mike explained. Let's take MAPLE for example. They call me up on the phone and they say "Brian we got a grant for 5,000 or 10,000 dollars. We want to plant trees." What we then want to do is have guidelines that are set in place, a book set in place, with all the ordinances, with all the processes of planting trees, how to go about getting the trees planted. Basically it would be a soup to nuts type of a book. Like a direction type of thing. I would work along side these people, kind of overseeing, it would be a cooperative effort. Because, as Mike explained, the money issue comes into play, as far as grant money. It's not city money, it comes out of a trust, what's called a Wheeler trust. So, there's a lot of logistical stuff. It would be a cooperative effort between the Forestry or the Parks Department and the local organization. We would work hand in hand. Whether we would physically do the planting or we would put it out to contract all depends on how our staffing is, time of year, what we're doing, so that all has to come into play. Basically it would be a soup to nuts book. How to, how to maintain the trees after they're in the ground, and at the end of all of it, to have them be able to go out and look at their tree, and be in question about something and then be able to call me and come out and take a look at it. We just don't want to put the tree in the ground and forget about it, and that'll be the end of it. We want to kind of keep it, we want to have a cycle.

So it's just always being, we want to have monitor process after it's in the ground. So that's kind of it right there.

Erin: See, when we first were looking at it, we we saying five years because it sounded like a good round number, but we were also looking at it and saying "Well, do we really want these people to be calling the city any time anything looks funny. Because we don't want you guys getting 30 calls from day like from people that are saying 'My leaves, they're twitching funny in the wind.'"

Brian: And I'll tell you, you get people like that. You would be surprised. This past summer, because we had a lot of moisture, we had a lot of rain this year, there's a fungus called maple leave tar spot. It's tar. It's a black splotch on maple leaves, and I got bombarded with thousands of phone calls. People were just curious and concerned, and it was nothing to be concerned about, but people get really worked up, and we absolutely want to try to minimize that. But at the same time, if they do notice something that would really stand out. If we pick out the stuff that would really affect or stand out, that's what we want to have them. You know, like the top of the tree broke out from an ice storm, or branches got ripped off from somebody walking down the street. The trees, the leaves are wilting. I could go out and look and say chances are you need to water it. Those type of things we want out, because otherwise you get these happy good police people. I'll get a hundred phone calls an hour.

Erin: Right. That's not good because then you can't.

Brian: I don't have time. It's a waste of time. And at the same time, I have to be careful because these people I am working for and I have to, it's a PR thing. I don't want to upset anybody because that's what I here for them to call me and I answer questions and do what they want. But at the same time, you can only take so many of those phone calls.

Erin: Now in the case of that, with the spots on the maple leaves, would that be a case where it could have worked out that you guys could have sent out flyers or something to that effect, or would that be crazy?

Brian: Absolutely. It's not a crazy idea. What you could do, or what I've seen in other cities from my past experience is, and what the US Forest Service uses is, I don't want to use an alert because it alarms people, but professionals like me, I get them in the mail, and it will say "pest alert" on the top. And then it will give me all the details about what to look for, what type of damage it does, what it can do to the forest or the specific species of tree. For instance, hemlock [willyadelgit?] is pretty predominant insect we're having problems with right now, not so much yet here in the city, but I got a pest alert from the US Forest Service. And it's just a sheet of paper. It explains what to look for, what to monitor for, and it's very simple, concise and right to the point. So I don't have to read through a thousand pages of not so much BS, but of technical information, because I don't have time for that. I just go out, and when I'm out on my daily tours, I look for these specific things. And I also, and we just finished up over here. If you want, later we can take a ride over, I can show you what we did over here. We did a big planting

over there. I drive through that neighborhood all the time, and I monitor the trees. I've been through there a dozen times since we put the trees in. And I'll go in there next spring, and I'll physically myself take all the stakes out and reprune any branches that need to be pruned. I have one contact person. His name is Jim Conolly. And I say, "Jim, the trees on Blossom street look like they're wilting. Tell the neighbors to get out there and water the trees." I get a phone call back a day later, "Brian, the trees are all watered." I go back out there and they're all looking healthy. So I have one contact person that I work with.

Erin: Is that something that you think is a very good idea?

Brian: This works out well because what happens is, at his meetings, his monthly or yearly meetings with this particular group, they will say "Jim, you know the tree looks like this." Jim will call me. I won't get a phone call from all the neighbors. I'll get one phone call from Jim. He'll give me a list of stuff. I'll write it down, and they I'll go out and look at these particular things. It's very simple. It's one phone call, and it works out really well, and I have a good relationship with him. Like 2 trees died. I didn't know because I hadn't been over there in a while. He said "Brian, I got two calls from 31 Blossom and there was one other street that there was a dead pear tree on". And I went over and looked, and they were dead. I called the nursery and we got them replaced. And it happened just like that. I didn't have to talk to the [Auboughters?] or owners of the trees or the people who were responsible for the trees, I talk to one person and it made it really easy.

Erin: That's great.

Brian: So that one contact person, like MAPLE, [Genine Sherman?], I'm working with her and only her. She meets with her group, she takes all their information, and we sit down, her and I, and we meet like this, and we talk about what can be done and what can't be done. And like Mike said, there's the reality. There's textbook part of this, and then there's the reality of actually doing this. Some people don't like what I have to say, because I have to tell them the reality, "well we can't do this right now. We're tied up." or "this particular species of tree isn't going to grow here" because of this sidewalk or impervious material or just the layout of the land. "This particular tree grows 40 feet tall with a 60 foot crown on it and we don't want it growing into the houses or into the utility lines." All that is taken into consideration. And I have something for you that I forgot that will simplify all of that for you. I will get it to you.

Erin: What is it?

Brian: What I have is, what I've been working on, and this is going to work good, is kind of a list of species of trees that can be planted in certain areas that work to the climate zone here in this area. Some trees are highly resistant to salt. Some trees can be planted in parks. Some trees can be planted under utility wires. Some trees can be planted against buildings because they're [columnerforms?]. So I've been working on a species list. I will get that to you.

Erin: Great, because we've been trying to figure out

Brian: Don't. It's all set, and I have all this detailed stuff all set you for.

Erin: Alright, then I won't worry about it.

Brian: I also have another piece I've been working on. I know you talked about door hangers, and I have all these little do's and don'ts that you can take in. I'll give that to you. I also have, what I've done is, it's real basic, because I don't have time to really work on a lot of this stuff, is I took 1, 2, 3 and 4. I numbered it. And then I have number 1 would be a [columner form?] type of tree. Then I went down and I made a block, kind of like a checkerboard setup. It would be Norway Maple, and then it would say. On the top you'd have like [columner?] maple, flowers, blah blah blah, and it would be number one put in that box. So it's real easy for people to look at.

Erin: That's great. That's exactly what we were trying to do.

Brian: Alright, I've got most of it all set. And what we can do is, if we plan a meeting in like 2 weeks, I know you guys want to get going on this.

Erin: That's fine.

Brian: So if you want to meet in like 2 more weeks, I can come with all that stuff for you, but it's basically all put together, so don't go and reinvent the wheel. I have a lot of this stuff. I will bring you all kinds of stuff will help you out, and believe me, I know. When I went to UMass. Don't reinvent the wheel. I have everything that you need. And a lot of this stuff, I've been working on, but this is great because now I have help to do this, and so it will work out super.

Erin: If there's anything that you want help on, because I have a pile of like 40 books sitting in my room that I've been looking through.

Brian: And like I said at the meeting, remember, Urban Forestry and Forestry is a science, and everybody, all those books you got were super books, and I have all of those books, they were very top of the line books. We have to remember that when you're working in a city situation, there's a political climate, and then there's myself who's a scientist, and at the same time, you have to walk that thin line of planting trees in the right spot and at the same time make everybody happy. Everybody from that resident is most important, all the way up to the big con-chalant downtown, and that's the reality of Urban Forestry. And at the same time, we want to pull that in and make sure that these trees are given the best help we can give them to go on and grow to maturity. What you're doing is, for example, you have a red oak. You've taken a tree that mother nature has designed and has grown in the wilderness for millions of years and all of a sudden, we've taken this tree and brought it into an urban environment where climate changes change every day, well you know all this, we have soil compaction; we have poor soils;

we have poor moisture; and we're bringing that tree into a city environment. So all of a sudden, you're changing all of its genetic makeup to come here and to live in a city environment, pollution, all of that. We call it urban blight, and we have to give that tree every possible advantage we can, to make its value worth it. Because then there's all that logistical stuff that comes into play. They make property values increase, just like you did in here, this was super, property values increase, and not only property values, but just a feel good attitude from people in the neighborhood, because there's that whole psychology part of it. So that's kind of it in a nutshell.

Erin: That's great that you have something on that tree list because I've been working on that, and it's crazy, because there's nothing really, if you look at it like tree guides, they don't really have anything about urban trees, or what would go in urban environments. But then if you look in urban forestry books, they don't really do any guides on trees, and there's really no crossover, it's just all up in the air.

Brian: I have all kinds of stuff for you for that.

Erin: Great. Then I'm not going to worry about it.

Brian: No, you don't have to worry about it at all.

Erin: Okay. A little while ago, you mentioned the Wheeler trust. What is this? I've heard about it.

Brian: You have totally got me, the person to talk to about that would be Rob or Mike. I have just learned about the Wheeler trust because of Elm Park and MAPLE. I don't know how this, I think it's made up of a core group of people, and it has to do with. I shouldn't say anything because I really don't know, but from what I get, it's made up of people in the community groups, or not groups, but a small group of people that control a trust that was specifically designated, I think, for planting trees and doing park renovations and things like that. Don't quote me on that, but that's my guess. And Mike and Rob will give you all the detail on that, because I just learned about it.

Erin: Great. Because it's been popping up in research for the city, and we're like "what is it?" and "how can we use it?"

Brian: It's a big funding process for, I mean MAPLE got 10,000 dollars out of it, and Jim Conolly, the Elm Park Prep organization, they got 9,000 dollars out of it, so there's quite a bit of money to be gotten from it, and I don't know how to get it or what the details are on it. Definitely Mike and Rob would be the people to talk to.

Erin: Great, because when I talked to Evelyn, she mentioned it and she said it would be a great thing, but she didn't know anything about it. She was like "it's good. I don't know."

Brian: I know I saw John Trexler's name in here, I think he's on the board.

Erin: Really? I know he's in the Urban tree task force on their board.

Brian: Yes, he is on the urban tree task force, and I think, in fact, two of the people that are actually on it are. Jim Connoly's wife I think is on it. I can actually put you, you know what, you should talk to these people.

Erin: Okay, I want to talk to the groups. I've been trying to get contact information and Rob just hasn't gotten back to me on that.

Brian: I will get you that. In fact, if you call the office tomorrow morning, I will find Jim Connoly's number, and he's a super guy. I worked hand-in-hand with him and he'll be able to give you the details from the groups from that group side, so you'll get a different point of view than you would with me, which is good.

Erin: So I'll call tomorrow and get that. You're talking about pulling out the stakes, is that something that you want people doing?

Brian: People doing that, absolutely.

Erin: In light of that we also would like to know what exactly you want them doing with the trees. We know that we want watering.

Brian: Okay, I have that as part of the species list.

Erin: Really? That's great.

Brian: It's very simple stuff. What it is, is basically a feel good thing, and it gives you kind of specific criteria, and you're more than welcome to embellish on it and change it and do what you think, I'm always open to that. I think the first one was watering, and I think I put 15 to 20 gallons per week. And then I put especially during drought and all that other stuff, and then I things like you can plant flowers in the bed, and that's kind of an indicator if the trees in drought, because certain kinds of species, whether it's wildlife or plants are indicators of drought or habitat if something's going wrong, there's indicators species. And one species that is good at indicating drought is either English Ivy or Boston Ivy. You put this in the tree pits, and what happens is when it wilts, it's a good sign that the pit needs water. So it's an easy feel good thing for people, and at the same time you're getting the benefit of a flower or an ivy on a sidewalk or in somebody's front yard. The other thing I put on it, just keep dogs from crapping or urinating in the pits. Mulching, [furlganic?] material, soil moisture control, two inches of moisture. I put all kinds of stuff like that, so I'll give you that list.

Erin: That's great. Okay. Could you give me a basic idea of what would happen when you go to plant the trees, what the steps are, just so we can have that in the information.

Brian: Yes. What we do is, or what I do is, the first step is I have to match the species to the place. So I got out with a list of trees, and I say okay, this tree can go here. That's the

first step, and I take all the environmental factors into account. I can't do it perfectly textbook, but I can do a driveby and so okay this tree will do good here, this tree will do good there. Then the next step is to.

Erin: Is that also in your guide?

Brian: Yeah, you'll get that. The next step would be to call dig safe.

Erin: Yeah we already discovered that.

Brian: Alight, good. What I do is, what digsafe recommends forestry departments do, we take white spray paint, and I will make the tree pits, you want it, I like the tree pits in concrete areas to be 5 feet to 6 feet long by 4 feet wide. You can't do that in every sidewalk, because you have to take into consideration ADA, which is the American Disabilities Act. There has to be 42 inches for a wheelchair to get by. So now you have to go back and say "we can't put this tree here because the root system gets too big. It won't fit here."

Erin: And it will lift the sidewalk.

