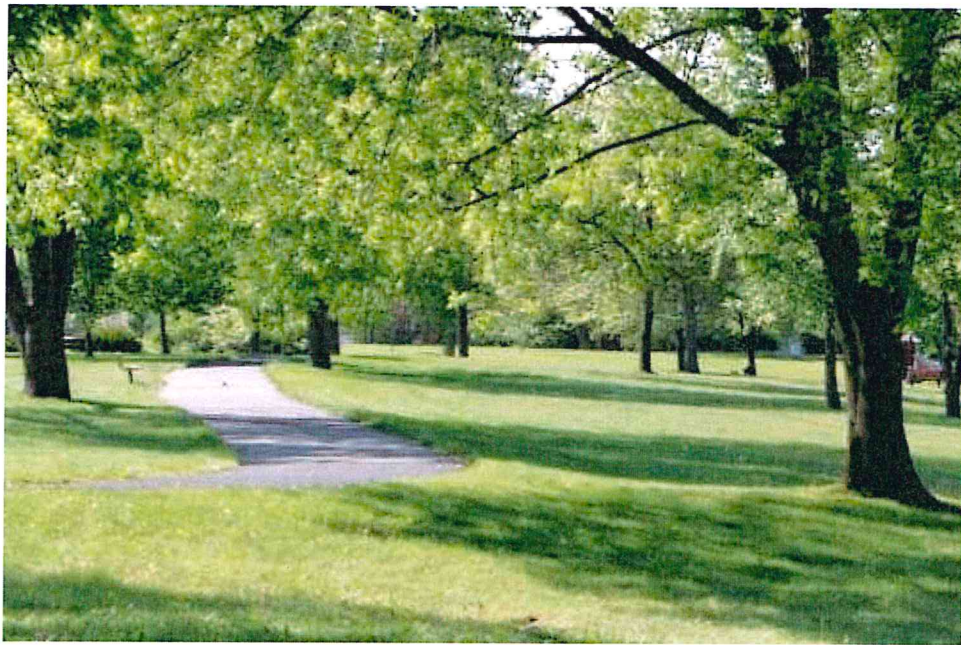
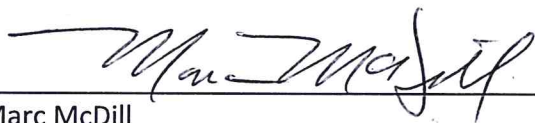


Ferguson Township Tree Plan

2017-2022





Marc McDill
Chairman of the Ferguson Township Tree Commission

4/17/2017
Date

Ferguson Township Tree Plan

Section 4 of Ordinance 991 details the creation of the Ferguson Township Tree Commission and outlines their responsibilities. The Township Arborist and Tree Commission have prepared this Tree Plan in accordance with this ordinance. This Tree Plan is the first edition of the document, and will be updated periodically to ensure it describes the current state of the urban forest in Ferguson Township.

Tree Commission Members

Marc McDill, Chairman

Howard Fescemyer, Vice Chairman

Mike Jacobson

Darlene Chivers

Jerry Learn

Former Tree Commission Members

Jackie Esposito 2014-2015

Troy Bayletts 2014-2016

Township Arborist

Lance A. King



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Part I: State of the Urban Forest of Ferguson Township

Ferguson Township was formed in 1801, and was named after settler Thomas Ferguson. It contains approximately fifty square miles of area in the south west corner of Centre County. Ferguson Township is home to over 18,000 residents, though much of the township remains undeveloped.

Ferguson Township continues to grow at a steady pace. In recognition of this growth and the value of green infrastructure, the Township formed the Ferguson Township Tree Commission in 2014 and hired the first full time Township Arborist in 2015. Ferguson Township also adopted a Street Tree Ordinance and two resolutions to help guide the township's tree program in the future.

Ferguson Township actively manages over 4,000 street trees along with trees in township owned parks. The Township's Urban Forest maintenance program is all encompassing, including pruning, pesticide application, removal and replacement, and new tree plantings. Ferguson Township also has a full street tree inventory that is completed every five years.

The most recent street tree inventory was completed in 2014. The inventory showed that approximately 21% of the street trees in Ferguson Township were in excellent condition. Another 70% were listed as being in good condition, with the remaining 9% being in either fair or poor condition (Fig. 1). The top three species comprised 34% (Fig. 2) of Township street trees were red maple, honey locust and ash 6%. The inventory found that 85% of Township street trees were under 10 inches in diameter (Fig. 3), indicating that the urban forest here is young.

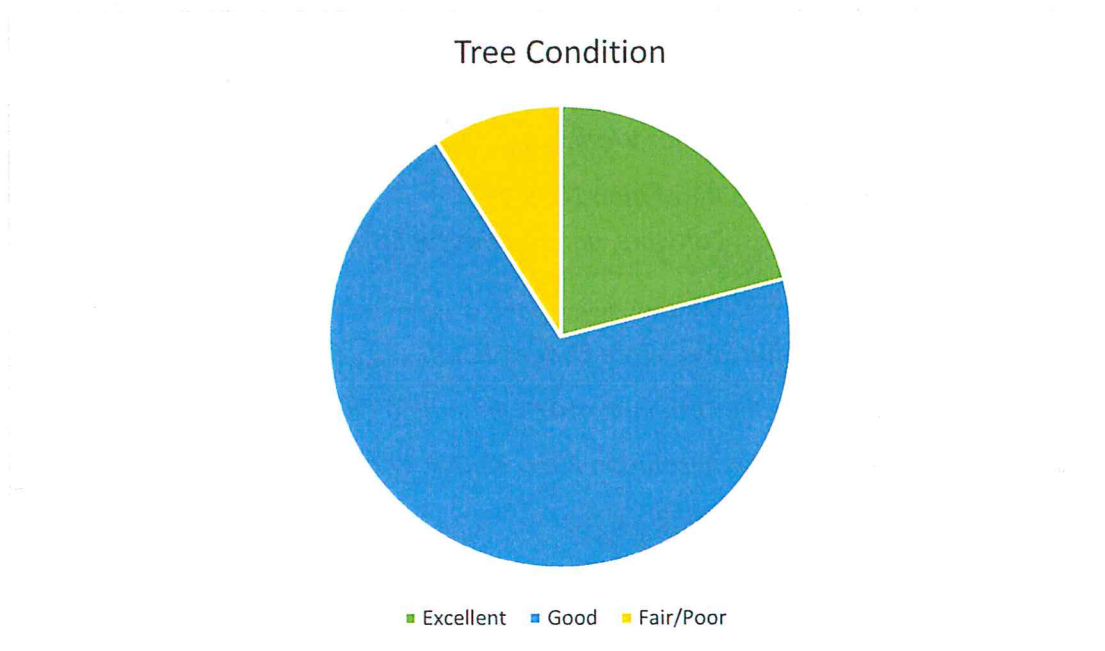


Figure 1. Distribution of the health of street trees in Ferguson Township.

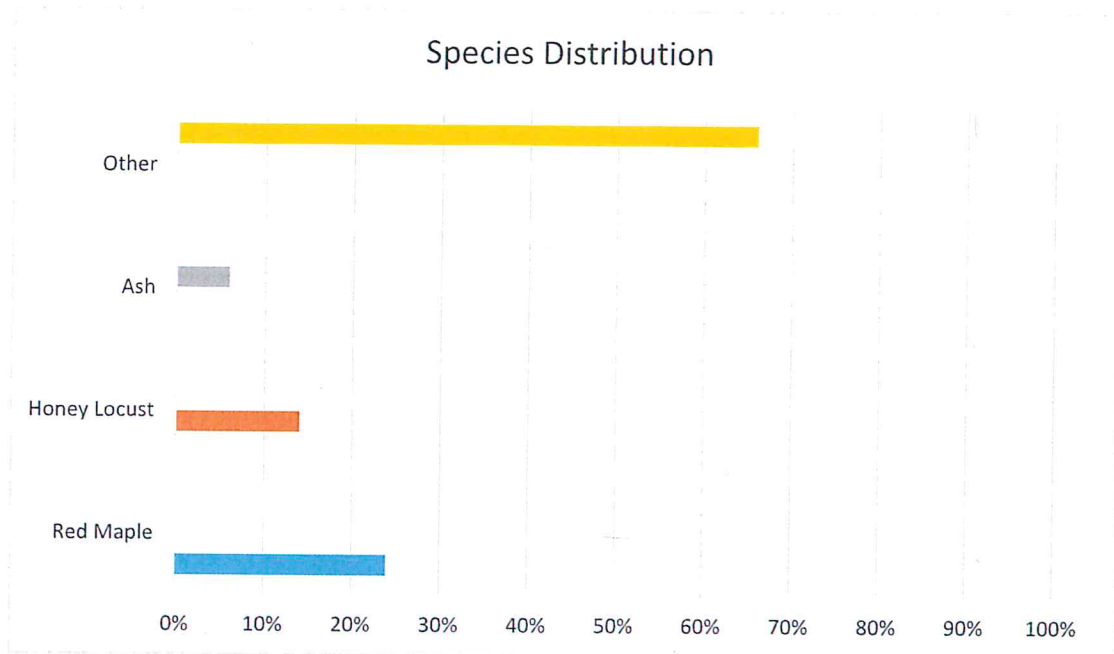


Figure 2. Composition of species among the street trees in Ferguson Township.

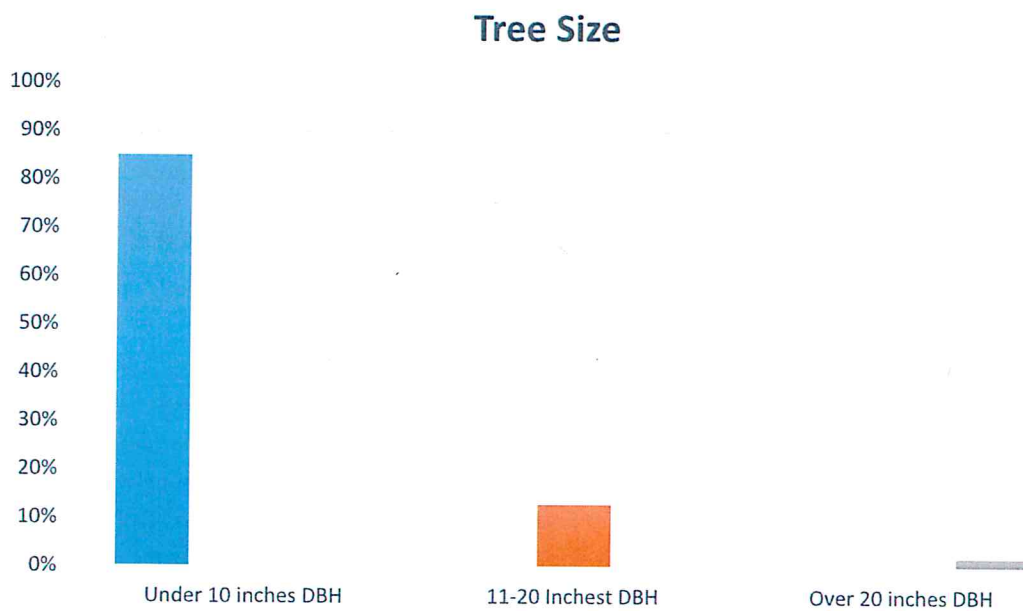


Figure 3. Distribution of the tree diameter at breast height (DBH; measured at 4.5 feet above the ground) of street trees in Ferguson Township.

The results of the tree inventory suggest that the Township should look to increase diversity both by tree species and age in order to improve the quality of the urban forest in Ferguson Township. A single tree species should make up no more than 12% of the inventory, and approximately 2% of the

urban forest should be removed and replaced annually to increase age diversity. This species and age diversity helps the township to combat issues including storm damage, maintenance costs and tree specific diseases and pests.

