Borough of Chambersburg Municipal Street Tree Plan

(Revised 02/12/02)

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Section I: Introduction

A. Introduction

In 1682, William Penn decreed that one out of every 4 acres cleared for farming shall be left forested, and towns be designed with green commons for public use. Since that time, trees have been an important part of all Pennsylvania communities including Chambersburg. Through the years, the citizens of Chambersburg have realized that the benefits and services provided by trees far exceed the price paid for their planting and maintenance.

The Borough of Chambersburg Municipal Street Tree Plan describes our community's street trees and how they are to be managed to attain community goals. The plan also provides a cost-effective approach for managing public street trees. The principal purpose of the street tree plan is to guide the management of our community street tree program; including tree removal, pruning, planting, and other important work. The plan should assist the community in achieving the greatest benefits from it's street trees at the least cost.

B. Vision Statement

The vision for community forestry efforts in Chambersburg is to achieve community sustainability and an enhanced quality of life through stewardship of our shared community forest and related natural resources.

Implied in this statement is full participation by all citizens of Chambersburg who influence or are affected by decisions relating to natural resources and their management in the Borough. Individual citizens must accept a key role for the stewardship of critical natural systems that sustain our collective well being.

Natural systems and processes provide an incalculable service to our community in terms of mitigating air and water pollution, reducing flooding, providing abundant clean water, and maintaining essential biological diversity. Trees soften the cityscape of masonry, metal and glass. Shade trees can also increase property values between 5 and 20%. These natural systems require management and care in populated areas if they are to continue to function.

The mission of the Borough of Chambersburg Municipal Shade Tree Commission is to create a community forest whose trees accurately reflect the values and standards of our community while making it a better place to live.

C. Goals

- Provide a safe and healthy environment for the community and trees.
- Improve community beauty, image, and pride while enhancing commerce and business by planting new shade trees within the borough limits.
- Create and maintain the maximum amount of visual and biological diversity.
- Preserve the uniqueness of different areas by selecting trees that compliment the activities occurring there.
- Increase the quality and accessibility of the community's natural resources by selecting specific species and giving careful attention to location for planting.
- Decrease the community's exposure to liability through sound administrative procedures.
- Continue to develop ways to increase awareness of the importance of shade trees.

D. Objectives

- Follow the American National Standard Institute (ANSI) recommendations for:
    1. Creating reasonable tree removal standards;
    2. Developing a system of tree replacement;
    3. Maintaining correct tree maintenance standards, (Work with arborists, property owners and the Borough to promote proper tree maintenance/ pruning techniques and reduce improper pruning practices such as “topping.”;
    4. Implementing correct site analysis and modification;
    5. Implementing correct tree planning and planting, (Promote “plant the right tree in the right place” concept to reduce street tree vs. utility line conflicts; street tree vs. sidewalk conflicts; street tree vs. intersection obstruction conflicts and other problems that occur when a unsuitable type of tree that will create problems as it grows to maturity is planted along the street.).
- Create opportunities for public participation and education
- Raise funds and seek grants for tree care, maintenance and planting of trees
- Develop volunteer programs to help increase the training, recruiting, and supervision of new volunteers.
- Continue the membership to Tree City USA
- Develop a “green ordinance” for the Borough which would enable the Commission to establish requirements for tree planting, and landscaping for new construction/subdivision projects.
- Work with Borough maintenance crews, arborists, residents, downtown business owners and business associations to reduce nuisance problems associated with large flocks of birds in street trees.

Section II: Stewardship of the Community Forest

A. The Borough of Chambersburg Municipal Shade Tree Commission

In 1993 in accordance with Borough Code, the Chambersburg Borough Council adopted a Shade Tree Ordinance to protect those trees planted on public right of way between the curb and sidewalk. This same ordinance created a Municipal Shade Tree Commission consisting of three appointed residents who serve as unpaid advisors with regard to borough shade trees. The commission has exclusive custody of and control of all street trees in the Borough, which are planted or growing on any street, public right of ways, treelawns or properties owned by the Borough. Following are responsibilities and duties of the Commission:

- Overseeing all planting, pruning, removal, and protection of street trees.
- Communicating with other committees and organizations nationwide in hopes of maintaining and improving the environment of local citizens.
- Studying problems and determining the needs of the community tree-planting program.
- Recommending the type and kind of trees to be planted along the streets and parks.
- Providing information regarding selection, planting, and maintenance of trees within the community and desirable legislation concerning any Borough tree program.
- Assist and educating persons engaged in tree care in the proper procedures required to maintain healthy and attractive shade trees.

The Municipal Shade Tree Commission also benefits the community by increasing the property value of the homes through encouraging both the addition of trees and proper tree maintenance. As the trees mature they can become local landmarks and be a sense of pride for our community. In taking advantage of the educational opportunities provided through the

Commission the community gains a heightened awareness of their environment as well as a feeling of unity due to being involved in a project. (NOTE: The Borough of Chambersburg Municipal Shade Tree Commission Ordinance and By-Laws are included in the appendices.)

B. Definition of a Shade Tree and a Street Tree

The definition of a shade tree is any deciduous tree (i.e. not an evergreen tree). A tree lawn is defined as the part of the street or highway not covered by sidewalks or other paving, lying between the property line and portion of the street or highway used for vehicular traffic or parking. The Shade Tree Commission shall have exclusive custody and control of all shade trees in the borough, which are planted, or growing on any street public right of ways, tree lawns or properties owned by the borough. Shade trees planted in the in the street public right of ways are considered to be "street trees."