Brian: Right, so you have to go back to that end of the deal. So the next step would be then to, and inbetween there I would be ordering the trees, so I would call 3 or 4 nurseries, personally go out and [pad?] every tree. Because I got specific requirements that I want each tree. I want them to be single stem, I want them to be freshly dug, well maintained, no scars, no pruning on them, I want them perfect. Like I said, because we want to give the trees every possible advantage, and that's one way to do it. That's got to be done. And once that's done, and at the same time I'm working with the particular group. I have to keep them informed, and we're working hand in hand. Then the next thing to do was the trees would get dropped off, the staff will go out and dig the pits. They will remove all the poor soil. No matter where we are, I ensure that all the soil gets removed. I don't care where we are. Then we order lome that meets specific requirements, has certain PH levels. That lome is then backfilled into the pit. Then the trees are brought it, they're put into the ground, they're watered, they're mulched, they're staked, and then we go on to the next one. That's basically the step. And it ends there. That's where it ends. But it can't end there, and that's where we're getting into with the monitoring process and where we are right now with the [book/ball?]. Now, there is a bare root process that I talked to you about when we first met early on, that actually can be done with volunteers. It would take a little effort on my part. It would be an educational process. They come dipped in what's called a hydragel. This hydragel binds to the root and holds the moisture in, because when you get bare root, you literally get a root with no soil on it. The problem with bare root the old style is they would dry out right away and you would lose your tree. Well this doctor [Nina Bassik?] up in Cornell University developed this gel. They dip it in, they bag it, and it's sent on truck, so you can get a whole tractor trailer truck load of tree compared to what you could get B and B. They're like over half the cost. So if you're spending like 200 dollars for a B and B, you

can get a bare root tree for less than 100 dollars, and at the same time, you can get a volunteer to put it in the ground.

Erin: Is that something you're interested in?

Brian: That's absolutely what I want to do, because we can plant more trees, I mean we'll never get away from the B and B. But we can also get more trees in at a lesser cost, also there's a technical end to that. When they go in and dig a B and B tree, they take 90% of the root system away. With the bare root, you're almost getting a 150 percent more root system than you are, because what they use for B and B is big shears, and they shear the roots, so you're not getting anything. When they ball it, when they move it around, all the fine absorbing root hairs are getting broken off, whereas with the bare root, you're getting all root hairs, all fresh root, you put it right in the ground and boom it's over with. And the trees have a higher success rate than B and B's do.

Erin: Oh, we haven't been able to find any of that.

Brian: I have all that statistical information, and when we meet again, I will bring you all that. Fact, what you want to do is, Cornell University, you've got a computer, right? Go to Cornell University, and go under their horticultural and garden sciences, and look up Doctor Nina Bassik, and all that information is going to be there. You can download her books, her reports and everything, and that's the basic. I emailed her, and I explained to her that I would like to do this type of work, and would it be okay to use her material to incorporate, and she said absolutely yes, to go forth with it. Now, if we do, I will email her again, and let her know what is going on because I don't want to cause any problems, as you'll learn, this forestry field is a real small field, and once this gets out, it's going to just explode, people are just going to go nuts over this, and it's going to be a positive thing. I just don't want to step on any toes on the way. And I've been in contact with her, and I will let her known again.

Erin: So is this going to be one of the first applications of this?

Brian: Of this particular, I've worked with this in other cities. I did this with Ed Casey in Springfield. In fact, you should call Ed Casey, he's a great guy. Tell him I gave you his name and number, and tell him you're interested in the bare root planting we did with the hydragel, oh, I have 2 videos for you too. Tell him you're interested in the hydragel planting, how it worked, what he thought about it, how was his success rate on it. I did it like 2 or 3 years ago, and he knows me very well, and call him. City of Springfield, Parks and Recreation Department and just ask for Ed Casey and he'll give you a ton of information. And I'll have 2 videos next time I meet with you. They're like happy-go-lucky videos about bare root planting and there's hydragel. And I'll bring that to you next time we meet. Anything you need call me, because I have a lot of resources, a lot of information, and I can help you out with anything like that. Don't kill yourself. Just call me at the office.

Erin: Alright, great. So you think that the best way to organize a group would have one contact person?

Brian: Yes.

Erin: Now how do you feel about the whole whether it's 1 planter or 5 planters or 40 planters? How do you feel about that? We tried to get into that at the meeting.

Brian: You mean how many plants we actually put into the ground?

Erin: If you have an individual that wants to plant a tree, do you feel that they should contact you directly, or they should latch onto another organization and then.

Brian: Yes, I'll tell you what it is. It's more cost effective, if you do anything more in one sum, and for me to go out and look at and put one tree in the ground, and get a piece of equipment out there, for me, I don't want to sound like we shouldn't do it, but it's not really worth it. And it doesn't really benefit that street or neighborhood. It's such a small, small percentage in the whole scheme of things, it doesn't really make a difference. What I like to see is anywhere from 15 to 20 to 25 to 30 trees out, we'll take a right over here to Elm Park Prep. And that was 30, thirty something trees we put over there. It was a week. Now for me to go over there and put one or two trees in, it's just not worth it. MAPLE is, we put 5 in this fall, it's 20 trees. That's worth it, because you're actually reforesting a whole neighborhood. And I'll tell you, if these groups are going to go for money, they're apt to get more money for more trees than they are. I mean, if you were on a trust or a board, and somebody came to you "I want to plant 5 trees" and somebody came to you with a plan, they want to plant 30, you obviously want to get the benefit of the 30 trees rather than the 5. That's my feeling on it, and I'm sure it's pretty much everyone's feeling on it. I mean, I don't want to speak for everybody, but I think more is always better.

Erin: Okay, that makes sense, whereas at the meeting, I was getting the impression that they were saying it was organizationally more of a pain if it was an individual, whereas I didn't understand that because they saying that even if there were 5 trees, you'd be dealing with 1 individual, so it was getting confused for me, so that makes more sense.

Brian: Right, if you have a group such as MAPLE, you have one contact person, she deals with me, and if she, for example she wants 5 trees, we would do a little salesmanship and say can you get somebody else in your neighborhood or another group or a local organization in the area to pick up another 5 trees, so now we're up to 10, and then we try to do a little hustle and bustle, and you pick up another 5, so you're up to 15 all of a sudden, so it's a little bit better. What we do with single trees is they get planted in the parks, as Bob explained, kind of as memorial trees, because it's not worth it to go and open the sidewalk for one memorial tree. These people donate 250 dollars. It's just not worth it.

Erin: So you think one contact person, and then everybody signs their little contract saying that they're going to take care of [some] tree.

Brian: Right. It would be in front of their house, and you'd have a list of or a criteria of how to maintain and take care of the tree, and they would sign their little contract agreement, or their little agreement, and that would be the end of it.

Erin: Okay, that makes sense to me. Now when we've been looking at the urban planting, they've said that there's other options to just planting in the little opening inbetween the sidewalk and the street. Do we plant in yards here?

Brian: Let me give you my view on that. I will give you the forester's view and then I will give you the reality view and the logistical view. The forester's view is yes. Setback plantins are absolutely 100 percent economical, beneficial. They work, and they work in other cities. Now will they work in this city? [switch side of tape] Who's going to be responsible for that tree in 5 years? If a limb splits off of it, it's in private property, it damages the house, hits a car, who's liable for it? That comes into play. This is my other hat now. I'm all for setback plantings. Mike is a little nervous about it. I think Larry's a little nervous about it. I think it can work, but like I said, the logistical part of it, there's who's responsible for it. I know John Trexler's a big fan of it. Who's going to maintain that tree? Are these people going to calling us up in 10 years to trim that tree, if it has insect infestation, who has the responsibility of spraying or maintaining that? All this comes into play. I think we have to be careful on that issue right now. If it was me, I'd say "let's do it." That, if you want to get into more detail, talk to Mike and Rob on that. Mike will give you, I think he wants to do it, but there's just that "who's who's tree" and can we get in trouble as a city entity, and the insurance part of it. That's a big question, I'm all for it though; it works.

Erin: I don't want to put it in the handbook as an option if the city doesn't want to do that.

Brian: Let's say a developer comes in. There is a different feel for it. If a developer calls me up and says, and this will be in an ordinance that I'm working on, if a developer calls up and says "we're putting in a development", I want to be able to say "I want 2 trees in every yard" as a setback planting. Then I think we could do it, and I think it would work. And I think if it's made up as a street tree ordinance, in other words as law, that contractor would have to do that. Again, the tree would live to maturity because it's in the perfect environment. And who cares? The resident isn't going to know that really it's a city tree technically when they buy that house, but it really is in a sense. I mean, people buy houses with big red oaks and big trees in front of them, and they were planted 50, 60, 100 years ago in some of these old neighborhoods, and they were planted by the City of Worcester. A lot of our city trees came right off of Elm Park. Over 100 years ago, there was an original tree nursery there. And a lot of the street trees you see today are in people's yards. I think that can work. I think that part of it should be part of that. You put an addendum or something, the contractors chapter or something. For every so many feet, they have to plant 2 trees.

Erin: We would hope that any ordinances that get passed and used will be able to be put into the appendix.

Brian: This has to work. This can't be a one. When you develop a management plan, especially when it comes to forestry, you can't just say "okay, this parking lot has to have trees in it, that the law." That's not managing an urban forest. That's an outcry, it's like a Band-Aid type of a fix. "Okay, let's plant trees end of deal." The ordinances in that book, and this whole thing has to be part of the whole cycle I was telling you about in order for this to work. And I'm sure in all the readings you read, [nowhere?] urban forestry he talks about that. It has to be a full cycle. The city of Milwaukee it works. They're doing it. I don't know if you contacted them.

Erin: Yeah, we did.

Brian: They have a wicked forestry program. They have a 122 people working for them; they have like 22 crew; 22 foremen; they have 12 or 13 bucket trucks to do street tree trimming; they plant a phenomenal amount of trees every year. But they encorporate, they're a model city. Their urban forester speaks all over the United States. They're a model city for a management plan because they take their management plan, and it's integrated into the whole system. It's not just "okay, let's plant a tree for this group and keep them happy and go over here", it's developed as part of a system. That's the thing that I have to stress to Mike and everybody. We have to remember that it's a management plan. It's kind of like a master plan. This is one tool in a toolbox to get this done.

Erin: How many groups have you dealt with?

Brian: Two. I've only been here a year and a half. So I'm plugging away at what I can do, and like I said, we're contemplating some kind of interdepartment changes. Whether they're going to happen I don't know, we're supposed to get a new office in the cemetery, so things have been kind of weird lately as far as how things are going to work out, because like I said, I have numerous other tasks that I have to do. But I want this to be another tool of mine to get going. So, I only have experience with 2 groups right now.

Erin: And that's MAPLE and Elm Park Prep?

Brian: I think once this gets going, it's really going to take off.

Erin: When we talked to Eveyln, she was really excited about the whole thing. She tried to get me in contact with Sheila Reid, from Hammond Heights. But she's unlisted, and Eveyln has no idea how to get in contact with her.

Brian: I used to have her number, but I don't have it anymore, I think Mike or Rob would have that. Now when you talk to these groups, you have to keep in mind, and I've learned real quick, that these people are happy, there's nothing wrong with them, don't get me wrong, there people are happy feel-good people and their ideas of planting trees and

my ideas are much different. My ideas, and what we're trying to put into policy, is that we put a tree into the ground correctly, it's maintained correctly, and we have something and time invested in this that it's done correctly. There's a saying that you don't, you can have a 300 dollar tree, but if you put it in a 50 dollar pit, it's not going to work. But you can have a 50 dollar tree, and a have 300 dollar tree pit with all the amenities of fertilizer, good soil, the tree's going to live and survive. And some of these people, they read a few books, and they go nuts. They're all good people and I'm not criticizing them. We have to keep them on a level where they're working in a reality situation. They see a tree, some kind of flowering dogwood, and that's not a good street tree. It'll never live on the street. They want the pink and white flowers, and that's what they want, but there has to be an educational process to at the same time explain to these people "it's not going to live here." We're going to spend a lot of time and money and effort on this, and it's not going to benefit anybody. With them we have to walk that line and keep them happy and at the same time practice the science. Jim Conolly was a very easy person to work with. He came to me, he said "Brian you're the expert" boom boom boom, "do this", and I worked with him and his group, it was a cooperative effort. I think community effort is a really important aspect part in any city situation, because money and funds are short. Some of these people, they took the time to go get money through the Wheeler trust. They would never get 10,000 dollars to plant trees through the city. The city's not going to say "here's 10,000 dollars." So we have to work with them to get this done. And they're really great people, so we've got to keep them there.

Erin: Right. You were talking about citizens being able to plant bare rooted trees. Is this all going to be on the Cornell website?

Brian: Yes, and I have the 2 videos that shows it being, it was done in Ithaca, New York. I forget the forester's name. They'll show you on the video half a dozen people out digging holes, and then they'll show you, versus a bare root tree, what the costs are and time, and they show you the community involvement and how excited they are and all that kind of stuff. And it works. It really, really works.

Erin: I can see that working in Ithaca. Ithaca's a very activist.

Brian: And I'll tell you, their forestry has come around 100 percent. They're using the latest cutting edge techniques in forestry. They just take the initiative to get it done and do it right. It's very successful.

Erin: Now, I really do see how it could be very successful in Ithaca. Do you think that it can translate over to Worcester?

Brian: Yes, because we have right now the community. It's been in the papers. We have groups starting to reach out, and once this hits, people are going to want to plant trees. Because people's attitudes in this city right now are, we have a mature forest that is in major decline right now, and what you have is decline then death. That's the end of it and all you're doing is taking trees down, at a ratio of, let's see. Last year we did 75,000 dollars in contract removal, and we only planted 35 trees.

Erin: Oh wow.

Brian: That's not a very good ratio. And again, that cycle. You want to keep a well diverse forest and a well diverse age group. You want to keep that young, medium to maturity. You want to keep that going all the time.

Erin: How long is the average cycle for the life of a street tree?

Brian: It's like 32 years. An average tree in a concrete tree pit is 7 years. That's why I'm not a big fan of planting in tree pits on city sidewalks. But, sometimes it has to be done.

Erin: Now, like this side street right here, are these tree pits?

Brian: I don't know. I don't think so. Yes they are. And where we're going, when I take you over to Elm Park Prep, they're all concrete tree pits.

Erin: Now, how does that work? I've never heard that they did actual concrete tree pits. I thought what they did was a pit and then they planted.

Brian: Well, what I mean with concrete tree pit is sidewalk. There's like 4 inches of sidewalk there. We go and cut a pit, then we go and dig all the crap out, and we fill it with lome. What happens is that when the roots go to grow laterally, they can't get any moisture.

Erin: Because of the concrete. So even though there isn't actually physical barriers it's no point in growing, because they're nothing there.

Brian: Absolutely. What happens is because you have that little tree pit you have, the roots growing in a circular pit because it wants to stay where the moisture and the nutrients are. So then you run into the problem, what's call girdling root, and and they girdle the root balls, choke the tree, and then the tree dies. So that's why you only have an average of, and that's a fact, of seven years.