Ferguson Township continues to deal with the emerald ash borer. In 2017, approximately 100 infested ash trees were removed. Of the remaining ash trees, 30 will be chemically treated to increase their life expectancy and the others will be left standing until fully declining. By systematically removing the worst trees each year and allowing the others to remain, the township stretches out the cost associated with removing and replacing a significant number of trees. The decline of ash due to attack by the emerald ash borer is providing an opportunity to diversify the Township's street tree community.

Part II: Program Goals 2017-2022

Tree City USA

Ferguson Township applied for the first time ever in 2016 for the designation of Tree City USA by the Arbor Day Foundation. This designation recognizes the conscious effort and financial contribution the Township is making to ensure its urban forest is healthy and sustainable. Some requirements of this designation include having a tree ordinance, a tree commission, Arbor Day proclamation and observance, and spending a minimum of \$2 per capita on the tree program.

Increase Canopy Coverage

Increasing the canopy coverage of Ferguson Township will provide many benefits to all those who live, work, or do business within the township borders. Trees provide weather mitigation, storm water control, traffic calming, absorb carbon dioxide and pollutants, provide oxygen and shade, and many other benefits.

The township will seek to improve canopy coverage in several ways. One primary method will be to continue taking advantage of the many planting opportunities for street trees. Each street tree that is removed will be replaced. Furthermore, areas where there are currently no street trees planted will be investigated for the possibility of planting additional trees.

The Ferguson Township Tree Commission and Township Arborist also have the opportunity to encourage tree planting on private property through the review of land development plans. As additional land is developed within the Township, the required plans submitted are reviewed by both the Tree Commission and Arborist with comments reported to the developer. This review gives the Township the opportunity to request and/or require additional tree numbers and species to be planted as part of the development, which will enhance the quality of the Township's urban forest.

Increase Species Diversity

As was previously discussed in this plan and as the history of urban forestry in America has shown us, a monoculture planting of trees is not a recommended practice. If a species specific disease or pest is introduced, the resulting tree loss can be significant. Ferguson Township shall continue its efforts to increase tree diversity in a best effort to avoid any further epidemics such as Emerald Ash Borer.

Education and Outreach

In order to both increase support for its tree program and to encourage resident participation, the tree commission plans to increase public education and outreach. Educating residents on policies, current issues, and all the benefits trees provide helps to ensure that the urban forest is maintained at the highest level possible. The tree commission plans to utilize the township website, newsletters, social media, and public events to reach the largest possible audience.

Maintenance Plan Development

Much of the past tree work performed in the township was both reactive and work order related. Trees received attention stemming from windshield surveys, resident complaints and the like with no set schedule. The township is currently moving toward a more proactive maintenance program.

The first part of this plan is to keep the tree inventory current and up to date. Keeping the inventory current, rather than relying on data that is up to 5 years old, will provide much more useful information that can be used, for example, to establish pruning cycles, planting cycles, and diversifying tree age and species. The maintenance plan in this form will be implemented in part by dividing the township into sections, with each section receiving attention on a set schedule. Through each tree receiving scheduled attention, reactive pruning should decrease.

As a result of having more current data, tree removal and tree planting operations will become more effectual. For example, trees that may need to be removed are identified in a timely manner as trees inspection becomes routine. This routine helps to eliminate possible hazards and speeds up the process of replacing trees that are past their useful life, thereby enabling diversification of tree age and species

Part III: Management Policies

Administration

A staff Arborist is directly responsible for the management of the urban forest in Ferguson Township. The Arborist prepares pruning and planting contracts, conducts inspections, reviews tree and development plans, carries out the core of the tree plan program goals, and performs arboriculture work as needed. This Arborist also serves as the staff representative to the Ferguson Township Tree Commission and the Township Board of Supervisors.

The Ferguson Township Tree Commission helps guide the Township's tree program. Some of their responsibilities include holding public meetings and hearings to address resident concerns, providing recommendations on various tree related issues, and provide education and outreach for the Township tree program. Tree Commission members are appointed by the Township Board of Supervisors to staggered four year terms. Commission members must be residents of the township, and are selected based on education and interest in the fields of forestry and horticulture.

Tree Planting

Tree planting in Ferguson Township is done by outside contractors and Public Works staff. The Township strives to replace all trees removed in the previous year, along with planting additional new trees as budget allows. All street trees planted in Ferguson Township are done so at no direct cost to the property owner. The planting of native tree species is encouraged.

The majority of new street trees planted in the township are planted by developers. Current ordinances require that developers plant street trees in all new subdivisions as part of construction. This rule ensures that new residential neighborhoods will have street trees without putting the financial burden on the township or individual property owners. Both the Tree Commission and Arborist will review the street tree components of land develop plans with comments reported to the developer.

Due to the current imbalance in species diversity, Ferguson Township is reluctant to allow planting of red maple and honey locust. Though both species are approved as street trees in the township and normally perform well, another monoculture planting should be avoided. Recommended standards for planting, which includes species make up, can be found in the attached appendices.

Tree Maintenance

Ferguson Township has an active tree pruning program. Most routine pruning on street trees is done by outside contractors. The miscellaneous pruning requests throughout the year are handled by the Township Arborist and Public Works Staff.

The Township routinely prunes approximately 750 street trees per year. This number equates to all street trees in the township being pruned every nine years. Routine pruning includes crown cleaning, crown raising and structural pruning. As more street trees are planted in the township these numbers will need to be altered to ensure maintenance pruning stays on a reasonable schedule.

Current pruning efforts focus primarily on clearance for pedestrian and vehicle passage and tree structure promotion due to the immature state of the urban forest. As more and more trees mature pruning priorities will shift as well to more deadwood removal and hazard mitigation.

Tree Removal

As a general rule, Ferguson Township does not remove and replace healthy trees or trees requested to be removed by residents simply for aesthetic reasons. Insistent requests by a resident for removal and replacement of a healthy tree may be permitted on a case-by-case basis with the understanding that the resident is responsible for all associated costs.

Removal of any non-hazardous tree must be reviewed and approved by the Ferguson Township Tree Commission at a public hearing. These hearings give residents the opportunity to voice their opinion on the removal of each tree and the proposed replacement species. The Tree Commission does its best to reach an agreeable solution with each resident during this process while keeping in mind the overall goals of the program and wellness of the urban forest.

Due to its current battle with the Emerald Ash Borer, ash species make up the majority of trees removed each year in Ferguson Township. These ash trees, along with a few other selected trees, are removed over the winter by the Township Public Works Staff and Arborist. As the overall population of ash in the township continues to decline, so will the number of tree removals. At that point only dead, diseased, or hazardous trees will be removed each year.

Pesticide Application

Ferguson Township entered into agreements in 2014 with three homeowners' associations to chemically treat ash street trees in those selected neighborhoods for Emerald Ash Borer. These

Appendix I: Ferguson Township Street Tree Ordinance 991

ORDINANCE NO. 991

AN ORDINANCE OF THE TOWNSHIP OF FERGUSON, CENTRE COUNTY, PENNSYLVANIA AMENDING THE CODE OF ORDINANCES BY CREATING A CHAPTER 25 TREES, AMENDING CHAPTER 21 STREETS AND SIDEWALKS, CHAPTER 22 SUBDIVISION AND LAND DEVELOPMENT AND CHAPTER 27 ZONING.

The Board of Supervisors of the Township of Ferguson hereby ordains:

Section 1: Chapter 21, Streets and Sidewalks, Appendix A, Ferguson Township Road Construction Standards, II. Specifications, N. Street Trees 1. Is hereby amended by deleting the reference to the Ferguson Township Tree Planting Guide and replacing with reference to Chapter 25 – Trees.

Section 2: Chapter 22, Subdivision and Land Development is hereby amended by amending Section 202, Definitions, Improvements by deleting reference to shade tree and replacing it with street tree; Section 401, Preliminary Plan Contents and Review, A. Requirements for Subdivision and Land Development Plans, (3) Proposed Development, (s) replacing shade trees with street trees; Section 502 Streets, 2. Design Standards for Rural Arterial, Urban Arterial, and Collector Streets, by adding reference to Chapter 25 for street tree installation; Section 509 Shade Trees by renaming this section Street Trees, and referencing Chapter 25; Section 509, Part 5A Design Standards for Development in the Terraced Streetscape District, Section 509A, Streetscape Design Standards paragraph E. by amending the entire paragraph to reference Chapter 25;

Section 3: Chapter 27 Zoning, Section 701 Traditional Town Development, 4. Site Plans, G. Landscaping (1) Standards, (a) Street Trees. is hereby amended by referring to Chapter 25 establishing street locations, tolerance, number, species, standards and maintenance of street trees within the planting strip, Section 702 Plan Process and Procedure 4. General Master Plan, C. Plan Requirements, (4) (a) and (b) by changing the reference from the "Guide to Planting in Ferguson Township" to the "Ferguson Township Regulations and Standards for Arbor Work", 6. Specific Implementation Plan D. (2) by changing the reference from the "Guide to Planting in Ferguson Township" to the "Ferguson Township Regulations and Standards for Arbor Work".

agreements cover a period of ten years for the treatment of trees that continue to remain in good condition. Each homeowners' association pays half of the treatment cost. Currently there are thirty trees scheduled for treatment in 2016. This number continues to decrease as more ash trees succumb to this invasive pest.

In 2016 Ferguson Township created an oak wilt policy along with a subsequent ordinance and resolution. The oak wilt policy allows the township to proactively treat oak trees on both public and private property to prevent the further spread of the disease.

Tree Permits

In 2015 Ferguson Township created its Tree Permit application. The permit is designed to protect Township owned trees from unintentional or intentional damage or removal. It must be applied for by residents or contractors before performing any work on or near a street tree. The permit is free of charge and requires information regarding what type of work is being performed, by whom, and where. The applications are reviewed by the Township Arborist for approval. In general, permits are not issued to residents to perform work on street trees. This work should only be done by qualified professionals.

Upon completion of permitted work, an inspection is done by the Township Arborist to insure proper procedures were followed and no unintended damage was done to any affected trees.



Section 4: Chapter 25, Trees is hereby added to the Code of Ordinances as follows:

Sec. 1.00. Purpose.

The Ferguson Township street and park tree ordinance acknowledges the urban forest as a necessary part of Township infrastructure. It states trees and green space are equal with other Township infrastructure and services as important components of the health, safety and welfare of residents and visitors. This green infrastructure provides numerous benefits to the Township including environmental (carbon storage, increased biodiversity and air pollution mitigation, climate modification and storm water mitigation); social (improved human health and quality of life); and economic (increased property values and business and decreased energy use). The failure to properly replace and maintain our urban forest reduces its ability to provide these important ecosystem processes and services. This ordinance addresses the management, maintenance and enforcement policy necessary for a healthy urban forest. As the Township improves the health of the urban forest, human health and safety, quality of life and the Township as a whole are improved. Thus, the purposes of this ordinance are:

To protect public health, safety and welfare by providing for efficient and effective street and park tree management and maintenance. To protect and enhance our plant, air, soil and water resources and the ecosystem processes and services they provide.

Sec. 2.00. Definitions. For the purpose of this ordinance, the following definitions shall have the following meanings:

Board of Supervisors – the elected governing body of Ferguson Township.

Canopy - The upper portion of a tree's limbs, branches and leaves.

Commission- The Tree Commission of Ferguson Township.

Public Works Director -The Ferguson Township Public Works Director or his/her designee.

Hazardous Tree- A tree determined by a qualified arborist or Public Works Director to constitute a threat to the health and/or structure of other trees and/or a risk to property damage or personal injury. This could include trees that have been assessed as having improbable, possible, probable or imminent risk ratings.

Notice- Notice shall mean either publication in a newspaper of general circulation once a week for two consecutive weeks, or written notification sent by first class mail to property owners immediately affected, or notification posted on the affected tree. Notice of public hearings shall be published and sent to affected property owners within 30 calendar days of the hearing date.