The ownership of street trees includes all trees lining the streets, which are within the streets' right of way and are therefore the property of all borough residents. Property owners fronting on street tree locations are responsible for maintaining these trees. Property owners and residents are in effect the stewards of our community forest.

C. Property Owners Responsibilities and Borough Regulations

It is the property owner's responsibility to promptly remove or have removed all fallen trees on street right of ways of tree lawns. In case of emergencies or storm conditions, it is the responsibility of the property owner to remove or have removed all fallen trees as soon as possible. If the property owner fails to have the fallen trees removed within a reasonable period of time, the borough may contract the removal and levy and collect the cost thereof as a municipal claim against the property owner.

Property owners must remove trees that impede vehicular or pedestrian traffic flow on the streets and sidewalks in the Borough. Property owners in the Borough are reminded that all trees, shrubs, etc, overhanging sidewalks must be kept trimmed to a height not less than (8) feet to avoid interference with pedestrians; and tree limbs overhanging the main travel portion of roadways within 14 feet must be removed or trimmed.

It is illegal to attach printed or written material to utility poles, light standards, trees or refuse containers along any streets, sidewalks, or public grounds. Grass, weeds, or other vegetation may not grow in excess of 12 inches. This includes the grassplot along the street and sidewalk, grass in sidewalk areas, between the curb and street, or any other areas of the Borough. Residents are required to keep their sidewalk in a good state of repair. In addition to avoiding fines and making the property look better, property owners can protect themselves from lawsuits if someone should injure themselves.

In order to provide property owners in the Borough of Chambersburg an incentive to plant replacement street trees following the removal of hazardous street trees, the Borough of Chambersburg Shade Tree Commission has developed a reimbursement policy. To find out what the current policy guidelines are contact the shade tree commission.

D. Chambersburg Street Tree Inventory Summary (Numbers and percentages listed below are based on initial street tree inventory and do not include trees planted or removed since completion of initial tree inventory in December, 1995.)

1.) Street - **166** Chambersburg Streets are listed in alphabetical order in the inventory.

2.) Species - **31** different tree species are included in the inventory. **991** street trees are included in the inventory. Tree species - total number (percent %)

1.) Norway maple - **403 (41.0%)***
2.) Bradford pear - **111 (11.2%)**
3.) Silver maple - **66 (6.7%)***
4.) Ginko - **56 (5.7%)**
5.) European hornbeam - **49 (4.9%)**
6.) Red oak - **47 (4.7%)**
7.) Linden - **40 (4.0%)**
8.) Sugar maple - **37 (3.7%)***
9.) Pin oak - **32 (3.2%)**
10.) Red maple - **31 (3.1%)***
11.) Sycamore maple - **28 (2.8%)***
12.) London plane - **12 (1.2%)**
13.) Sweet gum - **11 (1.1%)**
14.) Dogwood - **10 (1.0%)**
Elm - **10 (1.0%)**
15.) Flowering cherry - **7 (0.7%)**
16.) Ash - **5 (0.5%)**
Crabapple - **5 (0.5%)**
17.) Honey locust - **4 (0.4%)**
Sassafrass - **4 (0.4%)**
Tulip tree - **4 (0.4%)**
18.) Horse chestnut - **3 (0.3%)**
Kentucky coffee - **3 (0.3%)**
White oak - **3 (0.3%)**
19.) Arborivitae - **2 (0.2%)**
Bald cypress - **2 (0.2%)**
Chestnut - **2 (0.2%)**
20.) Boxelder - **1 (0.1%)***
Hybrid poplar - **1 (0.1%)**
Peach - **1 (0.1%)**
Yew - **1 (0.1%)**

(*Maple species (Norway, Silver, Sugar, Red, Sycamore & Boxelder) total **566 (57.4%)**.

3.) Diameter at Breast Height (DBH); average tree diameter at breast height is **16"**. Range is from **1" to 49"**.

4.) Height Classes (Height); **985** tree heights included in the inventory.

a. = 0 - 10': **74 (7.5%)**
b. = 10 - 25': **312 (31.7%)**
c. = 25 - 50': **550 (55.8%)**
d. = 50' and larger: **49 (5.0%)**

5.) Condition Code (Cond.); **983** tree conditions included in the inventory.
a. Good - healthy vigorous tree. No apparent signs of insect, disease or mechanical injury. Little or no corrective work required. - **548 (55.7%)**
b. Fair - average condition and vigor for site. May need corrective pruning or repair. May show minor insect injury, disease or physiological problem. - **277 (28.2%)**
c. Poor - general state of decline. May show severe mechanical, insect or disease damage, but death not imminent. May require major repair or renovation. - **123 (12.5%)**
d. Dead - or dying. - **35 (3.6%)**

6.) Management Needs; 973 management needs were included in the inventory.
a. Minor pruning: **372 (38.2%)**
b. Major pruning: **89 (9.1%)**
c. Wound repair: **9 (0.9%)**
d. Feeding - fertilizer, iron or
e. Insect control: **0**
f. Disease control: **0**
g. Removal: **65 (6.7%)**
h. None: **426 (43.8%)**
i. other elements: **12 (1.2%)**