Erin: That's awful.

Brian: It's horrible. And that's why it's like why do these people get all hummed up about spending all this kind of money to put in a concrete tree pit when I think, you could do flower barrels, you could hang flags from light poles. I mean, there's so many other options. You take that money in trees and put it on side streets where there's grass pit areas.

Erin: I think there is like a strip of grass.

Brian: That would work. At least it gives the tree a chance. Whereas, sticking it in a concrete hole, it just doesn't work.

Erin: So as long as there's a strip of grass, there's a much better.

Brian: At least it gives the roots a chance to grow somewhere and get the nutrients, get the soil moisture that it needs. It gives it somewhat of a chance.

Erin: Do you actually know whether they live much longer in strips like that?

Brian: Yeah. And the average would be, it's 32 years. I know it's 32 years. That would be an average in a planting strip. It's not like "we're going to put this tree in and it's going to make it 32 years." You could have some many things that could go that would cause that tree to drop or go into decline or just not live up to its full potential. That's where planting different varieties of trees and different species and [cultivars] in certain areas will help get above that certain level.

Erin: Okay, that's great. I think I covered everything I really needed to talk to you about. If you want to show me these trees, that would be great.

Interview with Richard Farrell:

Massachusetts Electric Arborist/Forester
Conducted on 1/9/2001 by Erin Sullivan.

Rick: So what is this you're doing?

Erin: It's meant to be a guide for anyone who has questions for the department because they don't have the time to be fielding all the questions that come into the office so this something that they are hoping will take care of that problem for them so if someone calls and says, ' I have a tree in my front yard and there's birds in it and my car is getting dirty and I want it removed.' They can say, 'Well, we're going to send you this and explain what we do here and when we actually do take down trees what that entails and why we do it. And then you look at it and you tell us what you think. Get back to us if you have any questions but this is how it works.' That way they don't have to sit there and argue with someone 'Well is it healthy?.... Go through all those points, this way everything is clear.

Rick: So what? They go to the national arborist standards assoc. for planting and everything? Is that where some of this information is coming from?

Erin: It's come from all over the place. Brian's been giving us a lot of information so I'm assuming that that is where that is coming from. Some of it has been coming from books, we have an entire resources guide that didn't bring for you because it's just several pages of books and I figured...

Rick: It's nice. So it's going to look something like this?

Erin: Yes, it's going to stay under twenty pages not counting resources such as book listings or organizational guides or the tree selection guide. This is the tree selection guide we have so far. This is from Cornell.

Rick: I think I've seen that. It looks nice, it's good. (pause) One of the things that we have I don't know if you have questions to ask but one of the things that we do, if people ask us about tree replacement or tree planting or we just happen to be discussing it, we've put out a book it's called "Trees and Shrubs in your Community." And what it does is it kinda goes through some of that type of thing about where you plant trees and why you plant them, gives some instructions about how to, and it also gives the zones, the hardiness zones in it and it gives a profile of different trees and an example of what they are. Now what this is is geared to planting trees near the powerlines or under the powerlines—selecting the proper tree for the proper place. And they go through it, you know, with foundation plants and other kinds of trees and plantings and it does the same thing selecting location, new tree planting and you can take that if you want.

Erin: Oh, thanks.

Rick: And that's something, we've had that book oh, as long as I've been around which is twenty-seven years and we've just gone through and re-editioned it.

Erin: That's what they want to do with this. After the initial printing it's just going to be keeping it up to date that way they have a resource.

Rick: So how can I help you with this?

Erin: Well, I have just a few questions. Now, we contacted the city about people who have planted with the city before and that's how we got info on you guys, so what kind of planting have you done with the city?

Rick: Okay. Ummmm. What we normally do—now I don't know what Brian was referring to whether he was referring to working with the city or just some of the plantings we've done—but what we've done with our replacements is on an as need basis. If we need to run a line or if there's a tree that's grown too far into the line and there's just nothing we can do with it, we try to get that tree out. And in some cases we may need to replace that tree, that's when we get a situation like this where we like to choose a low-growing tree and try to replace it. We have not been involved, in my time in Worcester, I've only been here since '93, we haven't been involved with any planting program directly with the city. But we have done replacement tree plantings in Worcester and in other towns on an as need basis. Okay? And usually we work with the property owner to determine the right kind of tree and where to put it.
Some of the things that we use besides that, and I don't know if you've seen this but it's the "STREET TREE FACTSHEET." And it lists all kinds of trees and the trees are list

and then it lists whether it's compatible with utility lines. As you go through it you'll see like some of these, like the Commemoration Sugar Maple obviously you would not be able to plant that under the powerlines so it gives you a guide right off the bat. And even some of the nursery stock they're starting to do this now if you go through Bigelow Nurseries or some of those you'll notice some of the trees they have there will have this sticker on them. So when people go to pick out a tree they can see right away that it is not compatible to plant in a utility zone. But a lot of times if I'm talking to people about trees I'll use this guide to show them a picture of the tree and it will give the stats on it and then it will show you what it will look like and whether or not it could be planted in that zone.

Erin: No, I hadn't seen that one.

Rick: That's a real good resource I don't know if you have the ability, or if the school may have it…

Erin: I know the school doesn't have it because we've looked all through it.

Rick: If you're going to pursue this at all that may be one you want to look up. I can give you the address on where to get it.

Erin: That would be great.

Rick: Okay.

Erin: As an arborist I'm going to have to ask you all these questions. What would you see as care instructions for people who are going to be caring for these trees?

Rick: Anybody, whether it's a town or whether it's private people—keep it watered. Definitely. Plant it properly according to the instructions, there are plenty of intructions that are going to be in that manual and are going to be those books there. Just dig a nice big hole, make sure you plant the tree properly and the back-fill you use is suitable material, guy it for a year or two and above all keep it watered. That's one of the things we've found with trees that we have replaced, people don't water them and we lose them. And you go back a year later and either their in terrible condition or they've died completely and most of the time you can trace it back to plain not being watered. So for the first couple of years it's very critical that it's watered.

Erin: Anything else you can think of?

Rick: Umm Mainly, my concern in an urban environment is that they're placed in such a way that people won't vandalize them. That they're not going to hang out over the sidewalk where you're going to have to excessively trim them, that they're allowed to grow in their natural shape as much as possible. So they should be set off the sidewalk a little bit, off the parking area so they're not growing into the travel zone or the sidewalk zone.

And keeping them watered. That a big thing.
And choosing the right tree. You know, from our focus as a utility we want to see people plant what we call "non cabable" trees which is outlined in some of these books. The low-growing flowering trees that will not grow up in the wires and if they do only a little bit of them will get in and we can keep them shaped fairly well when we come through on our routine trim. But it won't be a situation where we would totally have to disfigure the tree because it's just the wrong tree in the wrong place.

Erin: Now we have a process in here for working with the city that we've been trying to get everyone's opinion on…Whether you have too much experience with working with the city I don't know but…

Rick: Now is this….geared towards individuals who would like to plant a tree on the city land?

Erin: They will not actually be planting the trees. The trees will be planted by the city. But say a neighborhood assoc. wants to get together and plant thirty street trees and they contact the city and they get it all approved, then they can go through with it and put them in the ground and they're responsible for them for the first three years So that's what we've been going for.

Rick: That looks good, again I would answer the same, I would say the same thing you asked me, It's really critical to select the right tree for that area. Considering sidewalks…

Erin: They won't be doing it by themselves.

Rick: Oh no. Definitely, I'm looking at this and it looks like a good procedure. And…(reading)…'select location for planting and get approval from WPRC." That's it right there. If everyone's on the same page with that and everyone's looking at the width the zone of they want to put it in, what's around it: sidewalks, fences, places where kids skateboard…utilities. Those are the type of things you really need to look for when you're selecting location and it looks like you've got that covered here when you select location and then get approval. Yeah that looks good.

Erin: Any other materials might cover … trees that you use or procedures you use.

Rick: All that we have is basically just this and it's a guide that we use and it not something that we have to hand out. (Referring to STREET TREE FACTSHEET)

Erin: Oh, I understand.

Rick: I would urge, I don't know if the city of Worcester has one of these, but I would urge them to have one or anyone who is picking trees because it goes through it all, the hardiness zones, it goes through the size of the tree, the shape of the tree, there are planting instructions in there and then there's whether it's utility friendly or not. This is

one of the greatest publications I've seen in a long time. It really is I can't say enough about it.

Erin: Okay, then can I get the address for it?

Rick: Yes you can:

STREET TREE FACTSHEETS Price: $20.00
PENN STATE
PUBLICATION OFFICE
112 AGRICULTURAL ADMINISTRATION BUILDING
UNIVERSITY PARK, PA 16802

And it's geared towards the northeast too.

We got this maybe two-three years ago and before that we would just have a guide like that (referring to "Trees and Shrubs in your Community") and then we'd go to a nursery and we'd look and see what they had and see what varieties are available. And to a degree you have to do that today too. If you look up in this book Crabapple you may see Prairie Fire Crabapple and that's utility friendly and it's right for this zone but it might not be available. Bigelow's or one of those nurseries just may not have that particular one but there are other ones in here and we actually did—let me show you this. What we wanted to do was make an example of what it would look like if an area was planted—and this is only a sketch I don't have a picture to show you—planted with trees which would be compatible with utility wires. We have a training center up on route twenty in Milbury, and it's for lineman training and everything else. The driveway coming in alongside the building we have planted with ornamental trees. That will not grow into primary utility wires. And so what we did was make a sketch of the planting design and we put them there and we taped on the light posts the different heights of the different wires. So what it is.. it's just kind of an educational walk down that road to see what these trees look like when they're mature and the heights they'll get to and the fact that they can co-exist with utility wires. That's what we did. That's available if anyone from the city would like to see something like that and see what some of these trees look like. We could bring them up there and show it to them as in this is what a street would look like with these trees. They won't get into utility wires.

But that's the only thing about this book that I wanted to point out, that it's in here doesn't mean it's available at the nursery but something compatible to it will be. I guess that's where I was going with that, we haven't come up short yet. We had come up with a plan describing specific crabapples and hawthorns we had wanted and we couldn't get them all but we could get similar trees with the same growth characteristics and everything else so it's workable, definitely workable.

[PAUSE] While writing address

There it is, it's well worth the money.

Erin: Now what, you guys all buy your own trees when you're planting? There's no contributions from the city or residents?

Rick: Umm, for the most part anything we've done up 'til now has been what we've purchased we have done some plantings—see in the city of Worcester there's a certain area where everything is underground as far as utilities go but some of our electrical services are in the backyards of houses and we actually have primary lines that run down the lot lines in the backyards. We have done tree replacements out there when we've had to put a bowline in or a new bow or something like that and we'll say we'll put in three or five trees or something like that and the customer may want more so he may buy an additional tree or two more but normally we just buy on our own--there's no contribution to our fund.

Erin: What nurseries do you use?

Rick: We use, what we do, there's several ways we do it. We have purchase order with Bigelow's nursery and that's our primary supplier. We've also used Shemin nurseries over in Hudson. They're a commercial provider. But we tend to use Bigelow.

Erin: We're also trying to set up a small guide for people interested in planting trees in there own backyard and the best places where they can go out an purchase their trees.

I can't seem to think of anything else to ask you about. Thank you very much.....

Interview with Evelyn Herwitz:

Author of Trees at Risk
Conducted on 11/8/2000 by Erin Sullivan

Erin: I'm quite, I'm quite used to that actually. Our apartment is quite ...

Evelyn: noisy?

Erin: yeah. Um, So when, when did you begin working ...

Evelyn: on the book?

Erin: ... towards ...

Evelyn: Well ...

Erin: Just when did you begin with your interest in the trees in Worcester?

Evelyn: Umm, Back in uh, I'd say ... eleven years ago ... so in 1989, 1990 ... 1989. It was right before the twentieth Anniversary of Earth Day. But my older daughter was 1 at the time; she's now 12. and I used to take for walks in stroller. I started noticing that the trees [??] It's true which was May Street, that's where we were living at the time, were in bad shape. That's what got me interested in being a writer.

Erin: uh huh

Evelyn: So I wanted to do some writing and I ended up doing some volunteer work so um that's getting involved with a project.

Erin: So the book is about the history of the trees in Worcester?

Evelyn: Yeah, it's um, it's a history of the really the cultural political values that have shaped the whole shape of the city and how um Worcester's really a microcosm of what's been happening nationally. And I started, I started researching that when I found out, before I found out that I was pregnant with Emily... Oh did you want me to tell you. She's 8 so it was 9 years ago I started writing. Um. And uh ... you know, what's happening in Worcester is really a microcosm of what's happening nationally in that many cities are neglecting that they [??] maintaining their trees and planting as a result of the coming [deforestry?] in terms of their publicly owned trees.

Erin: uh huh ... When did you, when do you see the apathy coming about?

Evelyn: Hmm. Well, I mean if you look in terms of the planting that's been going on in the city and the history of that, money for planting and effort to replace trees started to dwindle in the seventies

Erin: uh huh

Evelyn: and then when proposition 2 and a half was passed in 1980 and when it was effected in 81 that's when there was, since that time there has been no public funds, uh, for tree planting, it's all, there's no local property tax revenue that have been um used for tree planting since that time and the only trees that have been planted in Worcester have been funded by federal, um no, block grants or private funds. So what's happened is that roughly for every 4 trees removed, only one trees been planted since that time, so there's been around a decline of...

Erin: from [50??] to 20 thousand?

Evelyn: yeah.

Erin: trees ... Is ... are there any programs in the history of Worcester that you think would be successful nowadays?