Park Tree- Any tree located in a park controlled by the Township or its designated agent.

Person- Any individual, firm, partnership, association, corporation, company or organization of any kind and includes the plural of each.

Public Area- Any public right-of-way, park, easement or other area to which the Township has title.

Public Tree- Any tree located in a public right-of-way, park easement or other area to which the Township has title.

Private Tree- A tree whose trunk is entirely on private property.

Reduction Cut. A pruning cut that shortens a limb to a lateral branch large enough to resume growth of the pruned limb. A reduction cut removes or shortens a branch to a side branch that is at least one-third the diameter of the branch being cut.

Replacement Tree. A tree planted in a location formerly occupied by, or directly adjacent to, another tree.

Street Tree. A public tree located in the public right-of-way.

Thinning Cut. A pruning cut that removes a branch at its point of origin on the trunk or limb.

Tree Condition. A measure of both a tree's structural stability and health.

Tree Protection Zone. The 3-dimensional area within a tree's drip line from the trunk to the edge of the canopy.

Tree Risk Rating. A method that ranks both the relative degree of risk and consequence of tree failure by considering tree condition and defects, the size of the tree part prone to failure and the vulnerability and value of any target that may be struck. Tree risk ratings include:

Improbable- Tree is not likely to fail even in severe weather.

Possible- Failure could occur, but is unlikely during normal weather conditions.

Probable- Tree failure is expected under normal weather conditions.

Imminent- Tree failure has started or will occur in near future.

Work Days. Monday through Friday, excluding legal holidays when Township offices are closed.

Tree. A woody perennial plant, usually having one dominant vertical trunk and a mature height greater than fifteen feet.

Tree Lawn. The area found between the inside edge of the curb and the edge of the sidewalk, or from the edge of pavement to the edge of the sidewalk or from the edge of pavement to edge of the public right-of-way.

Tree Drip Line. The perimeter of a tree's canopy as measured by a circle extending upward from the ground to the outermost tips of branches.

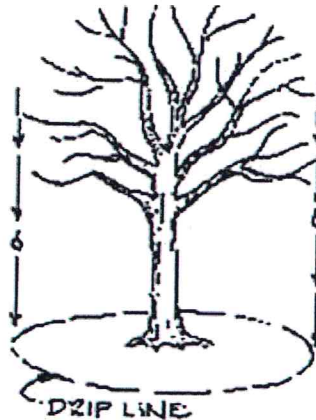


Figure 1. Tree dripline. Area within dripline is tree protection zone.

Sec. 3.00. Authorized Activities of Department of Public Works

The Department of Public Works is authorized but not limited to perform activities in regard to public trees including: adopting policies, rules and regulations for tree management and maintenance; selecting and planting trees in public areas; ordering the removal of nuisance, hazardous and/or diseased trees on private and public property; overseeing tree maintenance operations; overseeing tree planting and maintenance operations undertaken by contractors; reviewing land development plans for landscaping including zoning and building permit applications; completing and updating inventories of public trees; completing and updating tree and landscape management plans; completing annual work plans and budgets; and developing and implementing programs of public participation and education.

Sec. 4.00. Tree Commission.

(A) Creation and membership.

A Ferguson Township Tree Commission is hereby created which shall consist of five members appointed by the Board of Supervisors, each of the five appointments to be subject to confirmation by a majority of all members of the Township Supervisors. Members shall be selected on the basis of education, experience or demonstrated interest in the fields of arboriculture, forestry, horticulture, landscape architecture or urban design.

Such Commissioners shall be appointed for four year staggered terms. A vacancy on the Commission, which occurs for reasons other than the expiration of a term, shall be filled by the Board of Supervisors for the unexpired portion of the term.

The Commission shall meet at least quarterly and may adopt appropriate by-laws to conduct meetings and business. The Public Works Director shall coordinate staff support for the Commission. Upon request, additional technical assistance may be provided by other Township departments.

The Commission's role is advisory to the Public Works Director and the Township Manager.

(B) Organization, records and meetings.

(1) Members of the Commission shall elect a chairman, vice-chairman and such other officers as they may determine necessary. All officers shall be eligible for reelection.

(2) The Commission shall keep a written record of its meetings in accordance with law. The Commission shall provide the Township Supervisors with minutes, annual work plans and annual or other reports of its activities, as may be requested or required. For the purpose of taking action a quorum of three members must be present.

(C) Responsibilities.

The Commission shall have the following responsibilities:

(1) The Commission shall advise the Public Works Director, and Township Supervisors, on the planting, design, maintenance, management and removal of street, park, and other public trees. Such advice may include:

(a) Recommendations of tree species for planting in public areas;

(b) Recommendations for controlling diseases and pests damaging trees;

(c) Recommendations on arboricultural standards regarding tree preservation, planting, maintenance and removal;

(d) Recommendations for public education programs concerning the importance and care of trees;

(e) Recommendations on landscape design and other ordinances;

(f) The preparation and review of a community tree plan;

(g) The preparation of an annual report of activities;

(h) The preparation of an annual work plan and budget; and

(i) The preparation and acceptance of grants and contributions.

(2) The Commission shall conduct all appeals and public hearings required by this ordinance. In accord with sections 5.00(C) and 7.00(B) of this ordinance, the Commission shall (a) hear appeals by property owners of nonemergency orders by the Public Works Director to eliminate public hazards and nuisances and (b) in a published notice of the public hearing, hear and recommend approval or denial of permit requests for the planting, removal and pruning of public trees including those requested by the Township in nonemergency situations. A decision of the Commission can be appealed within 10 days to the Board of Supervisors. Further appeal is as provided by law.

(3) The Commission, through the Department of Public Works, Department of Planning and Zoning and/or the Centre Region Parks and Recreation Department shall provide review and advice on the preparation and/or amendment of a management plan for street, park and other public trees in the Township. The plan should recognize the ecosystem processes and services provided by the Township's public tree program and include a list or inventory of existing trees (including species, condition and location). The plan should also include objectives, strategies, standards and policies for: 1) the planting of trees (including suitable species for various environments, tree planting standards and

spacing of trees); 2) the management of tree risk; 3) programs of public participation and education; 4) tree management and maintenance; 5) landscape design; 6) funding and fund raising; and 7) other elements of a public tree program. In reviewing and advising on the plan, the Commission may consult with other Township authorities, boards and commissions. The Commission shall review the plan every five years or at other times at the request of the Public Works Director.

(4) The Commission may, with the approval of the Board of Supervisors, solicit grants and contributions on behalf of the Township. Grants and contributions will be administered by the Township. The Commission shall develop strategies to secure funding for Township beautification initiatives. All funds obtained by the Commission on behalf of the Township shall be expended for the specific purpose(s) or under the stipulations set by the contributor.

(5) The Commission, at the request of the Public Works Director, or other Authority, Board or Commission or Department, shall review private and public land development plans applications to determine the impact of such plans on public trees and to make recommendations on steps needed to mitigate said impacts. The Commission shall review all proposed tree planting plans for neighborhood and other development proposals, and shall have the authority to propose changes. The Commission shall review proposed plans of public improvements to Township parks, plazas, streetscapes and other public places, and shall have the authority to propose changes.

(6) To facilitate review of all private and public land development, the Public Works Director may establish a subcommittee comprised of two members of the Tree Commission and the Public Works Director. The subcommittee shall have the authority to review and comment on private and public land development plans on behalf of the Tree Commission. The subcommittee shall meet as required and may report to the Tree Commission at the next regularly scheduled meeting of the Tree Commission.

(7) The Commission shall educate the public about the environmental, aesthetic, human health and economic benefits to the Township and its citizens of both publicly and privately owned trees and green space.

(8) The Commission shall encourage corporations, local business and neighborhood associations in the Township to improve the appearance of trees and landscaping contiguous to their properties or within their neighborhoods.

Sec. 5.00. Hazardous and Nuisance Trees on Public and Private Property.

(A) *Trees of imminent risk: Emergency measures.*

Whether in the public right-of-way or public area if the condition and/or risk rating of any tree, or any part thereof, is imminent and as such constitutes an imminent danger to the public, to the public right-of-way or to other trees or property on Township property, whether such condition is a result of disease, injury, structure, poor condition, act of God or any other cause, and is such that there is imminent or likely danger of the trees or any part thereof failing, falling, dropping or collapsing upon, or is such that it in any other way is imminently or likely to cause injury to any person within close proximity or is imminently or likely to cause damage to any vehicle, structure, building or other property that is within close proximity, then the Public Works Director shall be authorized to, or may by contract with an authorized agency, remove, prune, treat or otherwise abate the imminent risk, or cause the same to be done, in order to render safe such risk condition for any tree.

For trees on private property, if the condition and/or risk rating of any tree, or any part thereof, is imminent in the opinion of the Public Works Director or Township Arborist, and as such constitutes an imminent danger to the public, to the public right-of-way or to other trees or property on Township property, whether such condition is a result of disease, injury, structure, poor condition, act of God or any other cause, the Public Works Director may require the pruning or removal of trees of imminent risk. If within thirty days after the date of notice by certified mail with return receipt requested to prune or remove the trees, the property owner has not complied with that order, then the Public Works Director shall be authorized to, or may by contract with an authorized agency or contractor, remove, prune, treat or otherwise abate the imminent risk, or cause the same to be done, in order to render safe such risk condition for any tree. The cost of pruning and removal of trees by the Township shall be charged to the property owner. The charge shall be a lien against the real estate of the property owner and shall be collected in the same manner as other municipal liens. Further penalties for violations of this subsection shall be those provided in section 10.00(A).

(B) *Potentially hazardous trees: Tree of probable or possible risk on private property.*

For trees on private property which, in the opinion of the Public Works Director or Township Arborist, are sufficiently damaged, diseased or in such condition as to contribute a probable or possible risk to the public, to the public right-of-way or to other trees or property on Township property, whether such condition is a result of disease, injury, structure, poor condition, act of God or any other cause, the Tree Commission may order the pruning or removal of trees of probable or possible risk by certified mail, return receipt requested. Property owners required to prune or remove trees of probable or possible risk shall have 30 days following receipt of the order to prune or remove such trees, to appeal through the Public Works Department to the Tree Commission. The Tree Commission shall hear the appeal and make a determination within 60 days of the receipt of the appeal. Decisions of the Commission shall be appealable to the Board of Supervisors. Further appeal is as provided for by law. If the property owner does not appeal the order within thirty days of notice, or does not prune or remove the trees within 14 days of the appeal decision, then the Public Works Director shall be authorized to, or may by contract with an authorized agency or contractor, remove, prune, treat or otherwise abate the imminent risk, or cause the same to be done, in order to render safe such risk condition for any

tree. The cost of cutting and removal of trees by the Township shall be charged to the property owner. The charge shall be a lien against the real estate of the property owner and shall be collected in the same manner as other municipal liens. Further penalties for violations of this subsection shall be those provided in section 10.00(A).

(C) Nuisance by disease and or pests: Abatement measures to protect the public.

In any instance which in the professional judgment of the Public Works Director or Township Arborist, trees located on public property have the appearance of being infested by pests, such as emerald ash borer or other nuisance-type pests, or has the appearance of being infected by Dutch elm disease, elm yellows disease, oak wilt or any other infectious disease, as such terms are known and used by and among Certified Arborists, the Public Works Director, Township Arborist or his agent shall inspect the condition of such trees. If upon such inspection any tree is found to harbor any such pest or infectious disease as referenced above the Public Works Director shall be authorized to declare the trees, or any part thereof, to be a nuisance and through the Department of Public Works, order the removal, pruning, treatment or abatement of the trees, or part thereof, within such period of time deemed appropriate by the Public Works Director.