E. Annual Work Plan

An annual work plan can ensure that street trees receive the regular care they need to remain attractive, healthy, and safe. The work plan helps identify and prioritize important tasks, schedule work, assign responsibility, reduce liability, and even build support for a tree program. In addition, using an annual plan to document the maintenance needs of trees in the community will show administrators that annual tree maintenance is warranted and has been carefully planned. The Pennsylvania Forestry Association publication, "A Guide for Municipal Tree Commissions" was used to identify annual work plan tasks listed below. Following are recommended tasks and time frames for completion by the Borough of Chambersburg Municipal Shade Tree Commission:

- Planning and Administration:
  a.) Organize and prioritize work each January.
  b.) Evaluate and prioritize tree planting opportunities in the summer.

- Tree Planting: Decrease long-term costs and increase long-term enjoyment by selecting trees and locations carefully. Use the street tree inventory and an annual field survey to identify available planting sites and develop annual tree planting plan.
  a.) Plant during spring or fall. (Some species should be planted only in the spring.)
  b.) Water newly planted trees during hot weather and periods of little rain.

- Tree Pruning: Develop a schedule or rotation so that all trees are pruned once every five years. Young trees properly pruned in their first three to five years will develop a strong branch structure and require less work as they mature. Always remove dead and hazardous limbs immediately.
  a.) Prune in late summer or fall, or during the dormant season.
  b.) Prune young trees after the first year.

- Tree Removal: Keep trees safe and protect the community from injury and property damage by evaluating the health and structure of all public trees at least once a year. Trees identified as dead or dying should be removed promptly, and hazardous trees must be removed immediately. Check potentially hazardous trees frequently and keep written records of tree conditions at the time of inspection.
  a.) Evaluate tree hazards each summer. Remove hazardous trees as soon as they are discovered.

- Public Relations and Funding: Keep administrators informed of program plans and activities and involve residents whenever possible.
  a.) Submit grant applications for fall and spring deadlines
  b.) Submit Tree City USA application for fall deadline
  c.) Plan Arbor Day ceremony during winter and conduct ceremony on or as close as possible to the last Friday in April.
  d.) Conduct youth education during fall or spring.
  e.) Provide information in the winter and spring to residents and arborists on proper pruning techniques to reduce the practice of "topping."

- Other Tasks: Consider using a system such as Plant Health Care to monitor and plan for insect and disease problems.
  a.) Control diseases and insects, as needed.

F. Limiting Liability

The following are guidelines written into the street tree plan, which can help reduce exposure to liability:

- Annual inspections of community trees should be completed and accurate inspection records should be kept.
- A tree inventory should be completed and maintained. Dates of inspection, conditions of inventoried trees, pruning, and other maintenance should also be kept.
- Hazardous trees and decayed branches should be removed, as they become known.
- Only trained, certified, and insured professionals who follow good arboricultural practices should be hired for any work on shade trees.
- Personnel should be trained in safe procedures, first aid, and safe equipment use.
- Visual clearance for intersections, traffic signs, and signals should be maintained.
- Requests by property owners and others should be responded to promptly.

Section III: Site Analysis, Tree Selection, Planting and Maintenance

A. Site Analysis

Proper site Analysis, tree selection, planting and maintenance are vital in reducing conflicts and problems associated with street trees. Before choosing and planting trees and shrubs, consideration and careful attention should be given to the site itself. Each site should be evaluated for the following: slope, soil type, amount of light, space or size, hardiness zone, exposure, drainage, and soil pH/nutrient availability.

Other details that should be considered when planting new street trees are planting stock, species, and site suitability for the trees. There are some limitations on the placement of street trees, which need to be, followed:

- Space large sized trees 40-50 feet apart
- Space medium sized trees 30 feet apart
- Space small sized trees 25 feet apart

To avoid infrastructure conflicts and maintain visibility, plant trees:

- 30-40 feet from intersections
- 25 feet from light posts
- 10 feet from fire hydrants
- 5 feet from underground utilities

The Borough of Chambersburg Municipal Shade Tree Commission encourages property owners to consider new tree planting sites on the building/home side of the sidewalk. In many instances, the building/home side of the sidewalk provides a more appropriate lawn planting site then the grassplot that exists between the sidewalk and the curb/street. Planning for trees planted in this area should consider whether, at maturity, the tree will provide adequate canopy cover over the sidewalk and public right-of-way. The benefits of tree plantings on the building/home side that will provide cover for the sidewalk area include:

- improved tree health by providing a larger area for unobstructed root development;
- increased opportunity to plant larger tree species as appropriate to lawn size (as opposed to smaller grassplot area);
- reduced sidewalk/curb cracking and upheaval problems;
- reduced damage to trees from car doors, truck traffic, road salt and pedestrians;
- increased participation and tree stewardship by property owners.

B. Tree Selection

After the site evaluation, select plant material that will adapt well to that location. Match the needs of the plant to the site. When choosing plant material it is also important to know the growth habit and ultimate size, maintenance needs, pest resistance, function and potential invasiveness. Many trees traditionally planted along our streets, such as, Norway Maple, Silver Maple, and Sycamore quickly outgrew the available space. It may be beneficial to select narrow and compact species. A complete list of species and cultivators recommended by the Chambersburg Shade Tree Commission for street tree planting is available at the Borough Office and is included in the appendices. The Penn State publication, "Street Tree Factsheets," may also provide valuable information.