Evelyn: Hmm... Well... There's always been a public-private partnership really it is been, it is been, it has taken a very active volunteer role um, when in the 1870's when uh, when [Edward Winthall Lincoln?] was the first commissioner of parks here in Worcester. He was a wealthy, landed gentry who was very active in the horticultural society. He'd been a secretary for 36 years, he'd been [that?] for 25 years as uh parks commission chairman and he did it as a volunteer, and uh, and yet the city had the resources to pay for trees but there was also an incentive program. There were tree vouchers, you know so that if you planted a tree then you get a dollar or something like that you know, money in those days, but then people started planting trees and planting trees not really knowing where, it was supposed to plant the trees, they'd plant them too close together, they didn't care to know the damage, so then they had them, um, set up so that they had to be approved by the commissioner before they could the tree voucher. But, it seems to me that there's always been, you know, significant involvement by the community, by civic leaders in promoting the importance of trees and parks in combination with, um, with funding from the city and when we've lost those advocates is when...

Erin: You don't feel that there ...

Evelyn: I don't think that there's a unified voice at this time. what, what came out of the book was when [John Trackstein?] was head of the horticultural society and I um, I keep [??] the factor of the [??] I just backtracked a minute because what happened was that he, his organization was updating a book that was published in 1896 called Trees of Worcester.

Erin: uh huh

Evelyn: So the taxonomoy of the [fittest?] trees of the late 19th century and um, what happened was that the writer was working and he left the project and I got involved in this whole, it expanded into this big thing.

Erin: yeah

Evelyn: Uh, but when I finished the research and we sat down in 1997, we're looking at each other and said "okay, well now we know what the count is so what? What are we gonna about it?" So we decided to form an urban tree task force and get together representatives of all the environmental groups in the city and the department of environmental management had a representative. I had help getting started ...

Erin: uh huh

Evelyn: [half of that was getting a tree staff?] But, as a result of that group's work, the city placed a higher priority on getting [a good forester?] and also Mike O'Brien has come up with this management proposal and, that was really after some pushing by this group to make it a higher priority. In addition to that, there are private citizens who have been very active in the at grass roots level working on tree planting for their neighborhood. It began at [high street, and they've been a good example?] you probably

heard that. and there's some others. Um. So that, there's no one person like [Edward Winthrall Lincoln?] who's out there "trees, trees, trees", nobody, you know. That has to come together. This group, I think, has the potential to do that kind of

Erin: uh huh

Evelyn: stuff, but that book we hope will bring greater awareness. Some of the [fields?] in the book will help [decent folks?] with planting projects, [and just a basic profile of the issue?]

Erin: So, um, how do you feel about Commissioner O'Brien's plan, do you think?

Evelyn: It was a good first step, you know um, but

Erin: Do you see him following through on it?

Evelyn: I certainly hope so, I hear about it, you know in my conversations with them [probably took?] brief. But I did participate in the public hearing about it, when it was first presented to the parks commission committee, city council and you know the message that ... I mean that he felt very strongly and I agree that we can't fund simply tree planting, you have to have money there for maintenance and that was crucial to have to be together. That's really essential.

Erin: He, he also really feels that we need the commitment of the community to continue caring for the trees.

Evelyn: He's right, because they'll, the city just doesn't have the money for enough staff at this point in time to do the kind of really extensive tree maintenance program that the city needs. You know, I think you had asked me on the phone if there were any examples. Did we talk about that? The city Milwaukee has a model ...

Erin: Milwaukee, Newton

Evelyn: Newton, looked at

Erin: We also looked at trying to get information from Chicago

Evelyn: uh huh

Erin: and a few other cities.

Evelyn: New York City

Erin: Yeah, New York, they actually have really great community involvement.

Evelyn: Yeah. Lots of trees in New York.

Erin: A very strong web page

Evelyn: uh huh

Erin: just lots of access for citizens to sponsor trees, like in their own neighborhood.

Evelyn: Right, and in Philadelphia, I think ... So yeah, I think it has to be a combination, but at the same time, the city has to set the highest priority on [process equipment?]. You can't have, it can't be all one way or the other. You can't just have all private groups. But I think that private citizens and the citizens in realizing that there's a priority, you know, that not only do trees modify the climate and clean the air and you know do all those good things about you know soil retention and [??] control and so on, and an aesthetic element, but they also raise property values, and that raises the property tax and so we have revenue that we can collect so, That's the bottom line. If you want to have resources, more resources, for police and fire and school and all of these things, then if you know take care of the trees, then you're going to have a, you know richer of resources.

Erin: so um, how do you think it would be best to encourage community involvement. Do you think a [??] by [??] would be enough or do you think that some [??]?

Evelyn: Well, I think that first of all, it would have to be concern other people in the [kitty castle?], I think that, and I'm going to say that there aren't right now, I'm just saying that's what I think would be necessary part, the [??] would have to recognize any priority that would be [basic?]. But, I think a, un, you know we talked about this, that I think public schools should be evalued .. some kind of tree planting project at public schools, especially at the elementary schools, which are community based. In a way of getting the public aware of the issue. Um, you know, there are lots of models out there like New York and [??]

??: I just [??] to care for the trees and [??]

Evelyn: But, it's like, you know I was involved in helping the [????] before, you know, [??], it's like it was a lot more patched together, and so on and there was a lot of effort that went into creating public awareness that was tremendous and the campaign really took off to make the public aware, they put money into marketing

Erin: uh huh

Evelyn: now I'm living in information age and there has to be a way to break through the clutter and make people aware, and that to me [??] as well an important priority and then you continue, you [??] have recycling and everybody sees those [??] bins and the blue bins out they know what they're supposed to do every Monday and Tuesday.

??: ??

Evelyn: And people do it and people participate and it's a great program. It's easy. It's an easy program. You know, so if there was a way to translate that, to trees, you could have some good... [change?] part of the culture of the city to value its trees, I don't have an magic [??] on how to get there. Ah, but, but you know I think the public schools are probably key.

Erin: Now, I, I'm assuming you're familiar with the, the process, that they call it, that ,that's in place, they don't really have one.

Evelyn: You got to talk to Larry Blaire on anything?

Erin: Um, briefly, I plan on speaking to him further.

Evelyn: He's very important

Erin: Oh, definitely, I, I got that impression from the time that we had.

Evelyn: [???] I took a tour with him around the city once, pointing out trees, [???] this one, and this one, and this one [???]

Erin: Now we can't do anything. Our, our project itself is just to um, create a process and a handbook for um, the public, so unfortunately we can't ...

Evelyn: A process of what? How to care for a tree? How to recognize tree damage and what to do about it?

Erin: Well, what um... The city has given us the task of writing a handbook that they can give out to public and community groups who um are interested in planting trees, caring for trees, um if they have questions about trees that may be street trees, around their property, they expect us to address all these questions, but it's supposed to be a process for community groups to follow if they want to plant trees in the city of Worcester.

Evelyn: Is it, is it a process like for organizing themselves to get the trees in the first place?

Erin: uh huh. It, it's supposed to follow from the moment they become interested until a couple years after they're in the ground.

Evelyn: Okay. So you're asking me what I think that process should be?

Erin: What, yeah, what

Evelyn: [are the components it should include?]. Have you talked to Sheila?

Erin: Yeah, she's on the list of

Evelyn: [She'll tell you if anybody could tell you she'll ?], Um. Well, I think that, I don't think that the right [??]

Erin: uh huh

Evelyn: one key step is [??] to make the neighbors aware of what you know really the bottom line is, that the value of these trees add to their property [??] already there and the other ways the trees [??], point to things like um, you know when trees are in decline in a neighborhood, the neighborhood looks like it's more in decline, less cared for, [??], uh, it can help a strong neighborhood. It's kind of like [??]. [??]?

??:??

Evelyn: It talks about, it's about marketing and how ideas spread from [??] to social networks. It's actually very relevant. You know, what is the perception, how do you change perceptions about it, and, you know, if you go on a street where the trees are dying off, chances are, and I can't say it scientifically, that chances are it's going to be a neighborhood that has litter and grafiti, and has higher crime and whatever. Whereas the trees are symbolic, they have, if they're well tended, it's a better neighborhood, and people look for that when they look to buy houses. They look for neighborhoods with nice trees. You know, so you can make a case for what the value is both um, financially, um and aesthetically and just pragmatically, and environmentally fourthly, for what trees are all about, there's that, and then the very practical issues, what it costs to buy a tree, you know, how, they would need to have some kind of a you know, group together. I mean, I assume that the city would actually be planting the trees for them, or do they have to hire an arborist to come and do this.

Erin: They would, um, I believe they're offering the services of planting the trees with them, either they can help with the actual planting or they'll come in and plant, but they do expect the community to care for the trees once they're there.

Evelyn: Once they're planted. That makes sense. Okay so, there has to be some education about how, how it works and what it costs. I think it's what 200 dollars a tree now, or 300 dollars?

Erin: It's somewhere in there. I've heard $250, I've heard...

Evelyn: There has to be some education about the type of tree, because we have an issue of a monoculture [??] maple trees and which trees, obviously, are good to plant, and uh you know, there are a couple steps to taking care of your tree once its there, and you know there are, there are you know, basic issues of watering [??] ground, and when to take the stakes out and you know maybe having a what they did [??], they have a tree planting ceremony where everybody who [??] puts a tree in, and uh, [??]. Ironically, that day, um, the Parks Department, for whatever reason, has, has ordered to do some pruning on that same street and they got orders they took down the wrong tree [??] cut down. It

was right next to, just about right next to where the new tree was going to be planted. So you have the great irony of this Parks Department, like totally in disarray [??] community groups [??] couldn't ask for better [??]. But then they're just the process of [??] and [??] and watering the plant and I don't know Sheila would be a better person to talk to about this because people lose interest after a while and they don't want to take care of it anymore, it's a lot of work, and how do you keep people motivated?

Erin: uh huh

Evelyn: Um, to be tree stewards that's essentially what you're doing [??] tree stewards. I know that New York City has a pretty solid [??] about that. The guy who was ... I think he was the head of [??] and then he left, [??] forester of New York City [??] tree steward training process [??] classes and stuff, you know you can go [??] tree steward, so that maybe that's another component of it, that um, instead of just leaving it all on the shoulders of the community groups, people might be inclined [??] tree stewards. Like, you have to train a core of people that [??] trees. I think is what it comes down to. Not that they're gonna [??]

Erin: They need someone to be watching.

Evelyn: Like it's the hip thing to do. Go out and care for your tree. I mean there's gotta be a [??] I haven't thought about it in this context before, but it's hard to make it something that's not only social acceptable but [??]

Erin: Right

Evelyn: to take care of a tree

Erin: We've been looking at that point, but it's a difficult point to

Evelyn: yeah

Erin: really address because how, how can you, you know the neighborhood that I'm from, right? I'm

Evelyn: Where is it?

Erin: I'm right on Highland Street.

Evelyn: Ok

Erin: and I work,

Evelyn: Oh, I ... neighborhood ...

Erin: I work right with the Elm Park community school

Evelyn: Oh, ok.

Erin: a lot of the time

Evelyn: Oh, ok.

Erin: so you, you cross Highland and you go from pretty decent middleclass neighborhood to very lower class run down, poor condition of just about any

Evelyn: And what are the trees like in this neighborhood?

Erin: It goes from pretty healthy to pretty unhealthy. Not necessarily the stumps, but even the younger trees that you can tell are just maybe like 2 or 3 inches in diameter are like ratty, they're not healthy.

Evelyn: ??

Erin: uh huh. We've been looking at different ways that we can inform the public or make them interested or do some kind of educational campaign, because even if you just start with the children, that's 30 or 40 years down the line before it becomes a very strong mindset. And you have to start trying to push for that sooner, and we really can't think of a way

Evelyn: .. oh but the kids ...

Erin: To get not just the kids, but get their parents interested and get the community moving even in these areas.

Evelyn: Well, what is the school?. What is the Elm Park school [??]. I think if you start with the kids, you're going to get to the parents. I don't think in that neighborhood, you won't get to the parents without a whole lot of other issues that they're concerned about.

Erin: um

Evelyn: The kids [??] down at the school get involved, maybe the kids can educate the parents. Um. ... [What if each grade??]

Erin: That's interesting. That's really interesting.

Evelyn: And you know, every week, they go to the trees out and water them, and [??] and what are you guys doing, and then they have some education, you know right on the street corner there.

Erin: I know that I saw a program, in I believe it was [??], they forested to some extent, a school yard. They started planting trees in the school yard.

Evelyn: Yeah.

Erin: [??] a project like that.

Evelyn: Yeah.

Erin: [??] Elm park has a large plot of land next to it.

Evelyn: That's what I've seen.

Erin: Right, and, I don't know how much they'd be willing to plant trees in their entire school yard, but you know

Evelyn: maybe around the border.

Erin: it would be interesting to see.

Evelyn: what if they got a grove, you know, of, encourage people to plant trees in the grove, at the school for special things, like if a kid has a birthday, or graduates of each graduating class of the school plant a tree and give it to the school, or something like that. I'd like to see, you know, what the fifth or six graders can do. [??] Let them take some ownership of the idea, how they could get [??] because kids at that age, fourth, fifth, sixth grade could, I mean in sixth grade [??], [??] a little younger. [??????]

Erin: So, have you, have you tried to plant trees through the city?

Evelyn: Have I actually [??]? I was fortunate enough to live on, in houses that have healthy trees in front of them, although I will admit that one of the trees on my property is dying.

Erin: I was curious if you had any personal experience with this, because from, just from the impression I get it's so disorganized

Evelyn: It's disorganized and difficult and I know that in the case of the [Hammond Heights?], I believe they got money from a trust [??] you had to put something in to get the tree planting fund out, but there they had a subsidy, so it wasn't quite as much. The other group [??] the Massachusetts [??] group [??].

Erin: Was this the MAPLE group?

Evelyn: I'm not sure what their name is, but this is behind the [??] society up on Salisbury Street. It's a little Boulevard right before, you kept going up to [??] based on [??]

Erin: We find a lot more, um more affluent neighborhoods, the much healthier the trees.

Evelyn: And also the more likely [??]

E: Yeah

Evelyn: It's one of those [??] as a [carrot?]. It's perceived as a, that's the problem, it's perceived as something that's a [carrot?] but it really isn't.

Erin: [??] so simple.

Evelyn: Yeah

Erin: You just can't get [the interest in the forest behind it??].