For trees on private property within the Regional Growth Boundary for the Township, in any instance which in the professional judgment of the Public Works Director, trees located on private property have the appearance of being infested by pests, such as emerald ash borer or other nuisance-type pests, or has the appearance of being infected by Dutch elm disease, elm yellows disease, oak wilt or any other infectious disease, as such terms are known and used by and among Certified Arborists, the Public Works Director or his agent shall inspect the condition of such trees. If upon such inspection any tree is found to harbor any such pest or infectious disease as referenced above the Tree Commission may require the removal, pruning or treatment of trees. If within thirty days after the date of notice by certified mail, return receipt requested, to remove, prune or treat trees, the property owner has not complied with that order, the Public Works Director shall be authorized to declare the trees, or any part thereof, to be a nuisance and through the Department of Public Works, order the removal, pruning, treatment or abatement of the trees, or part thereof. The cost of cutting and removal of trees by the Township shall be charged to the property owner. The charge shall be a lien against the real estate of the property owner and shall be collected in the same manner as other municipal liens. Further penalties for violations of this subsection shall be those provided in section 10.00(A).

(D) Order by Department.

No provision of this section shall be construed so as to preclude the Public Works Director, Tree Commission or Board of Supervisors from issuing an order to a property owner to remove, prune or treat any tree or cause the same to be done, in any instance in which the Director in the exercise of his/her authority deems such action to be necessary for public health or safety.

Sec. 6.00. Protection of Public Trees.

(A) Duty to protect.

In any public park, public area or in any public right-of-way to which the Township has title, no person shall without written permission, as outlined in Section 6.00 of this ordinance, cut, prune, break, destroy, overthrow, injure, scrape, paint, deface or remove any public tree; or cut, disturb or interfere in any way with the roots of any tree; or remove leaves, flowers or fruit from any tree; or spray with any chemicals or insecticides any tree; or place any rope, sign, poster or other fixture on a tree or tree guard or other device erected to protect such tree; or injure, misuse, or remove any guard or device placed to protect such tree. The penalties for violations of this section which shall be those provided in sections 10.00 (B1 and B2).

(B) General protection of public trees.

The penalties for violations of this section shall be those provided in sections 10.00 (B1 and B2).

(1) Hitching animals, etc., to trees.

No person shall fasten a dog or other animal in any manner to a tree or tree guard or other device erected to protect such tree, nor cause a dog or other animal to stand so that such dog or animal can injure a tree.

(2) Regulations and Standards for Arbor Work.

The planting, removal, pruning, treatment or maintenance of any public tree shall be done in accordance with the Township's Regulations and Standards for Arbor Work. These rules and regulations may only be amended by the Board of Supervisors by resolution to add new technical standards and criteria recognized by the tree care profession.

(3) Township Tree Planting List

The planting of any public tree shall be done in accordance with the Township's Tree Planting List. The tree planting list may only be amended by the Board of Supervisors by resolution to add new technical standards and criteria recognized by the tree care profession.

(4) Protection of public trees during grading, building construction or repair work on public or private property. In the grading for, destruction, erection or repair of any building or structure, the property owner thereof shall place, or require to be placed, a chain link fencing, or such guards as approved by the Public Works Director, around the driplines of all nearby public trees as shall effectually prevent injury to such trees. Any trenching, excavating, filling or pruning of limbs or roots within the dripline of any public

tree shall be done with written permission of the Department of Public Works as outlined in Section 7.00. All root and canopy pruning and other tree work shall be done in accordance to the Township's Regulations and Standards for Arbor Work.

(5) Pouring injurious substances to injure trees.

No person shall purposely pour salt, salt water, acid, oil, wood killer or any injurious substance in such a way as to injure any public tree.

(6) Attaching wires, etc. to trees.

No person shall, without written permission from the Department of Public Works, attach any wire, insulator or any device for the holding of a wire to any shrub or tree growing or planted in or upon any public property, in any park or in or upon any public right-of-way in the Township.

(7) Free passage of water and air to tree roots.

Every person placing or maintaining upon the ground in a public right-of-way any stone, cement or other substance or combination thereof, which shall impede the free passage of water and air to the roots of any public tree shall leave such open space of ground outside of the trunk of the tree as may be designated by the Department of Public Works and the Township's Rules and Regulations for Arbor Work.

(8) Electric wires not to contact trees.

Every person having any electric wires running through, on or over a public highway in the Township shall securely fasten such wires so that they shall not come in contact with any tree.

Sec. 7.00. *Permits for Planting, Removal and Pruning of Public Trees.*

(A) *Permit required.*

(1) No street, park or other public tree shall be planted, removed or pruned (including pruning roots over two inches in diameter) without obtaining a written permit from the Department of Public Works. No person shall plant any tree in a location, or of a different species or variety, or of a different size, or contrary to the specifications as given on the permit by the Department of Public Works.

(2) A permit will be granted by the Department of Public Works to any person to plant, remove or prune trees on the condition that the work to be performed shall be under the

supervision and control of the authorized agents of the Department. All permitted work must be done in accordance with the Township's Regulations and Standards for Arbor Work. Each such permit shall be certified by a written permit issued from the office of the Department of Public Works.

(B) Permit application: Review by Tree Commission.

The Township Tree Commission shall review and recommend for approval or denial all permit applications for the planting, removing and pruning of public trees requested by property owners. The Commission shall recommend for approval or denial all requests for planting, removing and pruning of public trees requested by the Township's Department of Public Works, other department or in neighborhood development or other development proposals.

(C) Permit: Removal of public trees to accommodate grading or construction on private property.

If grading or construction on private property requires the removal of canopy or root pruning of any public tree a permit from the Department of Public Works shall be required. Approved and permitted work shall be performed in accordance with the Township's Regulations and Standards for Arbor Work. If a permit for the removal of a public tree is granted by the Township to accommodate development on private property the applicant shall provide one of the following as a condition of the permit:

(1) Transplanting of the public tree to a location approved by the Public Works Director. The value of the tree as appraised by a method recognized by the Council of Tree and Landscape Appraisers, said appraisal shall be paid for by the applicant and provided to the Township as a bond for one year after the tree's transplanting. If the tree dies within the one year bonding period the applicant shall forfeit the bond to the Township.

(2) Providing the Township with payment for the value of the tree as appraised by a method recognized by the Council of Tree and Landscape Appraisers said appraisal shall be paid for by the applicant and provided to the Township.

(D) Permit approval/denial by Tree Commission: Appeal to Board of Supervisors.

The applicant or all affected property owners shall have 10 days following the approval or denial of a tree planting, removal or pruning permit by the Tree Commission to appeal in writing to the Board of Supervisors. The Board of Supervisors shall hear the appeal and make a determination within 60 days of the receipt of the appeal. Appeals shall be recorded and decisions shall be written and shall include findings of fact. Further appeal as provided by law.

Sec. 8.00. Replacement Trees: Replacement Following Lawful Removal by Township.

Whenever the Department of Public Works or other Township department removes or causes to be removed any tree of any kind within the Township boundaries that was planted by the Township and stood in any right-of-way, or that stood in any park or in or upon any other Township-owned land, the department shall plant, or cause to be planted, no fewer than one young tree having a minimum caliper of two inches and being deemed appropriate by the Department of Public Works

Sec. 9.00. Easements for Tree Planting.

The Township is authorized to accept easements, except required buffer yards, from property owners to plant and maintain trees on private property within 12 feet of the boundary of a public area. Such easements shall be in writing, executed, and acknowledged by such property owners, and shall be recorded in the office of the Recorder of Deeds.

Sec 10.00. Violations and Penalties.

(A) Failure to comply with order or notice.

Any person who shall fail to remove, prune, replace, replant or treat a hazardous or diseased/nuisance tree, or in any other way violate any provision of any section of this ordinance, including any section in which a penalty is not specifically provided, after receiving written order or notice from the Department of Public Works, or other form of charge of violation, as applicable, such person shall, upon conviction, be guilty of a summary offense and shall be subject to a fine of not less than \$1000 for each violation.

(B) Unlawful public tree destruction, removal or injury.

Any property owner, contractor or other person who, without the written permission of the Department of Public Works, cuts, breaks, destroys or removes any public tree, or permits or allows any other person, without the written permission of the Department of Public Works, to cut, break, destroy or remove any public tree shall, under the advisement of the Tree Commission and at the direction of Public Works Director shall:

- (1) Plant or cause to be planted, or if there is a written agreement signed by such person and accepted by the Department of Public Works, by which such person agrees to reimburse the Township for costs incurred by it, permit the Department of Public Works to plant similar trees to replace the equivalent total cross-sectional area of the tree which was unlawfully cut, broken, destroyed or removed. In all instances of replacement pursuant to this subsection, such replacement trees shall be sufficient to replace the

total cross-sectional area as measured at diameter at breast height (DBH) of the tree removed. For example, for every six-inch diameter tree removed, it shall be replaced with one six-inch tree, or four three-inch trees or nine two-inch trees, all in a manner satisfactory to and in locations approved by the Department of Public Works. It shall be a violation of this ordinance for any person to fail to replant any tree when, as, and if directed by the Department of Public Works to do so. For purposes of this article, the word similar shall mean and include a tree that has a minimum diameter of two inches or more and is approved by the Department of Public Works; or

(2) For willfully injuring or killing a living tree in any public area by cutting, debarking, breaking, pruning of roots over two inches, pruning for lights or views, by the use of herbicides, use of a vehicle or in any other manner wherein it is determined by that such damage or destruction was intentionally inflicted, such person shall, upon conviction, be guilty of a summary offense and shall be subject to a fine of not less than \$1000 for each violation as well as the cost of repairing or replacing each damaged tree shall be levied. The value of tree(s) to be repaired or replaced shall be determined by an International Society of Arboriculture Certified Arborist using a valuation method approved by the Council of Tree and Landscape Appraisers, said appraisal shall be paid for by the property owner, contractor or other person who injured or killed a living tree in any public area and said appraisal shall be provided to the Township.

(C) Interference with Township Departments.

No person shall prevent, delay, harass or interfere with the Department of Public Works or any other Township department, or any of their agents or employees, including any employees of the Department of Public Works in the planting, pruning, spraying or removing of a public tree, or in the removal of any stone, cement or other substance about the trunk or roots of a public tree, or in any other aspect of the administration and enforcement of the provisions of this ordinance. Any person who violates the provisions of this section shall upon conviction thereof be guilty of a summary offense and be subject to a fine of not less than **\$100.00**.

ORDAINED and ENACTED this 18th day of August, 2014.

ORDINANCE NO. 1006

AN ORDINANCE OF THE TOWNSHIP OF FERGUSON, CENTRE COUNTY, PENNSYLVANIA AMENDING ORDINANCE 991 AND CHAPTER 22 SUBDIVISION AND LAND DEVELOPMENT, 502, STREETS, SECTION 509, SHADE TREES AND SECTION 509A, STREETSCAPE STANDARDS, AND CHAPTER 27, ZONING, SECTION 701 TRADITIONAL TOWN DEVELOPMENT BY ADDING CLARIFYING LANGUAGE.

The Board of Supervisors of the Township of Ferguson hereby ordains:

Section 1. Chapter 22, Subdivision and Land Development, Section 502, Streets, 2. Design Standards for Rural Arterial, Urban Arterial and Collector Streets, is hereby amended by adding the following:

B. (6) Chapter 25, Trees.

Section 2. Chapter 22, Subdivision and Land Development, Section 509, Shade Trees is amended to read as follows:

a. Section 509 Street Trees

Street trees shall be planted by the sub divider, in a variety approved by the Township along all new streets in a subdivision. Street trees shall be planted on both sides of the street in accordance with Chapter 25, Trees (EXISTING LANGUAGE IN THIS Section is deleted)

b. Section 509A Part 5A Design Standards for Development in the Terraced Streetscape District

509A Streetscape Design Standards, 1. E. is hereby amended by deleting 509A 1. E. (1), (2), and (3) and amending 509A 1. E. to read as follows: A minimum of one street tree shall be planted in the center of each 4 foot by 20 foot accent planting bed. The selected species of tree shall be in accordance with Chapter 25, Trees. Shrub varieties shall be included in a landscaping and planting plan prepared and sealed by a Pennsylvania registered landscape architect and approved by the Township Tree Commission.