C. Planting Stock

Any tree to be planted along streets should meet the "American Standard of Nursery Stock (ANSI Z60). These standards are recognized throughout the nursery industry. Good planting stock is a must. Residents purchasing a tree for planting along the street should ask their supplier about these specifications. Any shade trees planted along streets should meet the minimum standards for shade and flowering trees:

- 2" minimum caliper (diameter). In some situations, smaller stock may be used.
- 12" root ball diameter for every 1" in caliper
- 10-12 feet height and limbed up to 5-6 feet
- Single stemmed trunks should be sound and free of damage
- The root ball must be sound and made of natural non-synthetic burlap. Under certain situations smaller stock may be worthwhile

D. Invasive Plants*

Currently there is great debate on the use of native plants over introduced or exotic species. Where appropriate, choose the best plant for a given location. This choice may or may not be a native. Most urban landscape sites have been so modified and the microclimate so changed through buildings, underground wires, pavement, traffic, soil compaction, and so on, that native plants may not perform as well as non-native plants. Choose the "right plant for the right location" but also consider existing plant communities and avoid planting monocultures.

Invasive plant is a name for a species that has become a weed pest, a plant which grows aggressively, spreads, and displaces other plants. Invasive plants are generally undesirable because they are difficult to control, can escape from cultivation, and can dominate whole areas. The primary reason to not landscape with invasives is that they are degrading our native environments. The following trees have been identified by the PA DCNR as invasive trees in Pennsylvania:

- Norway maple(Acer platanoides) is considered a serious threat. It is commonly planted and escaped, invasive in many, wind spreads prolific seeds. It should be noted that the species has cultivars that are not known to be invasive. An example is Norway Maple 'Crimson King' grown for its reddish leaves. This cultivar is not known to be invasive.
- Tree-of-heaven(Ailanthus altissima) is considered a serious threat in south-central Pennsylvania. It is invasive in many states and wind spreads prolific seeds.
- Siberian elm(Ulmus pumila). This tree which is listed as occasional in south-central Pennsylvania is considered deserving of vigilance.

The following invasive trees are not considered a major threat yet in south-central Pennsylvania:

- Sycamore maple(Acer pseudoplatanus) is listed as escaped from cultivation and wind spreads prolific seeds.
- Empress tree(Paulownia tomentosa) has prolific seeds that fall to start new seedlings
- Callery pear(Pyrus calleryana) is commonly planted street tree that is becoming a problem as an escape. It should be noted that this species has cultivars that are not known to be invasive.

The following steps are recommended as best insurance against future problems caused by invasive plants:

- Avoid using known invasive plants; minimize landscape disturbance; protect healthy native plant communities; use fertilizers wisely; have a land management plan for maintenance over time; scout; remove invasives before they become a problem; replace invasive plants with native or noninvasive species; and remove invasives first where their densities are low.

*Source: "Invasive Plants in Pennsylvania," PA DCNR Brochure

E. Recommendations for Planting Trees

When considering the planting and maintenance of woody plants, many of the established cultural guidelines practiced by landscape professionals have undergone closer scrutiny in recent years. Based on research findings and field observations, many of these practices have been modified or changed in order to improve overall plant health in a landscape setting. Research has shown that improper planting techniques, particularly planting "too deep" is a major cause of tree mortality in managed landscapes. In addition, research has shown the accepted practices governing the size and shape of the planting hole and the nature of the "backfill" mixture require some modification. The recommendations for planting and maintenance of street trees contained in the Penn State publication, "Planting and After Care of Community Trees," (The Pennsylvania State University, 2001) should be followed.

Site Preparation: Because the fibrous or absorbing roots of most woody ornamentals are within the top 10" to 12" of the soil, it is recommended that the planting hole be dug no deeper than the rootball as measured from the trunk flare to the bottom of the ball. Holes dug deeper than the rootball often result in settling of the plant to a point above the trunk flare. As root development often extends beyond the canopy or dripline, it is now recommended that the planting area be loosened and aerated at least three to five times the diameter of the rootball.

Planting Hole Preparation: One of the most common errors in tree planting is that the rootballs are either planted too deep or too high, both of which can cause serious problems. To properly plant B&B plant material, begin by locating the point at which the trunk flare begins. In some cases, the trunk flare junction may be buried in the top of the rootball and it may be necessary to loosen the burlap at the top of the ball to properly locate the junction. Measuring from the trunk flare to the bottom of the ball will give the planting hole depth. Try to maintain the integrity of the rootball until it is secure in the hole. In the event that some of the soil should fall away from the roots, simply proceed with the planting, taking care to ensure that the roots do not dry out from sun or wind. The hole size should be approximately three times the width of the ball and have sloped sides.

Setting the Plant: Carefully set the plant in the hole so that the trunk flare is at, or 1" to 2" above the existing grade. Once the plant is properly placed, cut away and remove all visible rope and burlap. If the rootball appears in danger of completely collapsing, remove the rope and

burlap from only the top third of the ball. Although still subject to debate, it is recommended that at least the top 8" - 16" of the wire basket be removed once the root ball is stable in the planting hole. Do not leave any protruding points of wire which could cause injury.