Evelyn: Yeah. I mean you know, [??], we're not, [??] society [??], where do things come from? You know, we go to supermarkets to buy everything, and not a lot of people are into gardening, and not enough. So that growing things isn't part of what we do anymore, but there are people who are interested in that, as a hobby. But it's not like a preocupation or something that people [??]

Erin: Especially in a city like this, where there isn't space to [??]

Evelyn: Uh huh.

Erin: So, you mentioned the urban [??] forest, but you also mentioned that you're not really active in any way.

Evelyn: I haven't been [??]

Erin: But what was the purpose?

Evelyn: The purpose was to really galvanize the environmental groups. [??] to raise the profile and to see if we could encourage [??][????]

Erin: What kind of steps are they taking, do you know?

Evelyn: Well, I can't speak for the group and everyone involved, but I do know that they've done some lobbying on [???????] lobby the city council, then I met with Mike O'Brien to get him more [worked up?] on the issue I think, um, my understanding is that [????], [??] you know

Erin: training?

Evelyn: You know, not having the formal training?

Erin: Right, he has the experience but he doesn't have the educational training.

Evelyn: Right, you know as far as the planning, you know really maintenance goes.

Erin: You know, what you mentioned [??] and the group off Mass. Ave. Are there any other groups you can think of off hand?

Evelyn: Well, the Webster Square business association has been one of several business groups that had gotten involved in tree planted several years ago, and then you know, the official under the block grant program. There's Webster Square, [Rice?] Square up on [Grafton Hill?], and um, uh, [Green Street?] and [Shrewbury Street?]. I believe [??], [??]

Erin: uh huh

Evelyn: And the idea was that the business owners were to take care of the trees that were planted in front of their store. If you go down green street, you'll see there's a few trees that have been cared for, the rest of them are dying. Same thing with Webster Square, I don't know what the is now story with them. I remember interviewing one of the heads of the organization several years ago that I saw and the response was you know, we did not [??] the project, well, we want to give the tree back to the city it, it's getting too big to maintain. It's kind of like puppies. It's cute when it's little, but I don't want the dog anymore, it's too much work.

Erin: yeah

Evelyn: So again, if you head towards park, and go down that south end of Main Street, there are some shabby trees in there, all kinds of trees. It's very haphazard. Up on [Rice?] Square[??] And Shrewsbury Street [is getting nasty?], now I know there's some plant, I believe there's going to be some new planting down there

Erin: hmm

Evelyn: But when they put those trees in, first of all, John [thinks?] they put the wrong kind of tree, and they're calling them [crab apples?] or something like that. I forget. I think they're [crab apples?], but, it's a leaf tree or something so that um, they do damage when people run into them so that a whole bunch of them come down, and then, they have a Boulevard in the middle the street that goes right in front [??]

Erin: Really?

Evelyn: [Look?] [??] For those that [efforts that are mixed like that ?] and well, you're involved with the Elm Park group, which I know is

Erin: No, actually, I'm not involved in the tree group, I, I work in the school directly with the children.

Evelyn: Okay, well I know the Elm Park community group [??], um.

Erin: Now is, this is Elm Park as in

Evelyn: the park itself

Erin: just in, within

Evelyn: The neighborhood right around Elm Park.

Erin: Right, within a few streets.

Evelyn: I know there isn't actually, yeah. There's also, I believe there's a neighborhood that's just getting organized [by Buck Hammond Heights?], but I don't know what they call themselves, but that they're starting to [??] they're starting to organize [??], friend of mine [??], [??] part of that same old [??], and I think that you know it's kind of like [??]

Erin: Good thing.

Evelyn: Yeah, absolutely.

Erin: Now I, what, what does the [Wheeler Trust??] do? I've heard a lot about them.

Evelyn: Okay, they're a trust foundation that's currently managed by [Fleet Bank?] or whatever the bank is called now, and, um, it's the [people?] we set up for the beautification of you know, [??] surrounding cities, and John is on the [Board of Directors?] [??], They you know, they give grants for work, um, they help to support [??].

Erin: I mentioned that, um, we're writing a handbook to go along with the process. What chapters would you see in it?

Evelyn: In the handbook?

Erin: Right.

Evelyn: Well, first of all, I would keep it really short and simple

Erin: uh huh

Evelyn: with a lot of illustrations, you know, because people aren't going to sit down and read a lot.

Erin: uh huh

Evelyn: Um, and I would have, I don't know, [I think I'd keep it to?] 12 or 16 pages [??], you want a brief description of why trees are important, you want um, [??] on how do you go about, you know, organizing a community group, how do you organize the community, here's how uh, [??] tree species are the trees. What's it costs. how do you

order it. You know, that kind of basic information. Uh, then maybe, uh, how do you care for your new tree at different stages, and then suggestions for kinds of events you can organize to get people interested, you know, like a tree planting ceremony or whatever it might be. Um, have a list of phone numbers, websites that people could visit to learn more. Um, I think those cover the basics. You know I would envision it with as clear, simple direct language, you know.

Erin: Right

Evelyn: Um, really, can you excuse me just one second while I get the phone.

Erin: sure

Evelyn: Um, what were you saying, oh yeah just keep it at simple

Erin: uh huh

Evelyn: uh, you know, have some [??] clip art or something in there that makes it attractive, and just [white face?] and easy to read, and [??]

Erin: I think we've gone a little overboard with the uh, tree selection guide itself, which I swear has to be at least 20 pages at this point

Evelyn: Holy smokes.

Erin: with descriptions of all the trees and, you know, and where they're best suited, and all this

Evelyn: This is really a [trepanning?] of much more detail.

Erin: We've

Evelyn: The question you have to ask yourself is who's the audience.

Erin: Right, which is why I, I've looked at the tree guide, and I've. This is good, but it's not appropriate.

Evelyn: Right, you can have that as a reference source for the community group leaders

Erin: uh huh

Evelyn: But you might want to have a series of materials. You need something that they can hand out to.

Erin: Very basic.

Evelyn: Very basic, simple. You know, then you need some more detailed references, manuals, essentially is what you're talking about, that the person who's the real serious organizer going to really just want to chew up, okay. So that's where this manual that you're talking about comes in. I'm sure it'd be a valuable resource. I mean I'd love to read something like that, you know. [??] Again though I would, less is more

Erin: Right

Evelyn: I'm telling you this as an editor, now.

Erin: I understand.

Evelyn: um, and then you might want to have some kind of, I don't know, maybe a workbook or something, sort of a group organizer. To, you know, work through. Some steps for keeping track. Like a planner maybe, and how do they keep track of all the people they have to call and the different steps they have to take and room for them to kind of map out their progress and keep track of all the contacts and stuff, maybe have it in the form of a loose leaf binder so they can have sections and that they can work on them, maybe this manual you're talking about could be an appendix to that.

Erin: Right

Evelyn: So you might, you know, create the [??], which will be easily [introduced?], and easily updated, because the city [??] as the city changes, its procedures will change, [??]

Erin: They're looking at new things right now actually.

Evelyn: Right, you know, so then, you know, you only produce maybe, maybe the city will only come up with 50 of these things.

Erin: uh huh

Evelyn: it's fairly cost effective for them to do it because it doesn't cost that much to put that together [as it costs to actually process?] the printing of the book

Erin: right

Evelyn: and then, then the thing that they print is both simpler [manually?] and simpler [??]

Erin: Thank you. I think we've covered everything I've wanted to ask you about.

Evelyn: Ok

Erin: Thank you so much for seeing me.

Evelyn: Oh it's my pleasure, I hope I can see you whenever it is that you finish.

Erin: Oh that'd be great. We have great plans... [recording ends]

Interview with Peggy Middaugh:

Regional Environmental Council
Conducted on 1/5/2001 by Erin Sullivan

Erin: What we are doing is an IQP, which is a graduation project, and ours is to work with the city of Worcester and develop an handbook for their forestry department so that citizens that want to plant street trees have a very simple process that they can follow and so that way they can get more involved and have it less taxing for the people working in the department. My job is to go out and interview people and find out what people think should be in the handbook. Not only that but also get your general opinion since you were on the urban tree task force and you know you have some experience with this in the city. That's what I'm doing now.

Peggy: And is the purpose also so that, as I understood it, part of this purpose is that the city feels that as new trees are planted right now they don't have the staff to maintain them for the first 10 years of their lives and thats a critical period.

Erin: That's a very critical period and the city feels that if they can get the community involvement going they can have people that live near the newly planted trees take care of them for the first three year and therefore they have a much better chance of surviving longer because they have that care initially.

Peggy: Right. And they are looking for commitments from people too.

Erin: Right.

Peggy: OK

Erin: I brought you what we have so far so you can look through that if you are interested. Now. What do you guys do here? What is the purpose of the regional environmental council?

Peggy: We are a non-profit advocacy and education organization, and we work mostly in Worcester but on a number of environmental issues. Our biggest projects are community gardening, to sort of coordinate the community gardening effort in Worcester, and we have a youth program where we work with inner city youths getting them involved in nature projects and maintaining the [?] trail system in the city. So it's a combination. And we also do a lot of advocacy on issues such as solid waste, recycling, toxics, and

environmental [?]. And then we are peripherally involved in right now the water quality testing [?]. We're working on. Sort of the basis of a lot of the work that we do is working very much with the neighborhood groups and working very much at the local level and partnering with lots and lots of peoples. So we work with Mass. Audubon we work with most of the neighborhood associations you probably met with some of them already like the Elm Prep group. There's a couple of the neighborhood groups right now that are involved in doing this tree planting program. And interfaith groups and health groups and so we really try to partner with lots of people. Our angle of things is environmental [?]. A couple of years ago we did a tree survey, we coordinated a bunch of volunteers to do a survey of the trees in Worcester.

Erin: When was this?

Peggy: 2 years ago this spring.

Erin: Really? Do you have results from that? Because talking to the city I've never heard a word about it.

Peggy: Unfortunately, we let the ball drop and we collected a lot of data and we never got the final report together.

Erin: Really?

Peggy: So, we have a lot of information but we still need to put the report together. Mike knows who did it but. . .

Erin: Without any final results, I'm sure he just didn't feel like giving us "oh yeah someone started to do that. . . "

Peggy: Well no I mean we've talked to him and we've given him the numbers because we have the rough numbers we just never actually wrote them up in a report. So, and it was in partnership with the department of environment and energy. So they helped set up the model for [?]. It was a random sampling and we projected the number of trees and the status of the trees. So

Erin: Because I know in the next year or so they are going to be trying to do a tree-by-tree survey of the city.

Peggy: A tree by tree? Actually counting every single tree in the city?

Erin: Parks and streets. They are going to do it both by they are hiring a group to do this it's probably going to take about 6 months or so they said. To go tree by tree they are going to use a GPS program the American Forests put out and do a tree catalog for that.

Peggy: So that they'll know each tree on each street where they are and what they. . .

Erin: Right they can look at the thing and say ok there are 3, 4 inch Maples that need to be pruned on this street and this street you know

Peggy: Oh wow, that's great.

Erin: Huge task, but luckily that wasn't our project.

Peggy: Well anyway in the course of that, of talking to everybody we are really very interested in making sure that neighborhoods groups get involved in this stuff and the neighborhood groups really want to, but the missing link is that people don't necessarily know how to go about it they don't know which trees to plant or how to take care of them or getting that actual commitment is something to and people will say they'll do it and than they forget. So having something that is really accessible to the layperson to understand how they can help out and then also getting that commitment.

Erin: That is definitely what we are trying to get. Right now we are starting to put together a tree selection guide. We are very lucky. We got a large portion from Cornell, which does the whole "if you are planting underneath wires" or "if you are planting in small areas", and it goes through all the species that are available and gives you all the pertinent information. So that is going to be great. We are going to have that in there too.

Peggy: And there was a list that was put together. Have you worked with John Trexler at all?

Erin: I have a meeting with him on the 10th.

Peggy: Ok because he's considered I think somewhat authoritative and he should definitely be involved. He know the species real well and he's got some really strong opinions about what species should and shouldn't be brought into the city. There was a list that was developed that he had approved of which trees should be considered. It wasn't in the context of what you are talking about. It was just a list. But it was based on criteria

Erin: I am trying to think I do not think that I have seen a list like that. I know Brian Breveleri has been putting together his own list; he's one of the foresters. He's really enthusiastic and he's been feeding us like as much information as he can find he's been great but I haven't seen a list from John Trexler. Maybe on the 10th. Now what have you as a council done with the city department, have you done anything with the forestry department other than propose what you had on the tree count.

Peggy: They were involved in it. They [?]. We work with them on so many things it's hard to. We do clean ups of the city, we do excursions in the parks we do trail maintenance in the parks so specifically it's thought. I can't think of anything to give you except we work in the neighborhoods to get we go to those meetings so that we can get them the information.

Erin: You've worked with a lot of the neighborhood groups. Have you watched any of them go through this tree planting process?

Peggy: Well the only one Elm Park has done it and now they're talking about Wittman Street. I don't know I don't know who's connected with Wittman St or who you should talk to.

Erin: I don't know either I know there is [?] in the Salisbury Street area. I know I am meeting with Jim Connelly on Monday for the Elm Park Prep. I am trying to get a hold of Shelia Reed who handles around the area of Lincoln Street.

Peggy: See we work more on inner city neighborhood so Elm Park is closer to our neighborhood, Salisbury is sort of out of our territory, and so is Shelia's area, but we work with people. Actually there are a bunch of trees being planted down off Castle Street [?] tree nursery that's a neighborhood effort, and I am pretty sure that the effort [?] they're planning on planting 30 or 40 trees of different ages

Erin: really?

Peggy: that are in a nursery that they'll be maintaining for a couple of years and then taking out and planting on the street. That's with the Castle Street neighborhood group.

Erin: Where is Castle Street?

Peggy: Castle Street is off Main Street heading towards it before you get to Clark. I don't know how far down Main St. There is a number of little Hispanic stores around so and it's going from down town probably 3 quarters of a mile.

Erin: Are they working at all with the city or is this a

Peggy: Well. It's hard to know what it means to be working with the city

Erin: Well is the city planting the trees? Or are they just planting the trees?

Peggy: I think they are going got be planting the trees.

Erin: Well where are they going to be planting them?