Section 3. Chapter 27, Zoning, Section 701 Traditional Town Development, 4, Site Plans, G. Landscaping (1) Standards, (a) Street Trees is hereby amended as follows:

- (a) Street Trees. Street trees shall be provided. At a minimum, they shall be located along each side of all existing or proposed streets as well as within the median of any proposed parkway or boulevard. Medians may also contain shrubs and plant groundcover. Street trees shall be in accordance with Chapter 25, Trees.
- (b) Chapter 27, Zoning, Section 701 Traditional Town Development, 4, Site Plans, G. Landscaping (1) Standards, (a) Street Trees Subsections (1) through (7) are hereby deleted.

ORDAINED and ENACTED this 5th day of October, 2015.

TOWNSHIP OF FERGUSON

Appendix III: Ferguson Township Resolution 2014-25

Regulations and Standards for Arbor work

RESOLUTION NO. 2014-25

A RESOLUTION OF THE TOWNSHIP OF FERGUSON, CENTRE COUNTY, PENNSYLVANIA ESTABLISHING REGULATIONS AND STANDARDS FOR ARBOR WORK

Sec. 1.00. Sources of Regulations and Standards.

These regulations and standards have been compiled from professional sources including the International Society of Arboriculture Tree Pruning Best Management Practices, International Society of Arboriculture tree condition and risk evaluation protocols, American National Standards Institute A300 Standard Practices for Tree, Shrubs and Other Woody Plant Maintenance and Penn State University Cooperative Extension publications on tree pruning and planting and tree protection during development.

Sec. 2.00. General Requirements.

(A) Scope of requirements for Protected Trees.

(1) No person may perform any of the following acts without first obtaining a permit from Ferguson Township Department of Public Works. Nothing in this section shall be construed to exempt any person from the requirements of obtaining any additional permits or license as required by law. In these sections the term "should" refers to a strong recommendation

(2) Treat (chemically or biologically), prune, remove or otherwise disturb any tree, or do the same within any tree protection zone (See Figure 1).

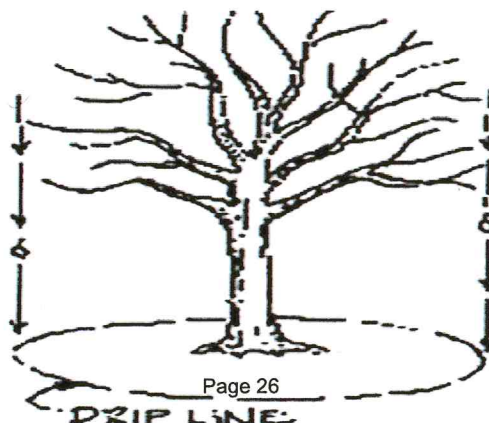


Figure 1. Example of Tree Protection Zone. Area within dripline is tree protection zone.

(3) Prune or remove any tree, public or private, or portions thereof, if such tree or portions thereof may reasonably be expected to fall on Township-owned property or public right-of-way.

(4) Damage or cut tree roots larger than 2 inches in diameter on any tree by tunneling, trenching or excavating for the purpose of sidewalk, curb, pipe, conduit or electric wire installation and repair; and grading or construction.

(5) Perform any excavation or place fill within a tree's protection zone (See Figure 1).

(6) Treat the soil within the tree protection zone with a soil sterilant.

(7) Plant any tree on Township-owned property.

(B) Exception.

Nothing in this section shall be construed to exempt abutting property owners, municipal authorities or public utility companies or their agents from any of the requirements of these regulations and standards. Only the Public Works Director, their designee or a contractor hired by the Department of Public Works may perform work on protected trees without obtaining a permit.

Sec. 3.00. Special Requirements for Pesticide Application and Tree Felling.

(A) Pesticide application license required.

All treatment of trees for insect, disease or other pests or pathogens shall be completed by a person(s) with a current pesticide application license and proof of license shall accompany any permit application.

(B) Felling of trees upon Township-owned property.

If tree work entails the felling of any tree, or part thereof, which, as a result of such felling, reasonably may be expected to fall upon Township-owned property or public right-of-way, then the owner or contractor performing the work shall agree to indemnify and to hold the Township harmless for all damages resulting from work conducted pursuant to the permit and shall deposit with Ferguson Township a Comprehensive General Liability Insurance Policy or Certificate of Insurance with limits established by the Township and listing Ferguson Township as an additional insured.

Sec. 4.00. Protected Trees: Land Development and Land Development and Landscape Plans.

(A) Identification of protected trees on development and landscape plans.

All land development or landscape plans shall accurately show all existing protected trees including the trunk location and the dimensions of the tree protection zone (Figure 1.). Every possible effort shall be made to preserve and protect worthy trees. Trees proposed to be saved or removed shall be indicated. All trees adjacent to said projects that may be damaged by construction activities shall also be shown on the plans along with their required tree protection zone.

(B) Protected trees during construction: Protection

(1) The standards and specifications in "A Guide to Preserving Trees in Development Projects," published by the Penn State College of Agricultural Sciences and Extension, should be regarded as best management practices for tree protection during construction activities. Contractors and architects shall demonstrate their understanding of and adherence to these criteria including, but not limited to, the protection zones required for different species of trees undergoing permitted soil compaction, root severance and other construction impacts.

(2) Trees not permitted to be removed, pruned or encroached upon within the protected zone, but impacted by land development, shall be marked with a sign or other prominent identification. The property owner shall install, or cause to be installed, a chain link fence, or other fencing as approved by the Director of Public Works, around all portions of the tree protection zone located

on both public and private property, excluding any portions occupied by sidewalks, street cart way, curb gutters or driveways. A sign shall be placed on the tree protection fence explaining the purpose of the tree protection zone. Any unpermitted trespass of this protective zone by personnel, equipment or materials shall be considered a violation of the Township Tree Ordinance and any land development or construction permit.

(3) Equipment access routes shall be established by permit as approved by the Director of Public Works. Equipment shall not be allowed to travel within a tree protection zone, nor shall materials or equipment be stored within a protection zone, unless geotextile landscape fabric and wood chips or gravel maintained at least 8" deep are used to avoid compaction of the soil and damage to a tree's roots as approved by the Director of Public Works.

(4) Cut and fill grade change or soil compaction, within a protection zone shall be avoided. If grade changes are necessary, as permitted by the Public Works Department, protective devices and engineering techniques (e.g., retaining wall) shall be used as approved by the Public Works Director or their designee.

(5) The routing of underground utilities shall be around and away from all tree protection zones. No excavation shall take place within a protection zone unless permitted by the Public Works Department. Tunneling, boring or other method of project modification under or around the tree shall be used when needed to protect the condition and survivability of the tree.

(6) In any activity, no tree roots over 2 inches in diameter shall be pruned without a signed permit. When in the process of excavating within a protection zone, roots larger than 2 inches are encountered, the Director of Public Works shall be immediately contacted. As permitted, all roots shall be cleanly cut with a sharp pruning tool. Roots shall be protected from desiccation by the use of geotextile, straw or other technique and backfilling shall be done as soon as possible to prevent the desolation of exposed roots. Irrigation of a tree should be required as a permit condition.

(7) If trees are in full leaf during the construction phase, it may be necessary to supply supplemental irrigation. The Director of Public Works shall notify the permittee when and the amount of irrigation required to maintain the condition of a tree impacted by construction.

(8) The permittee shall take all necessary measures to not damage trees during permitted excavation and associated construction activities. Any damage sustained by a tree(s), such as broken limbs, roots or scarred shall be reported immediately to Director of Public Works and treated according by his recommendation. All measures taken to further protect or treat such trees shall be done under the supervision of the Director of Public Works.

Sec. 5.00. Pruning Specifications for Public Trees.

(A) Specific requirements pertaining to the pruning of protected trees.

(1) All tree pruning shall be completed in accordance with the latest version of the American Standards Institute Pruning Standards (ANSI A300) and/or the International Society of Arboriculture Tree Pruning Best Management Practices.

(2) No tree shall be pruned in such a manner that its present or future condition is impaired. An exception to this shall occur if tree removal or pruning is necessary to provide emergency relief of an immediate hazard to person or property. Any such emergency procedures must be reported within one (1) day following the emergency to the Public Works Director.

(3) Authority to prune trees does not include the cutting back of sound, healthy tree branches outside the stated purpose of the tree permit issued.

(4) It shall not be permitted by Ferguson Township for any person or firm to use heading or stub cuts to top any living tree. Only thinning (removal of a branch at its origin on limb) and reduction (pruning back to a lateral at least 1/3 the diameter of the limb being pruned) pruning cuts shall be used. Topping is the severe reduction of upper and side branches of a tree without consideration for its normal growth habit or natural form. All pruning shall be done to enhance and protect a tree's form typical of the species.

(5) All dangerous, broken or dead limbs, or other defective tree parts which constitute a risk to the condition of the tree, to public safety or to property shall be removed.

(6) All tools used on a tree known to contain an infectious disease shall be properly disinfected immediately after completing work in such a tree and prior to being used on any other tree.

(7) All cutting tools and saws used in tree pruning shall be kept adequately sharpened to assure clean cuts without jagged edges.

(8) When removing branches too large to hold securely in one hand during the pruning operation, such branches shall be cut using the Three-step Pruning Method. Final cuts shall be made in such a manner to prevent unnecessary tearing of bark and wood (See Figure 2).

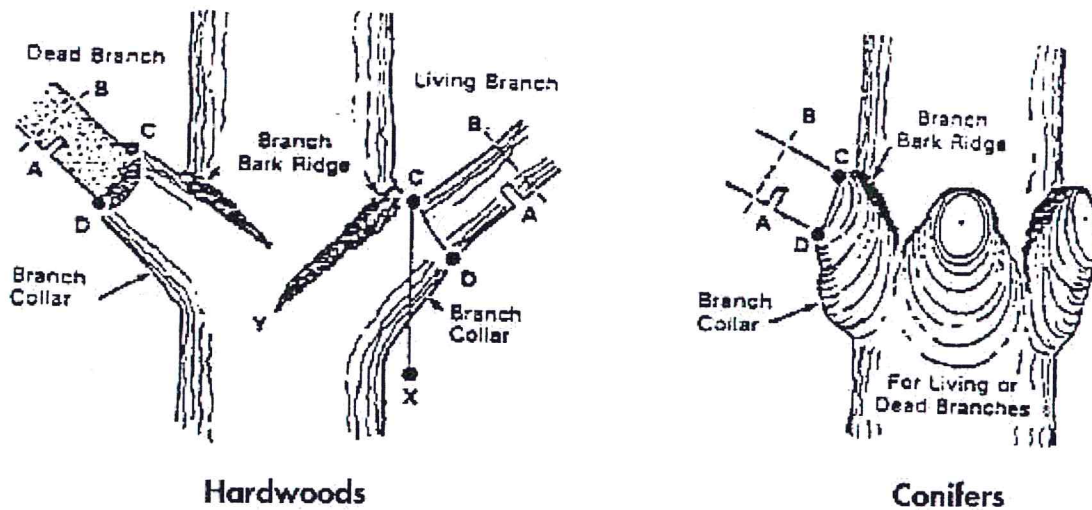


Fig. 2. Three-step and Natural Target Pruning. The first cut is a notch at A. The second cut removes the branch at B.

The third cut is made at C and is done so to protect the branch collar.

(9) To protect the branch bark collar and facilitate the growth of wound wood, all final branch removal pruning cuts shall use Natural Target Pruning. Final pruning cuts shall be made sufficiently close to the trunk or parent limb, without cutting into the branch bark ridge or branch collar, or leaving a protruding stub. Clean cuts shall be made with the proper pruning tools in all cases (See Figure 2).