Backfilling the Planting Hole: According to research, backfilling with soil dug from the planting hole is preferable to mixing the soil with large amounts of organic soil amendments such as peat moss, compost, etc. The addition of an organic soil amendment may be called for if the existing soil is of poor quality, ie. excessively sandy, heavy clay or undesirable fill material. Alternatively, quality topsoil, similar in texture to the existing soil, may be brought in and used for backfill. While backfilling the hole, water the soil halfway through the backfill process and allow it to drain. When the water has drained away, resume backfilling and water again thoroughly. To complete the backfilling, smooth the surface soil and check to ensure that the trunk flare is completely exposed.

Watering: Water is a critical factor to the successful establishment of landscape plants. Excess or insufficient water will impede the formation and/or elongation of new roots. After planting, water the planting area deeply. Newly planted trees must receive adequate water weekly during the entire first growing season to become established. Rainfall alone may not provide adequate, consistent moisture necessary for establishment. On larger caliper trees, weekly watering may be necessary through the next several growing seasons.

Fertilizing: Incorporate phosphorus, potassium and limestone according to a soil test report. If needed, a slow release or organic fertilizer could be mixed into the planting area or be applied on the soil surface around the tree basin.

Staking: While there are many opinions on the method and value of staking trees at planting time, most experts agree that staking is not necessary for all trees. Trunk strength, size of the canopy, wind direction and site traffic problems should all be considered before staking a tree. Research has shown that staked trees may develop a smaller root system and decreased trunk taper. If the rootball is stable in the soil, then it may not need to be staked. However, if the rootball is unstable and staking is required, try to attach stakes low on the trunk and allow some sway. In most instances, stakes should be removed after one growing season.

Mulching: Mulching is a cultural practice that can be of benefit in the landscape when done correctly. Mulching will reduce weeds, moderate soil temperatures, conserve soil moisture in the root zone and add an aesthetic quality to the landscape. Improper mulching can impair plant health and lead to the decline of the plant material. Organic mulch should be placed in a wide band, approximately 3 times the diameter of the rootball, over the root zone and no more than 2" to 4" deep tapering to, but not touching, the trunk. Mulch piled up against the trunk may cause rotting of the bark and can create entry points for insects or disease organisms. Field mice may also inhabit deep mulch and feed on the bark.

Pruning: After transplanting, prune only broken or damaged branches. Top pruning to compensate for root loss is no longer recommended. It is important to leave as much foliage on the tree as possible because carbohydrates and other products produced by photosynthesis in the leaves are necessary for root system regeneration and development.

Tree Wrapping: The bark on a tree or shrub is as important as skin to an animal. It acts as a barrier to exclude insects and disease organisms from the vascular system which lies directly under the bark. Some bark injuries may occur as a result of damage from the sun (sunscald) or temperature extremes (frost cracks). For many years it has been a common practice to use tree

wrap on newly planted or thin barked trees in an effort to reduce sun or temperature damage to the bark. Research has found that some tree wraps may not provide the protection that was originally intended. Some tree wraps were found to retain excess moisture beneath the wrap; this may encourage fungal or bacterial growth, especially if there were pre-existing wounds in the trunk. If tree wrap is to be used, it is recommended that appropriate material be selected, checked frequently, and the wrap be removed during periods of active growth.

NOTE: The above guidelines were developed by Deborah C. Swanson, Univ. of Mass. Extension Educator. The recommendations for planting and maintenance of street trees contained in the Penn State publication, "Planting and After Care of Community Trees," (The Pennsylvania State University, 2001) should also be followed.

F. Maintenance Practices Standards

Trees are a beautiful asset to any small town or city, but they do require attention. Tree maintenance can be expensive and time consuming, but it should not be neglected. A tree that is properly cared for will live longer than one that is not. The recommendations for planting and maintenance of street trees contained in the Penn State publication, "Planting and After Care of Community Trees," (The Pennsylvania State University, 2001) should be followed.

One practice that can be deadly to a tree is "topping". Tree care specialists do topping frequently, even though they are aware of the problems it causes. In this case all of the tree limbs are cut, regardless of size, leaving the tree bare. The cut parts are extremely susceptible to disease and pest infestation, which may result in rapid re-growth of many smaller limbs. These limbs are much weaker than the original ones and will break easier.

Topping will remove all of the leaves, which are the food producing part of the tree. Other effective ways of maintaining proper tree growth would be natural pruning. Natural pruning will enable the tree to "heal" pruning wounds in the quickest, most efficient manner. Trees thinned by natural pruning and the removal of crossing branches (all cuts made back to a lateral branch, no stubs) will enable a properly pruned tree to retain its natural form.

Young trees can be "trained" to grow shorter and fuller through regular trimming. Trees that become too wide can be thinned from the sides, which is called side pruning. Trees that become too tall and possibly growing into power line can be "side pruned". If a very tall tree's lower branches are interfering with utility lines it can be "under pruned". Arborists need to do pruning according to ANSI standards. These safety standards are designed specifically for tree care operations and should be incorporated into the Street Tree Plan.