Peggy: They're going to need to be talking with the city as far as doing curb cuts and things like that. The city is well aware of it. I think they wrote a support letter when they got their grant and so when I say it's hard to say because we always talk to Mike about doing all these things and we all sort of yes, yes we'll work together, but how that works I'm not sure. There's a contractor that lives in that neighborhood that also takes a great deal of initiative in doing that sort of stuff and he's rehabbing places all over the place. So he also puts in trees as part of his work and he's involved in that neighborhood group and so

Erin: So he knows what he's doing

Peggy: Yeah but there again you have to . . . he's . . . this list of trees, for example, is real important for him to have to make sure that they plant the right trees. And also to have something that you can hand to the people in that neighborhood like you said to care for them for the first three years would be really important because [?]. So I guess what I am telling you is as I am feeling this out and thinking of different groups who are doing things. Let me back up a little bit. We also did a tree inventory we did a tree inventory of [?] exactly as you had said tree-by-tree two years ago one section of [?] and that's in the city [?]. So and that's something that was started then and is going to continue. I don't know I guess Mike is going to continue that.

Erin: Yeah that's what they are looking for.

Peggy: They're just going to [?] That was also a volunteering group, I don't know if that would be any help to you at all. . . but anyway if I'm saying this the outline of how this is going to work the actuality of how it works is usually not ever as smooth as you would think. So because people in neighborhood just all have different personalities and taking advantage of whoever has the energy is you know always important. But having something like this is so critical because you can have a program going on perfectly, and then one of the key players leaves.

Erin: And then nobody knows what's supposed to happen next.

Peggy: So that why it's important.

Erin: Do you know anything about how they do it now? What do you feel about how the city does tree plantings do you know anything about it ?

Peggy: I don't think they do tree plantings, well they do they did like Elm Park. They do a few a few pilot projects. It sounds like they worked closely with that neighborhood group. I haven't been involved in it, and to all us people on the outside it appears to have gone smooth. And Elm Park is a particularly reclusive group of people. If they want to get a project done they will. Hammond Height I think they managed pretty well. Actually there's an example of planting in Webster Square where the Business Association planted all the trees, and my understanding is that they died. They did not take care of them, and nobody understood. And I think a lot of that happened on Shrewsbury Street too, where none of the trees survived and I think that's a lot of what's behind this trying to make sure that it gets done in a more [?]

Erin: Because it doesn't look good for anybody when all the trees start dying.

Peggy: Right. And the city doesn't have enough money to be out there planting all the trees, so they really wanted to bolster support.

Erin: What do you think the best plan for something like this to handle? What do you see being in it?

Peggy: Well I think some of the thing we just talked about having the little trees, the process how do you actually go through having the applying to get trees planted? Now is this for people to plant their own or for people to?

Erin: This should hopefully be for community groups, but we are going to have like a small section devoted to planting in your own yard or something to that effect.

Peggy: OK that's not what I meant though. What I meant when we talk about a process and we talk about a group gets money and they want to plant a whole bunch of trees in their neighborhood. Then they have to apply to the city for the city to do what ever the city has to do, dig a hole and maybe doing the planting.

Erin: Yeah the city would be planting the trees.

Peggy: But the city would not be purchasing the trees?

Erin: No.

Peggy: OK, so having that process laid out, I guess that's the main thing.

Erin: I'm trying to contact some of the places that people can apply for grants and get information on what they are and what they expect and what they are looking for in groups, so that it's easier for people to get the money they need to plant the trees. This is a very rough draft that you are looking at but it has the general idea of what we are trying to do.

Peggy: OK well, so I mean I think the process. I think it looks like what you're doing is sort of a background of why it's important, and here is the process of how you get involved in it, and then how to actually do the tree care. I mean, which is great, this is a perfect outline. How long were you picturing this being?

Erin: We are hoping to keep this under 20 pages without resources, without the tree selection pages. We believe that can be a supplement, but we don't want to have anything to read more than 20 pages.

Peggy: Were you planning on doing like a one page brochure? Something so that if people walked into Tatnuck Bookstore, and you say "Would you like to do planting in your neighborhood?" They're not going to pick up a 20-page booklet. I mean this is for someone who is already committed.

Erin: Right. That is a secondary thing. We are looking into ways to advertise. That is a separate issue for us right now. The city is very excited about it, but the funds that it has are for printing a handbook, so they figure they're mostly planning on people coming to

them and saying "Okay well I want a tree" and them saying "Okay, we're going to send you this stuff, and you read it and then tell us what you think, and get back to us."

Peggy: Okay, well I think that the two most important pieces of it are the process. Making sure that you have the process down, and this it's really hard to tell. Like you said, this a really good beginning. That's going to be the key in really saying how you go about this stuff, and then how do you take care of them? So again the step by step: here's the things that you need to know how to do. You need to prune it. You have to water it, and if this happens make this phone call. So, it's kind of hard for me to just off the top look at this.

Erin: One thing that the city has us looking into is they want to have a statement of good faith agreement, where the people that want to plant the trees sign it and return it to the city saying that they are going to care for it for three years. Do you think that that would be a good thing? Do you think that people would be OK with that or will they be like I don't want to sign anything?

Peggy: I think they have to. I mean I think if they don't do that they don't get a commitment. I would be very behind something like that. I mean you probably can't enforce it.

Erin: That's been our main thing but it would definitely be a good faith agreement because you can't make a contract saying care for this tree and if it dies you're in trouble.

Peggy: Yeah and I mean people may move but if people sign something like that then they feel like they have made a commitment, and there should be some sort of follow-up there should be somebody checking every once in a while to see.

Erin: Brian is definitely going to be a part of that. I don't know what will happen if leaves while we are working on this project or after it's been put together, because he has been like I am going to be checking on people so we are not even putting that into the process because it's taking care of.

Peggy: But it should be on the list of tasks for that job description. Is it going to be? Probably a really important part is the trees are the city's responsibility. Just as you are writing down everything that the citizens have to do, you should be writing down everything that the city has to do.

Erin: Yeah we have a reflective process for them it's step by step in reaction to what the citizens do.

Peggy: So in there it must say that the forester every once in a while is going to check. So if Brian leaves the new person that takes his position should have that same information.

Erin: Yes they are going to have the information, but the enthusiasm that he has hopefully will carry over to whoever.

Peggy: Well that's is just part of organizational processes you just have to do it, and it may not happen but. Is there any indication the Brian is not going to be there?

Erin: No.

Peggy: I think. To me the things that really stand out are, "What is the process?" and "How do you take care of the trees?" and finding a contractor that's got to be part of the process, so I think having those two things together. So of here's what you need to get started and here's the process and even the tree selection part of [?] isn't it?

Erin: Tree selection will be a resource in the back of the handbook

Peggy: So I'm just going through this outline really quick and I am thinking that you may just want to change the order of it a little bit.

Erin: Oh yeah, the order is really definitely up for grabs right now we want to make it a very step by step thing and right now it's just everything put together. We want to be able to have it so that if someone wants to plant a tree in their front yard as opposed to on the sidewalk in front of their house then they go to page 5 in the handbook, and they go through it. Or, you know if they want to plant a tree

Peggy: Is this specifically just talking about trees when you say front yard as opposed to on the street?

Erin: Tree lawn or city owned property.

Peggy: Isn't that 10 feet?

Erin: Mike is very worried about planting trees in people's front yards because he's afraid of in ten years down the road, who is going to own that tree? Who is going to be responsible if a branch falls on someone's car? You know what happens if someone assumes that it is their tree and cuts it down? He's very worried about all these things, so he doesn't want to move to the front yard which would be city owned property he wants to keep it in the tree lawn which would be that small area of grass in between the sidewalk and the street, and so all of our planting when we talk about city trees, that's what we are talking about, in that small strip of grass. If people want to plant on their own property you want to be able to say "Okay if you want to do that here is how you do it", but the city is not going to be responsible for that tree you have to take care of it .

Peggy: You're not going to dig the hole or anything like that?

Erin: Yeah the city is going to take care of all the city tree planting as far as digging goes. As far as anyone else digging, we are going to have a process telling them "Ok this

is how you dig a hole. Make sure you call dig safe" because but they are not going to dig non-city property for trees.

Peggy: So even if there's a lot of places where there is no tree lawn.

Erin: Elm park prep is like that they didn't have a tree lawn. They didn't have a strip of grass so then you cut the pavement to dig the hole.

Peggy: I know that there are a lot of people that feel that is not the right place to put a tree though.

Erin: It is a very small place and trees in a pit like that with cement on all four sides generally don't live very long at all. They live like 7 years and in a place like Elm Park Prep if they had placed them in the front yard, they would have been invading the living room within the first five years because there is no front yard to speak of in that area. So for trees that was the only option.

Peggy: Yeah that may be true, but you are going to get a lot of push back on this from John Trexler [?] You're not doing the right thing for the trees.

Erin: Oh no. I agree and Brian agrees and the issue is

Peggy: It's legality and I understand that, but it's really too bad.

Erin: Yeah it is too bad. We are at the stopping point where we really can't go further on that unless we get the OK from the city and the city is willing to go through all that. Maybe once the city has tree ordinances and it can say explicitly that these trees are theirs and everything is clear, then they can move into lawn plantings, but until then they feel like they shouldn't go there. It's too bad because the trees really do have a much shorter life.

Peggy: And the state is pushing for [?] and Mike's been [?] but I understand his position.

Erin: They don't have any tree ordinances for the city.

Peggy: That's the problem?

Erin: Yeah, they don't have a single one, so they can't say "Well, you know, we're going to do this and we are going to follow these rules", because this is something we found doing our project we look at something and we say well how do we say this because we have to write a report on the entire project, and we find ourselves saying "in the wishes of the city" because there is no way to say in conjunction with ordinances or something like that because there is nothing written everything that we are saying .

Peggy: Is this unusual for a city?

Erin: Yes this is very unusual.

Peggy: How come we don't have any?

Erin: They are working on them, but it's one of those things they started working on it in the eighties and they just haven't gotten any headway because the city council keeps saying no?

[Some garbled stuff]

Erin: Right they're working on them right now Brian is writing a whole new set but we saw a copy of them from 89 that they proposed and they were returned so they've been working on a new version I don't know why they hadn't don't it earlier but at least they're doing it now

Peggy: Do you know the history? Mike's been in his position for not quite 2 years now.

Erin: I don't know so much of the history no.

Peggy: So I personally think that he is doing a really good job, and we all complain about the city not doing things but I think he's made a lot of changes in the time he's been there. He's only had that responsibility for three and a half years and it's happening so that's good, but still the problem is that the parks department didn't do anything for all those years but part of the reason that they didn't do anything is because their funding was cut so there's a lot of.

Erin: Right now a major thing is the city can't take responsibility for new trees until they take care of all the backlogged trimmings and all that.

Peggy: We supported them on all that. We understand that they [?] so how much effort does it take to put a tree is what are the ordinances for?

Erin: From what I understand, it's going to include something to the effect of if you cut down a city tree to say build or something or say mass electric needs to cut down a tree because it's in the wires they have to replace for so many inches of the tree trunk they have to replace so many trees. So if it's a ten inch tree trunk you have to plant 3 new trees or something to that effect. It's going to have something about any kind of new building you have to plant any kind of parking lot you have to plant you know it's going to have very basic instructions on per how many, like if you have a very large parking are you have to have so many trees over such an area, and just go through all of that so that they don't have these big expanses of pavement with no trees. That's one of the major things that they are looking for. Brian talks of a time when they'll be planning houses for every house planted they plant two trees. It won't matter if they plant it in the lawn or not the people moving into these new houses will take care of the trees or even if they don't, those trees will just be in their lawn and they'll never really think of the fact that

they're not theirs. It won't be an issue it will be in the ordinances. They're trying to clear all this up, at least to the best of my knowledge. I don't know exactly because right now they are all in the works and they don't have any drafts for us to look at.

Peggy: Well I'm thinking it would be good for the grassroots groups to be involved and the environmental groups to know what is going on and support it .

Erin: I don't know when they are planning on proposing it. I just know that Brian is currently writing it. I don't even know who else is working on it. I know that the full time foresters are, but I'm sure that Mike and Rob Antonelli both have their hands on it and are working on it and I don't know.

Peggy: Well that's interesting to know. Anyway I mean this looks like a great start is there anything else I can.

Erin: Do you guys have any experience or material or anything that can help this?

Peggy: Well, I have a file cabinet full of stuff. Let's see. I'm not clear on the question. What kind of information?

Erin: Well, in your experience with groups that want to plant trees, have you learned anything other than straight from the city what to do or how to do it best?

Peggy: I'm not getting the question.

Erin: Like the Castle Street group, you've been working with them on this project, or is it just something you know of?

Peggy: When I said working with them, we write support letters and help them. People in our group were the ones that came up with the list of trees.

Erin: So you've come up with your own list of trees and stuff like that. Now what I am looking for is the idea. Did you learn anything directly that you feel isn't reflected in what we have so far that would be helpful or informative?

Peggy: I would have to read through this. I can see the outline the outline looks good, but as far as the details I think what you are asking is too specific.

Erin: More pertinently towards the process. The process I believe would be the most helpful.

Peggy: I sort of glanced at he process and it looked like. I'm hesitating, I mean I could ask you questions about every single one of these points but you said right here that you need to expand.

Erin: The process right now is in a pretty. We've worked that out a lot, so that shouldn't be something, if you have any questions please go for it.

Peggy: OK so contact them for the information packet this is the information packet.

Erin: uh huh

Peggy: Decide on individual or group planting?

Erin: Whether they are going to plant as a neighborhood or they want to plant like one memorial tree in the park because at that point it's still a very big process it's like ok you want a tree.

Peggy: Okay and then organize group.

Erin: If they are doing a neighborhood group.

Peggy: But what does that mean, organize?

Erin: If say Jim Connolly was looking at planting trees in the neighborhood, he would get the information and he would then go "Okay, I want this to be a neighborhood association thing" and then he would contact the neighborhood and be like "Okay do we all want to do this who wants to be"

Peggy: Will it say that in here or will it just say organize the group?

Erin: We are going to expand on each step like a paragraph or so.