(10) When pruning mature trees, no more than 25 percent of the live canopy of any tree shall be removed in any year unless approved by the Director of Public Works. Limbs over 8 inches shall not be removed unless they constitute a risk or are unhealthy as approved by the Director of Public Works.

(11) Pruning shall not "over-lift" a tree canopy by pruning only lower branches. No "Lions Tailing", or removal of all interior branches, is permitted. Pruning will be distributed evenly throughout a tree canopy.

(12) Pruning of any deciduous tree should be avoided from time of bud break until leaves have grown to full size. Pruning of conifers shall be avoided during summer months or unseasonably

hot weather. Pruning of elms, oaks and other trees susceptible to summer borne insects and associated pathogens shall be avoided during summer months.

(13) Flowering trees (e.g., red bud) shall be pruned immediately after flowering to allow a tree to develop flower buds for the following spring.

(B) Special Considerations for Protected Trees: Pruning Young Trees and Establishing Tree Structure

(1) Competing branches on newly planted trees shall be pruned to reduce co-dominant stems and establish a dominant leader. Other pruning of all newly planted street trees shall include: a) removal of malformed branches, b) removal of crossing or rubbing branches, c) removal of branches growing at sharp or unusual angles, d) removal of any badly broken branches and e) removal of suckers and water sprouts. No more than 25% of a young tree canopy shall be removed in any year without approval of the Director of Public Works. All pruning shall protect and reinforce a tree's form typical of the species.

(2) To reduce sunscald, development of trunk and limb decay columns and tree risk, the establishment of proper tree structure including the use of pruning for the elimination of co-dominant stems, proper spacing of lateral branches, proper development of aspect ratio (ratio of the diameter of a lateral branch to its stem) and lifting canopy for views and traffic should be established over the first 25 years of a tree's life. The pruning regulations and standards of Ferguson Township shall demonstrate a philosophy of correct and judicious pruning completed over regular pruning cycles on newly planted trees, young trees, mature trees and over mature trees.

(3) With the approval of the Director of Public Works, structural pruning of mature trees using reduction cuts on larger diameter branches should be done to: a) reduce co-dominant stems, b) reduce horizontal branch weight, c) subordinate competing leaders and d) reduce canopy height and spread.

(C) Authorized types of pruning for protected trees.

(1) Tree pruning shall follow the latest version of the American Standards Institute Pruning Standards (ANSI A300) and/or the International Society of Arboriculture Tree Pruning Best Management Practices and are summarized below.

a. Crown cleaning.

Crown Cleaning shall consist of the removal of dead, dying, diseased, crowded, weakly attached and low-vigor branches from the crown of a tree.

b. Crown thinning.

Crown thinning shall consist of the selective removal of branches to increase light penetration and air movement through the crown. Thinning opens the foliage of a tree and reduces weight on heavy limbs. Thinning enhances and protects a tree form typical of the specie of tree being pruned

c. Crown raising.

Crown raising properly removes the lower branches from a tree to provide clearance for buildings, vehicles, pedestrians and vistas.

d. Crown reduction.

Crown reduction reduces the size of a tree for the reduction of tree risk and clearance for utility lines. Reducing the height or spread of a tree is accomplished by using reduction and thinning cuts, as well as directional pruning.

e. Crown restoration.

Crown restoration attempts to repair damage to a tree canopy caused by storm injury or improper pruning such as topping. It requires multiple entries and treatments to a tree canopy over multiple years.

(D) Standards of workmanship for pruning and removal of protected trees.

(1) The use of climbing spurs or spikes shall be permitted only in the process of removing an entire tree.

(2) Trees or poles in the public right-of-way shall not be used as an anchor for any mechanical device for tree removal.

(3) Under no circumstances, when in the process of removing a tree, or any part of a tree, shall the work site be left unattended unless the tree and its branches are in a safe condition.

(4) Unless the tree work area is totally barricaded, or otherwise kept safe while pruning or removing trees, at least one responsible worker shall serve to coordinate safe operations on the ground at all times when work operations are in progress.

(5) Under no condition shall it be considered proper to leave any severed or partially cut branches in the upper portion of any tree being worked on after the tree workers leave the scene of the operation.

(6) Whenever large tree sections are being cut which may endanger person or property, such materials shall be secured by ropes and lowered safely in a controlled manner. Tree branches shall be removed and controlled in such a manner as not to cause damage to other parts of the tree or to other plants, people or property.

(7) Cleanup of branches, logs or any other debris resulting from any tree pruning or removal shall be promptly and properly accomplished. The work area shall be kept safe at all times during the cleanup operation. Under no condition shall the accumulation of brush, branches, logs or other debris be allowed upon a public property in such a manner as to result in a public hazard.

(8) All removal of trees shall be done in a manner so that the remaining stumps will be left as close to ground level as possible. If stump removal is required, they shall be ground at least 8 inches below ground level or removed intact.

(9) Excavations resulting from tree removal must be properly filled in to conform to the surrounding ground level with a top soil fill lightly compacted and free of debris. Surface material shall be restored to match adjacent material including seeding and restoration of lawn areas where applicable.

Sec.6.00. Assessment of Tree Risk.

All assessments of tree risk shall be completed by an International Society of Arboriculture Certified Arborist using the latest version of the American Standards Institute Standards for Tree Risk Assessment (ANZI A300) and/or the International Society of Arboriculture Tree Risk Best Management Practices.

Sec. 7.00. Chemical Application Specifications.

(A) General specifications.

The following specifications pertain to the spray application, soil application or injection of fertilizers, pesticides or growth inhibitors to a tree's above ground portions or roots.

(1) Applicators applying chemical pesticides to public trees shall adhere to all federal and state laws and regulations pertaining to pesticides and their application.

(2) The pesticide applicator shall know and understand the capacities and safety precautions of those materials used by either himself or his employees and be aware of those recommendations stipulated by the manufacturer.

(3) Ineffectual control (damage, injury or death to plants) or adverse effects on animals or persons resulting from the use of materials beyond the limitation of the manufacturer's guarantee shall be considered the responsibility of the licensed operator and his employer.

(4) Spray equipment shall be kept clean and in good working order. The Department of Public Works may inspect same at any time and take samples of spray materials being applied.

(5) It shall not be permitted to perform chemical application with dirty or contaminated tanks or equipment.

(6) Operators shall properly dispose of excess chemicals, including rinse water, in accordance with federal and state laws and regulations. Unsanitary or unsafe methods of washing out or draining tanks and equipment into public sewers and gutters are prohibited.

(7) No spray application shall be carried out when there is sufficient wind to make pesticide control ineffectual or create an overspray hazard to persons, plants or property.

(8) No spraying of pesticides shall be done when air temperature is less than 40° Fahrenheit.

(9) All spray machines other than hand pump sprayers must have agitators capable of maintaining a uniform spray solution at all times when spray application is in progress.

(10) Adequate precautions shall be taken in all phases of chemical preparation and application in order to minimize the chances of toxicity or phytotoxicity to non-target species.

(B) Specific requirements pertaining to injections of protected trees.

(1) Authorization by the Public Works Director must be given prior to any injection of chemicals into any tree.

(2) Injection hole size, spacing and timing of application will be according to product label and tree species.

(3) Injection holes should not be placed near wounds in the tree trunk, such as knots, frost cracks, cankers and decay.

(4) Holes shall be drilled as low on the trunk of a tree as feasible.

(5) Vertical alignment of holes from previous treatments should be avoided.

(6) Removal of external fixtures as soon after treatment as the manufacturer and legal requirements allow.

(7) If growth regulators are used, each stem of a multi-stemmed tree should be treated as a separate tree and any tree showing visible signs of decline or decay should not be injected unless permitted by the Public Works Department.

(8) A record of trees injected shall be kept and turned in to the Director of Public Works upon the completion of work. The record shall include the date, time of day and location that the tree or trees were injected, the operator, chemicals used, size and species of tree, amount of chemical used and any other pertinent information.

Sec. 8.00. Planting Specifications for Trees on Township-owned Property

(A) Age and Species Diversity.

(1) The Township shall use a tree removal and planting philosophy that provides for adequate age and species diversity on each street or in each park. To achieve desired diversity, the following concepts shall be considered.

(a) Monoculture plantings along any street or in any park shall be avoided.

(b) Trees should be planted in alternating groups (3–6 trees) of different tree species down a city street or along a frontage.

(c) No tree species should represent more than 8–12% of a block segment.

(d) No single species should make up more than 12% of all street trees owned by the Township.

(e) No single genus should make up more than 20% of all street trees owned by the Township.

(B) Plant material.

(1) All trees planted on Township-owned property shall be of a species and variety chosen from the Ferguson Township approved tree planting list, unless otherwise authorized by the Director of Public Works. To increase ecosystem services, the largest canopied tree for an existing planting site shall be planted.

(2) Tree material shall conform to the latest version of the American Standard for Nursery Stock (ANSI Z60.1). Plant material shall be of standard quality or better, true to name and type of species or variety.

(3) The minimum sizes of trees, straightness of trunk, clearance of lower branches and geographic location of the nursery tree origin and propagation method shall be specified by the Director of Public Works.

(4) The Township shall be notified and have the right to inspect any trees before they are selected, purchased or planted.

(5) Trees shall have normal, well developed branches and root systems. They shall be healthy and vigorous, free from limb, root and other defects, decay, sunscald injuries, abrasions of the bark, insect and pests and all forms of infestations or objectionable disfigurements and structural conditions caused by nursery practices including roots buried too deep in a root ball.

(6) Balled and bur lapped trees shall have solid balls of standard size, the balls securely wrapped with burlap or canvas and tightly bound with rope or twine. Plastic twine or wrapping material is not permitted.

(7) Bare root trees shall have adequate root systems as defined by the latest version of the American Standard for Nursery Stock (ANSI Z60.1). Their roots shall be protected from desiccation during transit and planting. Bare root plants shall have their roots covered either with a moist bag and/or mulch while transported to and being held at the planting site. Bare root trees shall be transplanted before bud break. They shall be correctly staked and irrigated adequately during hot dry weather as specified by the Director of Public Works.

(8) Containerized trees shall be free of girdling or circling roots. Containerized trees shall be correctly staked and irrigated adequately during hot dry weather as specified by the Public Works Director.

(9) In transporting plants to a planting site, trees shall be handled, secured and covered to prevent any damage from wind or vibration. Plants shall never be thrown, dropped or bounced off a truck or loader to the ground. Plant material shall be handled in a manner to cause the least amount of damage during the planting process. The trunk shall be protected against mechanical damage during handling and transport.

(10) Trees shall not be dug, balled and bur lapped or moved with a tree spade, during their active growth period unless the root ball is large enough to insure survival and the foliage is protected from desiccation.

(11) Plant material shall be planted the day it is taken to the planting site; or it shall be mulched, watered and placed in a shady area to prevent dehydration.

(C) Planting methods and techniques for trees on Township-owned property.

(1) No tree planting pit shall be dug or approved until all underground electric or telephone lines, gas lines, water lines or any other improvement locations are checked in accordance with the Pennsylvania One-Call System.

(2) Trees may not be planted within any clear sight triangle, less than 50 feet from a public road intersection as measured from the intersections of the edges of the road right-of-ways, or 20

feet from a fire hydrant or 10 feet from a driveway or pole supporting a street light. Actual tree planting locations shall be approved by the Public Works Director.

(3) Trees shall be planted in accordance to the International Society of Arboriculture Tree Planting Best Management Practices. For planting in tree lawns, parks and other unconfined areas, every planting pit should be at least three times wider and at the depth of the root ball or the full extent of the root system of bare root trees (See Figure 3).

(4). In the process of digging a tree planting pit "glazing" the sides of the hole by the use of an auger shall be avoided and/or corrected.