The Borough of Chambersburg Municipal Shade Tree Commission supports the use of the American National Standards A300 (ANSI A300) for tree care operations and the maintenance of trees, shrubs, and other woody plants within the Borough. A300 standards are the voluntary industry consensus standards for tree care operations and the maintenance of trees, shrubs, and other woody plants. Performance standards provide requirements and recommendations for the accepted industry maintenance practices. A300 standards offer arborists, green industry professionals, and other managers of woody plants a method for writing maintenance specifications and improving communication.

In this way reputable businesses are given some protection from dishonest competitors that say they will deliver the same service at a lower price, but only provide a fraction of that service. In this way the manager requires that accepted tree care practices are followed and that pruning

specifications from different companies can be compared in a fair manner. The ANSI A300-1995 standard requires the specification writer to consider the growth habits of individual tree species within the local environment.

The Borough of Chambersburg Municipal Shade Tree Commission recommends that these standards should be used in all relevant tree care contracts. Anyone contracting for tree service, whether for private, corporate, institutional, or public trees, should add the following sentence to a verbal or written agreement:

"Work to be done in compliance with the A300 Tree Care Standards"

Anyone supplying tree service should write the bid using the standard terms in a standard manner (such as "cleaning" or "salt index"). Also, tree care professionals should use the standards to demonstrate that their proposal belongs to a specific and carefully considered program of tree management.

Another way to protect shade trees and help them remain healthy is to avoid damage to the trees:

- Don't use nails to post signs on trees
- Don't injure the roots or bark when mowing grass around trees
- Don't remove more than one-third of the leaf cover during pruning; otherwise the bark may split from direct sunlight exposure.
- Don't allow climbing spikes to be used.

G. Tree Roots versus Sidewalks (NOTE: The following information is excerpted from an article edited by Leonard E. Phillips in "City Trees, The Journal of The Society of Municipal Arborists," Vol 35, Number 5, September/October 1999.)

Problems: Problems with roots from municipal trees begin when shallow-rooted trees are forced to grow in the tree lawn or utility strip and between the street, curb, and the sidewalk.

In urban situations, the tree roots always win and the sidewalks always lose. Sidewalk problems can not be easily solved. First of all, sidewalk construction requires compacted soil and the compaction will generally deflect the growing root downward. However, often a small gap occurs between this compacted soil and the pavement. The gap is caused by the difference in pavement expansion and temperature increases against the base material. In the gap, water collects from condensation of soil moisture rising to the surface and stopping against the impervious pavement. With water and oxygen present in this gap, an opportunistic root will grow. Once the root has entered this gap, it will grow and increase in diameter, raising or heaving the sidewalks and curbs just as they raise the soil in areas where there is no sidewalk. Soils that are: compacted, have excessive water, or have poor aeration can also cause surface rooting by trees not known to have shallow roots.

When the municipality decides it is time to correct the problems associated with heaved sidewalks and curbs due to tree roots, a whole series of new problems with the trees can result. Many of the horizontal roots that are causing the problems are the same roots that make a tree stable against storms and wind. It is not advisable to prune these roots in the interest of saving the walk.

Solutions: The best solution to the problem of heaving walks and curbs occurs when the trees are planted. The soil condition should be suitable for the type of tree selected. Curb problems

can be reduced if there is at least one foot of soil between the curb and the tree trunk at maturity. If these conditions do not exist, either create better conditions or move the tree to a better site. Care should be taken to select a smaller stature tree, and of a species with roots that are not evasive.

The following list includes some of the more desirable trees to plant in narrow tree lawns: Acer campestre, Acer griseum, Acer tataricum, Amelanchier, Carpinus, Chionanthus, Comus, Koelreuteria , Maackia , Magnolia, Malus, Ostrya, Oxydendrum, and Prunus.

The list below indicates some alternatives developed to deal with sidewalk problems:

- Remove and replace the trees.
- Remove and replace the sidewalks, making them higher than before or repaving with a flexible material such as paving blocks or gravel.
- Use expansion joints in concrete walks so if a heave occurs the damage is limited to a section and that section is easily replaced after the root problem is corrected.
- Work with the engineers and construction managers to understand the problems and reach an agreeable compromise.
- Use curved sidewalks or curbs to go around trees.
- Use ramps and elevated sidewalks to bridge over the problem roots.
- Plant trees on private property and at a minimal distance of 3 feet away from the sidewalk.
- Use easements to run the sidewalk on private property and increase the tree lawn width.
- Use physical root barriers made of polyethylene but do not cut major roots to install the barrier. The barrier should start one inch above the ground surface and extend at least 18" down.
- Chemically treat the asphalt and concrete walks to retard root invasion.
- Install a Biobarrier™ on Typar by Dupont (or equal), which is a fabric root barrier that is commercially available. The barrier is located according to the manufacturer's recommendations. This barrier is best installed when the tree is young and the roots have not yet become a problem.
- Improve soil conditions to help tree roots grow more deeply and away from the curbs and walks.
- Root prune the trees before a problem occurs. Do not endanger the tree by cutting too many large roots. Keep in mind that the severed root will probably regrow from where it was pruned.
- Have solutions built into construction specifications and subdivision regulations.
- Use a washed rock base under the sidewalk. The particles should be at least 1 to 1-1/2 inches in diameter. The large pores very successfully discourage root growth although some research at Cornell University has indicated that if the large rock has fine particles mixed into the stone/soil mix, the tree roots can absorb air, water and materials from the voids and fine particles. The roots will grow but not result in the problem of sidewalk upheaval.