Peggy: What's what I meant by just saying organize groups, they might not get it . Okay so the next step is pick where you want to plant it and then go back to the city. I guess with that process. Would they fill out a form? Would they send them an email? Would they give me a call?

Erin: We have intentions of setting this up as a very personal "you get a forester for your group" and you have one contact person in your group and that contact person contacts the forester that is assigned to your group. So my best example is the Salisbury Street group right now because they are in the process of working this right now. Genise will call Brian and say we want a tree in front of these addresses, and give him the list, and he goes out and he marks all the spots, and then he calls dig safe and gets more info on each spot. And then he sets the specific place that they will dig and marks it where the lines are that they don't want to dig near, that's what that step will be.

Peggy: Is there a form there should be a place where somebody signs and checks off?

Erin: Right.

Peggy: There needs to be some sort of check list so that even like Genine can say "Yeah, Brian said ok to this one and this one, but he's still checking on this one."

Erin: That sounds really good.

Peggy: And I guess all these getting approvals, I mean is there some sort of form to sign?

Erin: We haven't gone into the details of how we are going to do that. We are looking for something that will have signatures and will be passed with the main file of the group so that nothing gets lost and nothing gets sent to the wrong person.

Peggy: But I think getting people to actually sign things is important just because.

Erin: That's how Elm Park has done it so far.

Peggy: Is this going to be a? I guess it would be a person by person tree by tree?

Erin: Each person that is going to care for a tree would sign this. We are not going to do that as a group. It's too weak of a connection.

Peggy: I am wondering if it should be person by person or tree by tree?

Erin: Well it would be tree by tree. It would be like you would have one person per tree. We wouldn't want three people watering the same tree because there is always the chance of somebody realizing oh somebody else is doing it guess I don't have to.

Peggy: So there would be a good faith agreement per tree?

Erin: uh huh.

Peggy: I am going to go back up to select location because it feels like that is where all the meat is.

Erin: Select location, select tree type. Those are two very, very important steps we're going to. The way that it is going right now, in the Salisbury group, which is my best example because I really haven't seen this before, where Brian gets the list of addresses and he goes out calls dig safe on the addresses and the areas and goes back to Genine and says "OK, we can plant in this one this one and this one but this one we are going to have to move over there" and then she goes back to the residents an says "Is this ok?" and it goes back and forth until everything is agreed on and everything is good and you get signatures from the people that are going to have trees in front of their houses saying "Yes I want a tree in front of my house" and then you get the city saying "Okay dig safe has been contacted all the locations are ok."

Peggy: Okay so that's number three and then you have all those steps in between and you have all those forms that need to be signed?

Erin: Yup, and then with the tree selection the same thing. If somebody goes I want a sequoia in front of my house the city is going to say "No, how about this kind of oak, how about this, what about a pear tree?" you know like that until they find a species that the resident will be happy with and they feel will survive.

Peggy: That actually brings up another question. As you are saying that, I guess all along I've been picturing this as groups doing it, but this is also available on an individual basis.

Erin: The city really doesn't want to start doing planting groups smaller then like 5 or 10 trees they would really like it if there were like a group of 5 people that want trees in front of their houses that they latch onto another group that is planting trees so that their group as a whole have like 20-30 trees because that way for all the effort that gets put in there is a significant . . .

Peggy: I agree with that. It would seem that you would want neighborhood groups like the Elm Park Group so that if there are issues going on in the neighborhood around the trees it goes to the group first and they try to resolve it. So, because there are things like, one of the things that is going to come out of this is the people gaining expertise so that they know a lot more about trees [?]. So there might be something in here that states that.

Erin: What do you mean?

Peggy: That says the city really encourages, that they prefer groups over individuals and then something about developing tree stewards I don't know if you call them stewards.

Erin: Yeah that's something that we have been looking at.

Peggy: Maybe that could even be a title that people earn by showing that they have certain knowledge the city could count on that those are the people that other people in their neighborhood could contact first before. . .

Erin: I would love to see that I would love to see some kind of educational process something that would go along with it like someone in the group would go to a class that maybe like 4 hours long and they would learn about trees and they'll learn about planting and they'll learn about all the different things that they should know as someone that should be looking out for trees in their neighborhood. But I can't see the city doing it because the city doesn't have the staff, and doesn't have the manpower time to run. . .

Peggy: Well, they may not have to with the horticultural authority running it. And there are already people in the neighborhood that have that degree of education. We've got foresters living in the neighborhood so if they can show that they already have the knowledge, or in some cases just knowledge, or if you could just give out certificates that say you know a lot about this so that here is a list of people you could send who are volunteers in the neighborhood that are tree stewards and then other people could gain

that level of certificate by going to you know other education class and maybe it doesn't have to be formally run by the city.

Erin: Just the horticultural. . .

Peggy: Yeah, that's all I can think of right now. I'm pretty sure they do a tree thing every year.

Erin: I'll definitely talk to John.

Peggy: So, after we get through sign the good faith agreement set the date for planting, that's the parks department that's mostly in their court?

Erin: Yeah, the parks department is, since they don't have enough manpower and since this is a very small department at this point right now, they are looking to keep it confined to May and April and that way they won't be planting 30 groups in one summer, you know? They'll be like we have two months to do, say two different groups want to be planted so we're going to do these two groups this year and you guys can get planted next year. That way they don't become over. . .

Peggy: Right and I agree with that, and what mostly their job is cutting up the pavement and digging the holes.

Erin: Right and planting the trees. Their digging the holes and their putting them in. Their supplying the first year mulch that they'll mulch when they put the tree in the ground. They're also planting with fertilizer pellets so that the trees don't need to be fertilized for the first three years that way the people will be responsible for mulching and watering. And we're going to give them watering schedules and as for mulching we'll give them contacts for people to get the mulch from and how to measure the mulch and how much mulch you are going to need things like that.

Peggy: And they don't need to do any pruning?

Erin: No, no pruning we don't want them to be responsible for that. So if they have, say they have a branch that has been pulled off and ripped because of too much snow or something to that effect then they will be told to call the city and the city will come out and trim that. They have new steaks for the trees their using that they just starting using. . .

Interview with Elise Wellington:

Worcester Gardening Club, Former President
Conducted on 12/18/2000 by Erin Sullivan

Elise: This is for the stuff, and I have my original copy here. I got involved because of the Worcester gardening club, the former president. And I was on that urban street tree task for that John Trexler started 3 years ago. Have you met with him?

Erin: No. I keep calling him, but he hasn't returned my calls.

Elise: Here it is. This just shows our conservation chairman Betty Wheeler did that and she got the steps from the Parks and Rec commission thing. Really. What she didn't like. Why it's important to have street trees. And then who to write and as an example I just gave you my letter. I don't know whether you need stuff on the politics but [that serves] my interest. So that, I'll put with all this stuff. [?] Chronological order so the most recent will be on top. Then, I didn't know if you needed stuff on Tree planting, how to do it.

Erin: As for the procedure of tree planting, we've been using the city as a resource, and also books.

Q: Do you need that in your brochure?

Erin: The main purpose of our handbook is to guide people who want to plant street trees, in which case they won't actually be planting, they'll just be paying for the tree and the city will plant it in the ground for them. But actually, Brian Breveleri is trying to get toward the thing where.

Elise: Who's he?

Erin: He's one of the foresters. He wants to be able to have citizens planting the trees but that's a few steps down the road.

Elise: So your brochure is going to be more on who to contact in the city, why it's a good thing to do.

Erin: Also we're going to have a small section on how to plant trees yourself, in the case of people who want to plant trees in their backyards or stuff like that.

Elise: Alright well then some of this stuff. I don't know do you want to ask me questions or do want me to show you what I have here.

Erin: I'll ask you questions too, but it would be if you would show me.

Elise: Alright, this you can have. This is put out by the state department of environmental management division of urban parks, urban forestry program, community trees and forests, and the book here says why it's a good thing. People shop longer, shop more, blah blah. I thought this was interesting. They give grants for printing out brochures.

Erin: Actually I think the city has applied for a grant to pay for the printing of what we're making.

Elise: Okay, that's good. Then this I found, this is from Horticulture Magazine which is put out by the Massachusetts Horticultural Society. I thought this was interesting because it's about life for a street tree in the city. Very difficult. Roots heave the pavement because the gravel is easier for them to grow in than the very compacted soil you find. And there's this new structural soil that's been developed at Cornell University.

Erin: We've been researching the stuff they've been doing at Cornell because.

Elise: Alright, so you know about that. I thought that was so interesting.

Erin: Well, it is very interesting. Also here, when they plant a city tree, they dig a pit, and they take all that dirt, and they get rid of it. And they bring in new dirt for the tree, and then the plant the tree, and unfortunately the ground underneath the sidewalks is very compacted and very dry and lacking nutrients and moisture and air, so the roots often just stay within that area. Which means if it's a very small area, it's growing back and forth and eventually it girdles itself. It strangles itself with its own roots. And so, when you have a tree grown in a small cement tree pit, that's what they call them when it's a cement tunnel, they usually only live like seven years.

Elise: Yeah, that's a problem. And I know when I was president of Worcester Garden Club, Worcester Garden Club is one of two advisors to Fleet bank on the Wheeler Trust. Nathaniel Wheeler set up a trust for planting in the city, and they give out about 50,000 dollars per year, but one of the problems is when one of these neighborhood groups came to the Wheeler Trust for grants, you didn't really have. The city wasn't doing any maintenance. They didn't have the money. I think that is changing now. But also, the conditions there are so bad. You're squeezed between the sidewalk and the street, and often the grassy area is so small that it was hard to give them money for street tree planting because. John Trexler was the other adviser. Worcester County Horticultural Society and Worcester Garden Club were the two advisors. On the strip, John would say "It's too difficult. The tree isn't going to survive."

Erin: If they plant them to where they have a green strip between the sidewalk and the street, it can live up to 32 years, because that gives them the extra spread for the roots.

Elise: Right, but it depends how wide that green strip is. Worcester, being an old city.

Erin: Right, sometimes you don't have any at all, and you have to cut into the sidewalk, but you can only cut so much, because there are handicap laws. You have to be able to get a wheelchair by.

Elise: That's interesting. I hadn't thought of that.

Erin: That's one of the main concerns. You can't make the pit big enough for the tree because otherwise you don't have enough sidewalk.

Elise: I remember, we were even looking at having the street trees owned by the city planted on people's private yards, but I don't think that worked. I can't remember what happened.

Erin: Some of the foresters are very excited about the idea of doing setback planting, but the commissioner of forestry is kind of concerned because in say 10 years, a big branch falls on someone's car. Who's liable? Because it's on their property, but it's technically a street tree.

Elise: There's a lot of legal problems.

Erin: Right. I can understand that concern, but it may mean the tree grows 50 years instead of 7. It's a very tough call.

Elise: Well, I suppose if the city improves their maintenance program, if they'd maintain the tree, then they won't have that problem. That's the biggest problem in Worcester.

Erin: The problem with the maintenance thing is without more people, they can't have a maintenance program.

Elise: More staff?

Erin: Right. They need the staff. They don't even have a maintenance program at this point.

Elise: I thought that was what they got all the money for last year?

Erin: They're trying to instate one, but it's hard, because they go around and they're doing emergency trims.

Elise: Oh yeah. This was another article about some computer chip system they have in Paris for their trees. Actually, that's pretty advanced and it's probably much too expensive, but I thought it was interesting.

Erin: I don't think we have a tree surgeon in our city.

Elise: But I think Mike O'Brien was, I thought part of the money he last year for got for the parks department was to have a new computer system.

Erin: I believe they're trying to do a catalog of all the trees in the city. They're using.

Elise: Yeah, and they're putting it into a computer system.

Erin: An American Forests program called CityGREEN which uses global positioning. GPS. They take a picture of the city, and then they put the trees where all the trees are.

Elise: Oh. They do it all by aerial survey?

Erin: Well, they do aerial survey and they do regular survey, so that they know what each species is and diameter and things like that. And once it's all in the computer, it's going to be easier to maintain, because they can look and say, we have 3 14-inch elms that need to be sprayed.

Elise: It would be so much simpler. But they haven't started that yet?

Erin: No. Actually, our project would have been that, if we had started our project next year. It's one of their goals, but they're not there yet.

Elise: That's too bad. I thought they had done that.

Erin: That's really interesting.

Elise: I have a Xerox machine if you want copies.

Erin: That would be great.

Elise: Why don't you just look at them and tell me what you want.

Erin: Now how long have you been collecting all of this?

Elise: Oh, I love doing stuff like this. I love reading the paper. I love reading the globe.

Erin: Just piles of stuff about trees?

Elise: I was a poly-sci major. I used to write lots of research papers and I always read the newspaper. You had to know what was going on if you were a poly-sci major.

Erin: Now have you been involved in planting in the city?

Elise: Well not digging the dirt, but Worcester Garden Club, we were invited to that Elm Park Prep planting. We've done a lot at Green Hill Park. We've planted a lot of fruit trees.

Erin: Oh really.

Elise: Yeah, near the pavilion. And we planted those gardens that they construct around.

Erin: Yeah, those are very nice.

Elise: So that was one of my goals when I was president to get the club more involved in the city. We've been really involved up at tower hill for a number of years because the city really needed help. It was a brand new.

Erin: They really seem to getting it off the ground really well.

Elise: Yeah, they're really miles from what they started with.

...

Erin: This actually was very interesting because it talks about root pruning, something we don't do, because in the facts that we.

Elise: Oh.

Erin: Yeah, root pruning is really bad.

Elise: And they tell you to do it?

Erin: Yeah. This is like "how to prune your roots". Root pruning products.

Elise: Bartlet Tree Company. You know I got this, they had a conference up at tower hill. John Trexler did for Trees in Urban Landscape symposium.

Erin: I'm sure it would be reasonable to trim roots in someone's yard if it was encroaching on their sewer, but to trim roots of a sidewalk tree is very bad because they have such a bad chance of living anyway.

Elise: Yeah, I remember thinking I had never heard of that.

Erin: Sometimes they use sidewalk barriers, but that isn't really pruning, that's just.

Elise: Keeping them from growing out. You don't want. And this is what they handed out.