(5) All trees shall be planted at a proper depth that identifies and protects the root collar. The top of the root system of a newly planted tree shall be no more than two inches from top of grade.

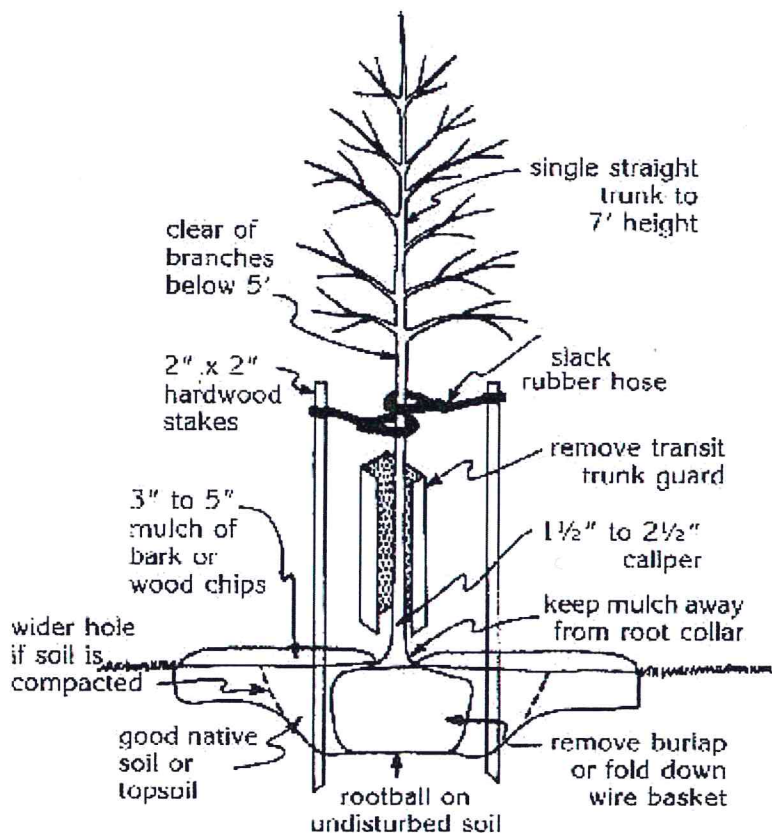


Fig. 3. Standard unconfined tree planting detail.

(5) For all balled and bur lapped, bare root and container plantings, backfill shall be of desirable structure, texture and pH to support vigorous establishment and growth. The Director of Public

Works shall approve the use of existing soil, new top soil or other rooting medium at each planting site. Backfill shall be added and tamped firmly, but not excessively, around the ball or root system at 12 inch increments, or lifts, until the planting site is at desirable grade.

(6) Organic amendments to backfill should be avoided. To reduce problems with soil settling and poor drainage and root growth, organic amendments to backfill shall only be used as approved by the Director of Public Works.

(7) Each plant should be centered and vertically aligned in a tree planting pit.

(8) For all balled and bur lapped stock, once a tree has been properly positioned in the pit, burlap and twine surrounding the root ball shall be removed or tucked down in the planting hole. Plastic burlap or other synthetic materials shall be completely removed from the pit. Tree baskets may remain on the root ball, but the top 1/3 rings of all wire baskets shall be removed.

(9) All twine, rope or plant labels secured around the trunk and branches shall be removed before planting is completed.

(10) When possible, a watering berm shall be constructed around every new tree. The soil in the planting hole shall be thoroughly irrigated to the depth of the root ball or roots immediately after planting.

(11) After irrigation at planting, all planted trees shall be adequately irrigated by applying at least 25 gallons/week of water during hot/dry periods using TreeGators or other deep irrigation methods.

(12) All tree plantings shall be mulched with two to three inches of composted wood chips, coarse fibrous bark or other surface treatment as specified by the Director of Public Works. Mulching shall be placed in a circle a minimum of three to four feet in diameter, but not touching a tree trunk.

(13) All bare root and containerized trees will be properly staked as specified by the Director of Public Works. The staking of balled and bur lapped trees shall be at the discretion of the Director of Public Works. Every evergreen tree in excess of 6 feet in height shall be guyed securely. All stakes and ties shall be removed from a tree after one year.

(14) For any tree transplanted with a tree spade, all space between the ball and surrounding soil shall be filled. Trees shall be staked or guyed and irrigated and mulched immediately after transplanting. Further irrigation shall be at the discretion of the Director of Public Works.

(15) Excavated tree planting pits that will be left open when work is not in progress or pose hazards to pedestrians or vehicles shall be adequately barricaded with qualified warning devices.

(16) Cleanup of soil, branches or other debris resulting from any tree planting shall be promptly accomplished. The tree planting work area shall be kept safe at all times until the planting and cleanup operations are completed. Under no condition shall the accumulation of soil, branches or other debris be allowed upon Township-owned property in such a manner as to result in a public hazard or be unsightly.

Sec. 9.00. Special Considerations: Planting specifications for trees in sidewalks, patios, squares or other confined planting areas.

(1) Sidewalks may be reduced to 3 feet wide with a grade of no more than 1:12 in certain circumstances to accommodate trees in crowded areas. Consideration shall be given to ADA requirements and other applicable standards when determining the technical feasibility, lines and grades for sidewalk, curbs and other hardscape.

(2) Tree species to be planted in sidewalks and other confined planting areas shall be approved by the Director of Public Works.

(3) When planting any tree surrounded by sidewalk, or other impervious surfaces, a tree shall be planted in a concrete or other planting cutout no smaller than 5 feet long x 5 feet wide with a depth of 3 feet. Larger tree planting cutouts shall be provided if possible (e.g., 6 feet long x 6 feet wide) or uneven sized tree planting cutouts (e.g., 8 feet long x 4 feet wide). Lesser planting cutouts may be used as approved by the Director of Public Works.

(4) To increase tree rooting area, support tree condition and improve storm water collection and infiltration, the engineered systems summarized below shall be considered in capital improvement or other projects that remove and replace roads, sidewalks or other hardscapes. The design and construction of any of the below systems shall be approved by the Director of Public Works.

(a) Engineered structural and sand soil.

Structural soils should be placed three feet in depth under the entire tree planting area, not only within or around a tree planting pit. They shall be mixed and installed by a person or contractor licensed to do such work. Structural soils should be mixed 80% angular stone 1 – 1.5 inches in size and 20% high clay soil by volume. Hydrogel should be used as a bonding agent. Limestone gravel shall be avoided. They should be installed and compacted in 6 inch lifts and can be compacted to 98% Proctor Density to support sidewalk panels and porous pavers. With the approval of the Public Works Director, engineered sand soils may be used to replace structural soils in sidewalk, patio, squares or other confined planting areas.

(b) Continuous Planters.

In wide sidewalks, or rows of trees in squares or patios, a continuous tree rooting space should be constructed by retaining or cutting a minimum 4 foot wide planting strip parallel to the curb, or within the patio or square. The planting area should be three feet in depth with an open bottom. Depending on use (e.g., pedestrian traffic), the planting area should be filled with top soil or structural soil. Brick, pavers or other porous material, not set in concrete or other non-porous material, shall cover the top of the planting area.

(c) Retention basins below tree planting areas.

The engineering and construction of sand storm water retention basins should be considered below the rooting area of trees planted in confined areas.

(d) Raingardens and bioretention basins.

The use of raingardens, bioretention areas and other systems should be considered in conjunction with street and park tree planting projects.

e) Grading and curb modification.

Grading of sidewalks areas and other hardscape and the use of rolled curbs, curb cut-outs and deletion of curbs should be considered to facilitate root protection and drainage into tree planting pits and areas.

Sec. 10.00. Special Considerations: Construction, Repair and modification of sidewalks and curbs.

(1) Tree roots over 2 inches in diameter shall not be cut without a permit. During sidewalk repair or modification, roots less than 2 inches in diameter may be cleanly pruned on the tree side without obtaining a permit. If possible, sidewalks, curbs and other hardscape installation shall be

vertically and horizontally redesigned within tolerances acceptable to the Public Works Director to avoid cutting of any tree root.

(2) When repairing, modifying or installing sidewalks the use of asphalt and rubber panels, increased expansion joints, panel removal or cutting, panel bridging and realignment of sidewalk into street or on private property easement shall be options to protect valuable trees as approved by the Director of Public Works.

(3) Curb cuts shall not be closer than 5 feet from the trunk of a tree without approval of the Director of Public Works. No asphalt paving or concrete shall be installed closer than 2-1/2 feet from a tree trunk.

(4) During curb repair or installation, damage to roots over 2 inches in diameter shall be permitted by the Director of Public Works. Encroachment upon any tree lawn while excavating shall not exceed 12 inches unless done under the supervision of the Director of Public Works.

(5) Replacement of concrete curbing with metal curbing to clear large roots, the use of rolled curbing without footers, curb cut-outs and deletion of curbs shall be options to protected valuable trees as approved by the Director of Public works.

RESOLVED this 18th day of August, 2014.

**TOWNSHIP OF FERGUSON
BOARD OF SUPERVISORS**

Appendix IV: Ferguson Township Resolution 2015-29

Approved List of Tree Species, Cultivars, and Hybrids for Street and Park Planting

RESOLUTION NO. 2015-29

A RESOLUTION OF THE TOWNSHIP OF FERGUSON, CENTRE COUNTY, PENNSYLVANIA AMENDING RESOLUTION 2014-24 AND ESTABLISHING A REVISED APPROVED LIST OF TREE SPECIES, CULTIVARS AND HYBRIDS FOR STREET AND PARK PLANTING

The Ferguson Township Board of Supervisors hereby resolves to create an approved list of street and park tree planting species, cultivars and hybrids and further establishing the appropriate planting spacing and preferred planting season for each variety and restricting the locations for certain planting varieties.

Whereas, many tree species, cultivars, and hybrids are provided in this planting list. Tree cultivars, or cultivated variety, provide the desired traits of a tree species, such as fall color or drought resistance, and are usually propagated through cuttings, grafting and tissue culture. Hybrids are trees that are bred from two different species to form a new species. The trees in this planting list are proven to be good performers in differing street and park landscapes. Two excellent references for tree selection are:

Dirr, M. A. 2009. *Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation, and Uses*. Champaign, Illinois: Stipes Publishing Company.

Gerhold, H.D., W.N. Wandell., and N.L. Lacasse. *Landscape Tree Factsheets: Including Evergreens for Screens*. University Park, Pennsylvania: The Pennsylvania State University College of Agricultural Sciences.

Whereas, restrictions on the planting of certain trees have been provided as *Note(s)* at the end of the tree's description and separate lists that summarize trees that require the permission of the Public Works Director for planting, trees to be planted in full or partial shade, trees recommended for sidewalk and parking lot cutouts, trees to be planted under utility lines and trees that should not be planted are provided at the end of the document, and

Whereas, the Township of Ferguson has adopted REGULATIONS AND STANDARDS FOR ARBOR WORK which provide direction on tree care and planting procedures.

Further, the Ferguson Township Board of Supervisors has established the following approved tree species for planting as street and park trees:

TREES FOR LARGE LANDSCAPE AREAS (TREES OVER 45' IN HEIGHT)

Large landscape trees require planting areas a minimum of 5' wide. Trees should be spaced no less than 25 and no more than 30' apart and should be planted a minimum of 2.5' away from any concrete curb, sidewalk, or patio. Soils must be a minimum of 3 to 4' in depth. These trees require adequate space for canopy growth and should not be planted underneath power lines or within 10' of any driveway, streetlight, or utility lateral, curb box, or clean out.