Remember that the best solutions are long-term ones that involve planting the right tree in the right place. There is no substitute for careful planning and cooperation with other municipal officials.

Planting Solutions: Tree selection when planting near a sidewalk is critical to having long term success. The amount of space available should be used to determine the size of the tree being planted. The following chart illustrates this information:

Tree Lawn Width	Mature Tree Height
0-3 feet	None
3-5 feet	10-30 feet
5-7 feet	30-40 feet
7-9 feet	40-50 feet
9 feet or wider	50 feet or taller

Another source indicates that the walk should be further away than three times the trunk diameter at maturity. Trees that have shallow roots should be avoided near sidewalks. The worst ones are: Norway Maple(Acer platanoides), Red Maple(Acer rubrum), Silver Maple(Acer saccharinum), Ash (Fraxinus spp.), Sweetgum(Liquidambar styraciflua), Tuliptree(Liriodendron tulipifera), Pin Oak(Quercus palustris), Poplar/Cottonwood (Populus spp.,) Willow Salix spp., American Elm(Ulmus americana), and Siberian Elm (Ulmus pumila).

According to Bruce Fraedrick of Bartlett Tree Research Laboratories, Certain species are more tolerant of root pruning than are others. His list follows:

Tree	Level of Tolerance
Ailanthus	Tolerant
Ash	Intermediate
Beech	Intolerant
Birch	Intolerant
Elm	Tolerant
Conifers	Intolerant*
Ginkgo	Tolerant
Honeylocust	Tolerant
Lindens	Intermediate
Norway Maple	Intermediate
Oaks	Intermediate
Pear (Callery)	Intolerant*
Red Maple	Tolerant
Silver Maple	Tolerant
Sycamore	Tolerant
Tuliptree	Intolerant*
Willow	Intermediate

*Highly subject to windthrow following root pruning.

Besides the species, mature trees are less tolerant of root pruning than younger trees are. Trees with large crowns are more sensitive to windthrow following root pruning as are all trees exposed to high winds.

H. Working With Utilities

In an effort to prevent community conflict and damage to street trees, the Shade Tree Commission will use the following guidelines to assure good working relations with public utilities:

- Utility representatives will be included when establishing/changing ordinances and rules. Their inputs and suggestions will be considered.
- Proper pruning techniques will be recommended for use on all street trees.
- Utilities will be encouraged to participate in or develop a tree replacement program to eliminate nuisance and hazard trees.
- The public should be notified prior to utility line clearance to explain the necessity of line clearance and that proper pruning techniques will be used.

It is recommended that all utilities be required to notify the Borough before pruning or removing street trees. This includes root pruning by underground utilities.

I. Birds

Birds create enjoyment and recreation while greatly enhancing the quality of our lives. Unfortunately, they can become pests at times too -- feeding on crops, creating health hazards, roosting on buildings, contaminating food, or creating a nuisance. The major pest birds are pigeons, starlings, and house sparrows, although many birds can become pests in the right (or wrong) situation. Birds are protected by many laws and regulations. Although pigeons, starlings, and house sparrows are not directly protected by federal law, their control is often strictly regulated by state and local governments. Public opinion is often strongly against any control measure that kills birds, even pest birds.

During the past several years, bird flocks roosting in trees on South Main Street has been a concern, in particular, for business owners. The Borough of Chambersburg Shade Tree Commission has been working with business owners, wildlife professionals, forestry professionals, university specialists, to identify a workable solution to this problem. Currently, existing street trees used by flocks to roost are being replaced with trees with branching patterns less hospitable for roosting. It is recognized that similar problems exist in urban areas around the country and a combination of methods may be need to control the problem. Following are some methods that should be consider for controlling bird problems.

Street trees: When roosts occur in landscape trees near homes or along streets, thinning side branches from the trees used by birds will usually disperse them. This method was developed from blackbird roost studies in Texas and appears to be an effective approach. Consultation with a professional arborist will help maintain the trees' aesthetic qualities.

Woodlot or grove of trees: Thin out about one-third of the trees. Generally, such roosts occur in dense, overcrowded stands of young trees; thinning improves tree growth and makes the site unsuitable for roosting. Such thinning successfully dispersed roosts from research woodlots in Ohio and Kentucky, and from at least two problem roost situations in Nebraska. In dense cedar thickets, bulldozing strips through the roost to remove one-third of the habitat has also been successful in dispersing birds. Soil disturbance with heavy equipment, however, may be hazardous in soils harbor fungal spores of histoplasmosis.

Tree Selection: If planting trees in an area with a history of bird roost problems, avoid trees that have a more closed or dense canopy. For example, fall blackbird/starling roost appear more likely to occur in trees such as maples, Bradford pear in protected spots, and to a lesser extent, pin oak. Roosting flocks generally choose dense trees that offer ample perch sites for the large flock and protection from adverse weather. Another point to consider in a landscape plan is that a mix of tree types is less likely to be suitable as a roost site, compared to use of a single species grouping.

Nonlethal bird control: Methods include habitat modification (limiting food, water, and shelter), exclusion (with netting, porcupine wire, sticky repellents, etc.), and trapping. Most common lethal control measures are AVITROL poison baits and toxic perches. Be extremely careful when using bird poisons so that you do not harm nontarget birds and animals.