Erin: Oh, that scares me.

Elise: Tell John Trexler that. That was February 99, almost 2 years ago.

Erin: Maybe I'm wrong, but as far as I can tell.

Elise: It makes sense to me.

Erin: Root pruning has not been one of the staples.

Elise: Are you taking horticulture or some course that relates to this?

Erin: No. We are doing our "Interactive Qualifying Project," which is a project which is completely outside of our major and everyone at WPI has to do this to graduate. And so our project, there's 3 of us working on it, is to develop a handbook and process for anyone interested in planting trees with the city.

Elise: Great.

Erin: So we try to cover as many topics as we feel would be necessary to know about and set up a process with very simple steps and send them off on their way, and we're going to be testing it in the spring. Now you said that you're part of the Urban Tree Taskforce?

Elise: Right.

Erin: What is this group?

Elise: Well, it's a group John Trexler, director of Worcester County Horticultural Society, set up 3 years ago in the fall of '97. And I was asked in because I was president of Worcester Garden Club. Regional Environmental council. And we would meet periodically because John was so concerned about the cities street trees. Some people, private people, had planted some on Shrewsbury Street, and they weren't doing very well. And the other reason he started the group, the main reason actually was because Evelyn Herwitz, who I think you had met with. She had finished researching her book on the trees and how they had declined from about 50,000 at the turn of the century to about 20,000. Well actually by '97 it was like 18,000 something street trees, plus a few thousand park trees, a decline of about half since the turn of the century. And so Evelyn prepared a summary of the problem for us which I gave you, have you seen that?

Erin: No, I haven't seen that.

Elise: She showed that for every 1 tree being planted, there were 4 that were being taken down since 1981 when proposition 2 1/2 went into effect. Since that time, no local tax dollars have been spent on tree planting, just private and federal grants. And then often what was happening was a neighborhood would get a grant, they would have street trees planted, and eventually, they would lose interest in maintaining them. And the city forest and parks had no interest because they weren't involved in planting them, and they didn't have enough in their budget to maintain them. So it was really a sad situation. And so Evelyn really gave us the facts to be concerned and so we started trying to decide what we could do. We did write a letter, which I included in your packet. December 4th, 1997, John Trexler on behalf of the tree task force sent a letter to the city manager asking him to do something. And that will show you all the members of the taskforce at that time. So we met with BEM, and we met a lot of times. But basically what we used was Evelyn's information. And finally, the Parks Department, Mike O'Brien, did come up with a plan for addressing maintenance concerns, and for a computer program where they have an inventory of all the street trees and their status, that's what we're talking about

before, and getting more staff for trimming dead wood and all that kind of thing. And I think he got, if you look in that information that I gave you, I think he got most of what he wanted, not everything.

Erin: I know that they've been trying to pass a little, what's the word?

Elise: Regulations.

Erin: Like regulations for, if you're doing new development, you need to have at least 2 trees for every 100 feet of frontage, or something to that effect. There will be tree, and tree maintenance in the city law.

Elise: Or, if you're taking down a tree, you have to replace it. That was the one we were after.

Erin: That's the one that they're really fighting for too.

Elise: Because sometimes I think the electric company has come in and done electrical work and taken down trees because they were in the way, and they really should be required to replace them. There has been a number of neighborhood groups that have been very active pushing for this, like the Hammond Height Neighborhood Association, which was founded by Sheila Reid. Have you met with her?

Erin: No. I can't find contact information, but the city's trying to get it to me.

Elise: Okay, because she's the one who got a grant from the Wheeler trust to plant street trees in her area, clearly they've worked hard. And then there's the Elm Park Prep area.

Erin: Right. I'm meeting with one of the contact people.

Elise: Tim Connolly?

Erin: Jim Connolly, in January.

Elise: Yeah. So there have been neighborhood groups that have been pushing for it and that's been good. So finally last spring, the city council gave the Parks Department a big increase in funding. But I know Mike O'Brien, parks commissioner, said he did not want to embark on any planting program until they got caught up with the backlog of maintenance problems, and that made sense to me.

Erin: It's really not reasonable for them to start large planting projects without enough back to care for them or without enough community involvement to care for them. That's why they're very excited about having community members plant trees, because then they want it to be a good faith agreement that the people that plant trees will care for the trees for three years.

Elise: That makes sense. So, depending on how the Elm Park Prep project goes.

Erin: Was the Urban Tree Taskforce just made to lobby the city council, or did it have some greater purpose?

Elise: Well, the general purpose was to try to look into ways that the city could improve upon its street tree program, because we were losing so many. I think Evelyn Herwitz said in 40 years, if we kept on removing 4 trees for every 1 we planted, I think in 40 years we would have none left. So it wasn't just lobbying, but it was anything that would help, such as your brochure.

Erin: Did the taskforce come back with any kinds of results?

Elise: We did write to the city council last spring when Mike O'Brien came up with his budget increase proposal and plans and many of us spoke for our own [intentions] before the city council and the parks, the subcommittee that deals with the park commission's budget. So we all testified at the hearings and gotten, Worcester Garden Club our conservation chair, last year got the numbers to write to our councilors, and that was the letter I included in the pack, I just included mine. But a number of other members wrote to the councilors about it. We got letters back too. It made them very aware. So I think that's probably the most effective.

Erin: I was just wondering if you were saying that you were trying to research methods, whether you came back with any methods or whether it was just.

Elise: No. Not really. I mean the one thing that was all agreed on was that the city really has a monoculture of Norway Maples, and they really need to look into diversifying.

Erin: Beyond just Norway Maples, but just Maples in general.

Elise: So that's mostly how I've been involved.

Erin: Now, you said that the garden club does do smaller planting projects, and things like that. Not necessarily all trees, but planting. And you haven't been involved in any major citywide planting or anything to that effect?

Elise: Tree planting? Street tree planting?

Erin: Yeah.

Elise: No, but we just had Evelyn Herwitz speak at our October meeting, on her findings and her book, then we follow that with the [box lunch] auction, and we raised I think about 1300 dollars that will go into this new fund Worcester County Horticultural Society has set up for street tree planting in Worcester called the Arrabella Tucker Foundation. And that name comes from the woman who wrote the first book about Worcester's trees

about 100 years ago. And John Trexler read that book when he first came to Worcester, which was probably about 15 years ago, it was in their library. And he was fascinated by it. And I guess he said to himself, "We really ought to update this book." And that's how Evelyn Herwitz book got written. He asked her to write that book, and got the grant from the Wheeler trust.

Erin: Now is this going to be like the Wheeler trust in that it's going to fund groups that want to plant?

Elise: Yes. You know, I'm not sure if it will be. I guess it will be administered by Worcester County Horticultural Society, but in close coordination with the parks commission.

Erin: Okay. So they'll have more control over where it goes?

Elise: Probably they'll work together, because it wouldn't make sense to plant something if the parks department couldn't take care of it. It's just to aid the effort to rejuvenate our street tree program, which has declined for almost a century.

Erin: You seem to know a lot about the Wheeler Trust. We've been asking people and we haven't been able to get any kind of information about it. Now, it's run by Fleet Bank. They have community group advisors?

Elise: Part of the trust agreement Mr. Wheeler wrote, the Worcester County Garden Club and Worcester County Horticultural Society are the two advisors to that trust, but the bank trust officer makes the final decision. But both those organizations have to be notified of any requests and advise on it.

Erin: Does it actually give 50,000 dollars every year?

Elise: It's about. They may not want this publicly known.

Erin: It was in the newspaper as 30,000.

Elise: Then maybe I'd better not. I'm not the administrator of that trust. I'm not even the president of Worcester Garden Club anymore. So if you use Worcester Garden Club's name in anything that's public, you really ought to speak to the president. Because I really didn't ask her. I thought you were just coming to me as a taskforce member, and I really didn't think I was going to represent the Garden Club.

Erin: We're not going to quote you on anything.

Elise: Or the Garden Club. Just don't use that because I'm not president anymore. But I think it's more like $50,000 a year.

Erin: I wanted to speak to someone directly that has the authority to talk about that.

Elise: The one who has it is, Mary Jane Tuohy at Fleet Bank.

Erin: May Jane Tuohy?

Elise: Well maybe she's not there anymore. She used to be the trust officer that dealt with it.

Erin: Okay.

Elise: So ask who has replaced her. Her name was Mary Jane Tuohy. T - U - O - H - Y. It's the Nathaniel Wheeler Trust. The bank merged and I can't remember if she

Erin: Stayed on or not?

Elise: Yeah.

Erin: All up in the air. All up in the air.

Elise: She's someone who was the last trust officer.

Erin: You seem to be very up on newspaper articles and all this, now what is in your opinion the public image of the Worcester Forestry Department, the people in charge of the trees right now?

Elise: I don't really know.

Erin: You don't know?

Elise: I don't. I think there were real problems for years because they didn't have the staff and the funding. I think they accumulated this huge backlog, and I know John Trexler was very convinced. I don't know that it was there fault, but they weren't able to get their job done. I think they have a huge task, because I was reading through my file here and one of the things Mike O'Brien was trying to do was to get the city council to okay using seasonal employees at Hope Cemetery, because they are the Department of Parks, Recreation and Cemetery, which is an odd combination. Parks and Rec are usually paired, but not cemetery. And what I found reading through my file, it reminded me that one of the things Mike O'Brien was trying to get changed was right. Last spring, 40 percent of the forestry department's man-hours were being spent maintaining the cemetery. So he wanted seasonal people there, and to me that makes sense, but that's just my personal opinion. I think he didn't get that. But I mean when you have to take care of this huge old cemetery, and I think they're mandated. There's something there. That comes first I think. So you know, what happens to the street trees?

Erin: Even less time to spend on the trees.

Elise: Yeah, so I think that's a problem.

Erin: If you were to advise someone that wanted to plant trees in the city, what do you think would be helpful for them?

Elise: A private individual?

Erin: Yeah.

Elise: And are they're going to need money.

Erin: Yeah, probably. It depends on the group though.

Elise: Well obviously you'd have to get your neighborhood behind it. You can't just start with an individual. And then you have to have them all plan a petition and submit it to the parks commissioner, Mike O'Brien. I think if you're willing to do a lot of the advocacying work yourself like Sheila Reid was, you can do it. But I'm not convinced yet that we have enough to maintain new plantings.

Erin: Uh huh. They want this to be a slow start.

Elise: Right, and I think a neighborhood group is essential. You can't do it all with just one individual. But I think you probably would need almost a written commitment from the city as well. If they will do the proper pruning and that kind of thing, you'll do the watering. I mean it does involve a lot of work to plant. I know just from the, I think we planted 22 fruit trees up at Green Hill Park and the city's parks commissioner promised us that they would have water up there, part of the park renovation of Green Hill Park, and they didn't. And here we had spent thousands of dollars to have these trees planted, so we had to go up, twice a week all last summer and fall, and water. I did this a couple times, it was a lot of work. They would have this one guy, Nick [Alathanian], who actually works for the DPW, and Nick, who does all the potted flowers in the city in the street and stuff, he's wonderful, works like a dog. And he would bring us water, but sometimes that wouldn't be enough and I'd bring a bucket and I'd go down to the lake, and I would bring up buckets. It's hard work. It's a lot of physical work to do something if you don't have a watering system.

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Erin: One thing that we're definitely emphasizing in our report is positive PR along with the planting. We're like "look if these people are going to be planting, then you need to do something for them. You need to be sending out thank-you cards and informational bulletins and things like that", making them recognize that what they're doing is helping and their participation is valued. Because if they feel slighted or if they feel like their participation isn't valued they're not going to want to do something else with the city. They're not going to want to support any other activities.

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Erin: When did you guys do that planting? Was that just last year? I'm assuming the trees were put in the ground by the city?

Elise: No, we hired Western Nursery. I mean they have thanked us and they came to our annual meeting to thank us, which was nice. They have to be careful that they don't get over committed.

Erin: No, they're definitely trying to make this a very slow process. They're like, "We want people to plant, but because of our under-staffing, we're going to limit it so that planting can only occur in April and May. That way we won't have the entire city replanting all these neighborhoods so that we can't be better."

Elise: It would be better if it were more area.

Erin: See, that you can't really control, especially when it comes to citizen involvement, because you know, you're not going to sponsor a tree three blocks away instead of the tree in front of your own house. But they're definitely getting. I guess Elm Park is working out really, really well.

Elise: They plant a tree for the firefighters. What else?

Erin: I'm talking about Elm Park Prep.

Elise: Oh, the community group street trees. So those people have done the watering?

Erin: They're definitely going very well. They're using some pear trees, some maples, some London plain trees. The people are caring for the trees. They're all in really good condition. I guess 2 of them have died and they've been replaced immediately. Everything's going really well with that group.

Elise: Good. You really need a group like that.

Erin: This is definitely going to be like out model group at this point. You know, because they have worked it out so that everything goes through one contact person who contacts one person in the department. That way no messages are lost and communication is always

Elise: Right, and the parks commission doesn't have to deal with a million different things. No, I mean, I think it's great, what's happened. I just hope you can keep up the momentum. Because if you look at those newspaper articles, there was a fair amount this topic over the last year, and it's very encouraging to me, because when I first moved here there were never articles about it.

Erin: We're definitely trying to get the PR and the positive feedback thing directly into our process. That way it's automatic that when somebody does this.

******Comments made off record.******

Erin: Are there any other sources of funding that you know of in the city?

Elise: There's the big Worcester community foundation, and they have a part of their grant that is just for environmental things. Our regional environmental council got a big grant from them for community gardens. I was reading the paper. [Black Stone Headquarters?] of the [Black Stone rivers?] got a big grant from them. So I think if this got organized well enough, they would probably be willing to do something. So they are getting more involved in the environment.

Erin: And this will have guarantees both on the city's side and the people's?

Elise: Yeah. If they show actual trees being planted and streets being improved and neighborhoods being improved, then I think they will probably be willing to make grants. And there are other foundations. The Stoddard foundation, a lot of private foundations in Worcester that give out a large.

Erin: Are they administered all by Fleet?

Elise: No I think those are administered probably by the family after.

Erin: Some of those family's have members in Worcester Garden Club.

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