Frightening*:

- Begin early before birds form a strong attachment to the site.
- Be persistent until the problem is solved.
- Dispersing a roost by frightening will likely require 3 or more consecutive evenings to be successful.
- Frightening devices include recorded distress or alarm calls, gas-operated exploders battery- operated alarms, pyrotechnics (shellcrackers, bird bombs-contact a professional pest control operator and city ordinances for regulations/permits/restrictions), lights (for roosting sites at night), bright objects, and various other stimuli. Spraying birds with water from a hose or from sprinklers mounted in the roost trees has helped in some situations. Beating on tin sheets or barrels with clubs also scares birds.
- A combination of several scare techniques used together works better than a single technique used alone. Vary the location, intensity, and types of scare devices to increase their effectiveness.
- Prior to dispersal efforts, consider alerting public officials and neighbors as appropriate about the possible disturbance and about the purpose of the dispersal. Consider also where dispersing birds might go.

(source: Dispersal of Blackbirds, Crows, and Starlings from Urban Roosts by Ron Johnson, Extension Wildlife Specialist, University of Nebraska Cooperative Extension.)

Section V: Public Education and Support

A. Community Benefits

The entire community will benefit from a well managed community forest. Maintaining a healthy and safe community forest requires the support of informed, involved citizens. Providing opportunities for community education and participation is essential for promoting and sustaining a community tree program. Tree commissions can improve public relations by working with many different people including officials, residents, business owners, developers, and the media.

Residents: People may be interested mainly in their own neighborhoods, but they can be stimulated to become involved in community-wide tree issues. Residents can be very emotional about their trees. They often voice alarm about excessive tree removals or improper pruning, so they should be kept informed and encouraged to participate in making decisions.

Local businesses: Trees can attract shoppers and other customers by making commercial areas more attractive and comfortable. The goodwill and enhanced public image resulting from the involvement of business owners in a community tree program can generate favorable advertising for the businesses.

Developers: Real estate developers are major forces in the growth of communities and they have a vested interest in landscaping. They can play a helpful role in the preservation and growth of the community forest, which makes properties more valuable and easier to sell.

Organizations: Civic and environmental groups such as Kiwanis, Rotary and garden clubs can help to maintain the community forest through organized projects.

The media: Newspaper, radio, and television reporters often look for either positive or controversial stories. Favorable publicity for the tree program can be generated by forming a good relationship with local media persons. This can be accomplished by keeping reporters informed of the program's activities and inviting them to attend scheduled events. Controversies can be avoided through proactive education.

B. Volunteer Opportunities

With the proper supervision and training, tree planting and other volunteer projects can benefit the community and help to bring people together for worthy causes. These projects provide opportunities for enjoyable interaction among residents and promote both personal satisfaction and community pride. Volunteers and volunteer projects help legislators become aware of the need for and benefits of quality trees and green spaces. Volunteers in a community forest program provide many services, including the following:

- Planting trees along streets and in parks and school grounds and helping to restore riparian and other green areas.
- Maintaining community trees by cultivating, simple pruning, watering, removing guy wires and stakes, and mulching.
- Forming shade tree commissions to develop master plans, write or revise ordinances, conduct tree inventories, help develop tree planting lists for communities, recommend removal of hazardous trees, sponsor workshops, and champion community forestry programs.
- Helping to promote the acquisition and preservation of parks and open spaces.
- Participating in fund-raising projects, such as garage sales, raffles, auctions, craft shows, and bake sales. These are fun and help volunteers become acquainted with each other and members of the community.
- Helping to develop, publicize, and promote special community events, such as Arbor Day, Earth Day, and other green celebrations.
- Developing and maintaining trails and forming patrol and advocacy groups to make riparian areas, green ways, and open space areas more accessible and attractive. Organizing cleanups of litter and debris.
- Communicating with government agencies and local residents to build and maintain support.

C. Challenges

There are challenges facing the Borough of Chambersburg Municipal Shade Tree Commission. Improper pruning of street trees in the form of “topping” continues to be a problem. The commission will continue to educate property owners and tree trimmers on proper pruning methods. In the future, the commission may consider a “Tree Care” ordinance to control the problem.

Funding for street tree planting and maintenance is limited. Even updating the street tree inventory is a major task and can be costly. The commission relies heavily on grants from the Pennsylvania Urban and Community Forestry Council. Other sources of funding may need to be identified. Additional volunteer and community support may also be needed for street tree management.

Particular attention needs to be paid by the commission to ensure that street tree projects are conducted in low income and minority neighborhoods. In addition, streets and neighborhoods with little or no tree canopy for shade in the summer should be identified and prioritized for tree planting projects. As Chambersburg continues to grow and improve, the commission will need to work closely with developers, business owners, and the Borough to ensure that existing public trees are protected and new trees are included as appropriate in development projects.

The vision for community forestry efforts in Chambersburg is to achieve community sustainability and an enhanced quality of life through stewardship of our shared community forest and related natural resources. The responsibility for management of the community forest as part of the natural systems that exist within the Borough is complex and must be shared among government agencies, non-governmental organizations, property owners and residents from all walks of life. Through cooperative efforts to meet these shared stewardship responsibilities, the vision for community forestry can be achieved in Chambersburg.