Acer rubrum- Red Maple

This fast growing tree reaches 50 to 75' in height with a somewhat smaller spread. It is a colorful tree year round with enjoyable bark and brilliant red and yellow fall color. The tree and other maples can have somewhat shallow root systems. *Notes: Performs poorly on limestone/alkaline soils and requires acid soil. Avoid fall planting. May be susceptible to verticillium wilt.*

Cultivars of Red Maple: 'Autumn Flame'- (better limb structure than some cultivars); 'Bowhall' (upright growth habit, good for narrower spaces); 'October Glory'- (one of the best cultivars for fall color); 'Red Sunset' (good fall color, susceptible to salt spray)

Hybrid Maples

A genetic cross between red and silver maple, these trees grow quickly where space is ample reaching 50 to 70' in height with a somewhat smaller spread. Leaves are typically the color of red maple, and offer enjoyable red and yellow fall color. Although tolerant of a large variety of soil conditions, they prefer slightly acidic soils. They have somewhat shallow root system. Tough urban trees that transplant and grow well on poorer sites. *Note: Susceptible to verticillium wilt.*

Types of Hybrid Maples: A. xfreemani 'Autumn Blaze'- (branching structure and color of red maple, rapid growth); A. xfreemani 'Celebration'- (branching structure and color of red maple rapid growth, tolerant of limestone soils, fall planting hazard); A. xfreemani 'Scarlet Sentinel'- (upright form, avoid fall planting)

Betula nigra 'Heritage'- River Birch

This medium to fast growing tree reaches 40 to 70' in height with a slightly smaller spread. It offers interesting drooping branches and flakey bark. The tree is a very handsome specimen and is the most trouble free and toughest of all birches in terms of insect and disease problems. *Notes: Performs poorly on limestone/alkaline soils and requires acid soil.*

Carya glabra- Pignut Hickory

This large tree grows to heights of 50 to 80' with a spread of 25 to 40'. It prefers well drained soils and full sun to part shade. Does not produce fruit until approximately 25 years of age. *Note: No serious insect or disease problems.*

Carya laciniosa- Shellbark Hickory

This large tree reaches heights of 60 to 80' with a smaller spread. It prefers medium to wet soils and full sun to part shade. Similar in appearance to the Shagbark Hickory. Produces the largest fruit of all hickories. *Note: No serious insect or disease problems. Not normally stocked by nurseries.*

Carya ovata- Shagbark Hickory

This large tree grows 70 to 90' in height with a slightly smaller spread. Prefers well drained soils in full sun to part shade. Exfoliating bark on mature trees is a point of interest. Good fall color. *Notes: No serious insect or disease problems. Can produce a large quantity of leaf litter when mature.*

Carya tomentosa- Mockernut Hickory

This large tree reaches heights of 60 to 80' with a spread of 40 to 60'. Prefers moist soils and full sun. Does not produce fruit until approximately 25 years of age. *Note: Large trees can produce a large accumulation of litter including leaves, twigs and fruit.*

Catalpa speciosa- Catalpa

This fast to medium growing tree reaches 40 to 60' in height with a smaller spread. Leaves are very large 6 to 12", medium green in summer changing to yellow or brown in fall. Fruit is a 10 to 20' long 'cigar' type capsule. Very tolerant of difficult soils including limestone/alkaline soils. In open landscapes can be subject to lightning strike.

Celtis occidentalis 'Prairie Pride'- Prairie Pride Hackberry

This medium to fast growing tree reaches 40 to 60' in height with an equal spread. Leaves are light green in summer and yellow to yellow-green in fall. Tolerant of acid or alkaline soils. The tree transplants and grows well on adverse urban sites. *Notes: Avoid fall planting. May be difficult to locate.*

Cercidiphyllum japonica- Katsura Tree

This medium to fast growing tree with a somewhat upright form reaches 40 to 60' in height with an equal spread. New leaves are reddish purple changing to bluish green in summer and a pretty yellow to apricot in fall. Adaptable to acid or alkaline spoils. *Note: May require irrigation for young trees.*

Eucommia ulmoides- Hardy Rubber Tree

This medium growing tree reaches 40 to 60' in height with an equal or greater spread. Leaves are lustrous dark green in summer and fall color is non-existent as leaves fall green. The tree withstands a variety of soils, drought, and partial shade. It is an excellent urban tree with few if any pest problems. *Note: May be difficult to locate nursery stock.*

Ginkgo biloba- Ginkgo

This slow growing tree reaches 50 to 80' in height with a variable crown form dependent on cultivar (spreading to upright). It has an interesting leaf with excellent yellow fall color. Mature trees have excellent structure and branch strength. They will grow in many soils and urban situations and are pH adaptable and extremely pest free. An excellent urban tree. Notes: *Because of the unpleasant odor of female fruit, only "certified" male varieties should be planted.*

Cultivars of Ginkgo: 'Autumn Gold'- (a good urban tree); 'Lakeview'- (upright growth form, good for narrow spaces); 'Princeton Sentry'- (upright growth form, good for narrow spaces)

Gleditsia triacanthos- Thornless Common Honey locust

This fast growing tree reaches 40 to 60' in height with equal spread. They have small leaves that are bright green in summer and yellow in fall. One of the most adaptable trees ever used in landscapes, they withstand a wide variety of soil conditions, are adaptive to pH and urban conditions, and are the most salt tolerant of all landscape trees. *Note: Insect problems, such as plant bug and locust leaf miner, are becoming a concern.*

Cultivars of Thorn less Common Honeylocust: 'ShadeMaster'- (somewhat upright form, reduced fruiting, plant in full sun); 'Skyline'- (less susceptible to plant bug, plant in full sun)

Gymnocladus dioicus- Kentucky Coffee Tree

This tree grows rapidly after establishment reaching 60 to 75' in height with a somewhat smaller spread. It is one of last trees to leaf out in spring. Leaves are medium green in summer changing to yellow or brown in fall. The tree has handsome bark and interesting limb characteristics in winter. Adaptable to a wide range of soil and site conditions with no serious insect or disease problems it is an excellent urban tree. Notes: *Large seed pods can be a problem. Plant "certified" male variety ('Espresso') only in full sun. Requires large planting area.*

Liquidambar styracflua- Sweetgum

This medium to fast growing tree with an upright form reaches 60 to 75' in height with a somewhat smaller spread. They have beautiful green leaves in summer changing to yellow-purple-red in fall. Excellent fall color. *Notes: Intolerant of limestone/alkaline soils and requires acid soil. Fruit may cause litter problem. Avoid fall planting. Plant in full sun.*

Cultivar of Sweetgum: 'Rotundiloba'- (more upright growth form, fruitless, plant in full sun)

Larix laricina- American Larch

This tree reaches 40 to 80' in height with a spread of 15 to 30'. It is a deciduous conifer whose needles turn a showy yellow in the fall before dropping. Prefers moist soils and full sun. *Note: Insect problems include larch looper and larch sawfly.*

Liriodendron tulipifera- Tulip Tree

This very large and magnificent tree is referred to as the "redwood of the east." It is the tallest growing eastern hardwood reaching 70 to 90' in height with a smaller spread. Fall color can be a spectacular yellow. It is adaptable to pH, but prefers slightly acidic soils. It can be slow in establishment in terms of root development. Slightly weak wooded, but perhaps stronger than most people give credit for. *Notes: Plant in full sun.*

Magnolia acuminata- Cucumber Tree

This tree has a somewhat upright form and grows rapidly 50 to 80' in height with the same spread. It has very large 10" leaves which are dark green in summer and green to brown in fall. Tolerant of limestone/alkaline soils. *Notes: Susceptible to verticillium wilt.*

Metasequoia glytostroboides – Dawn Redwood

This fast growing tree has an upright canopy form and reaches 70 to 100' with a smaller spread. Leaves resemble hemlock and are bright green in fall changing to brown or orange-brown in fall. It has limited insect and disease problems. A unique and lovely ornamental. *Notes: Performs poorly on limestone/alkaline soils and requires acid soil. May require irrigation when young on dry sites. Plant in full sun.*

Nyssa sylvatica – Blackgum

This slow to medium growing tree has an upright form reaching 30 to 50' in height with a somewhat smaller spread. Leaves are deep green in summer changing to scarlet-purple in fall. One of the best trees for fall color. *Notes: Performs poorly on limestone/alkaline soils and requires acid soil. Difficult to transplant and may require irrigation when young on dry sites.*

Platanus X acerifolia- London Plane Tree 'Bloodgood'

This medium growing tree is large and broadly spreading reaching 70 to 100' in height with a somewhat smaller spread. The tree has no fall color, but it offers interesting and handsome bark and limb structure during winter. It has extremely strong branching habits and is resistant to many insect and disease problems such as anthracnose. Tolerant of high pH soils, poor soils, and pollutants; it is a tough urban tree. *Note: Fruit and bark may cause litter problem.*

Platanus occidentalis- Sycamore

This large tree grows 75 to 100' in height with a similar spread. Prefers moist soils and full sun, but generally tolerant to most urban conditions. Brown outer bark exfoliates showing white inner bark each year. Fruiting balls normally ripen to brown in the fall before falling off. *Notes: Susceptible to sycamore anthracnose. Lawn clean up can be an issue due to fruit, bark, and leaves.*

Populus grandidentata- Bigtooth Aspen

This fast growing tree reaches heights of 50 to 70' with a spread of 20 to 40'. It prefers moist soils and full sun. Leaves turn to a yellow color in the fall. *Notes: Aggressive rooting tree, conflicts with sidewalks may be an issue.*

Prunus serotina- Black Cherry

This large tree reaches 50 to 80' in height with a smaller spread. It produces a showy white flower in the spring that gives off a pleasant scent. Presents a nice fall color. *Note: susceptible to most problems associated with other cherries.*

Quercus alba- White Oak

This tree reaches 50 to 80' in height with a similar spread. Prefers moist soils and full sun, but adapts to most soil conditions. Drought tolerant. In fall leaves turn shades of deep red. Slow growing tree. *Note: Susceptible to oak wilt, anthracnose, and oak leaf blister.*

Quercus bicolor- Swamp White Oak

The medium growing tree reaches 50 to 60' in height with an equal or greater spread. It can have purple fall color, but usually fall color is yellow. The tree has a strong and interesting branching habit. Transplants and grows better than white oak and can be used as a substitute in urban landscapes. Extremely drought tolerant. *Notes: Performs poorly on limestone/alkaline soils and requires acid soil. Avoid fall planting.*

Quercus coccinea- Scarlet Oak

This large tree grows 50 to 70' in height with a spread of 40 to 50'. Prefers dry, sandy soils and full sun. Leaves turn a showy scarlet color in the fall. *Note: Does not exhibit chlorosis problems like the closely related pin oak.*

Quercus imbricaria- Shingle Oak

This slow growing tree reaches 50 to 60' in height with an equal or slightly larger spread. Leaves are deep green in summer changing to yellow-brown in fall. Easier to transplant than many oaks. *Notes: Performs poorly on limestone/alkaline soils and requires acid soil. Avoid fall planting.*

Quercus macrocarpa- Bur Oak

This slow growing tree reaches 70 to 80' in height with an equal or slightly larger spread. Leaves are deep green in summer changing to yellow-brown in fall. Tolerant of

limestone/alkaline soils. A very large and impressive landscape tree. *Notes: Difficult to transplant and may require irrigation when young on dry sites. Avoid fall planting.*

Quercus muehlenbergi- Chinkapin Oak

This medium growing tree reaches 40 to 50' in height with a smaller spread. Leaves are dark yellow green in summer changing to orange brown in fall. It has an open, rounded crown. No particular insect or disease problems. Prefers acid soils and reaches largest size in rich, deep soils. An attractive ornamental tree.

Quercus palustris- Pin Oak

This fast growing tree reaches 60 to 70' in height with a smaller spread. Leaves are dark green in summer changing to bronze or red in fall. It has a strongly pyramidal form changing to more oval in older trees. Somewhat tolerant of urban conditions, it is the most widely planted oak. *Notes: Performs poorly on limestone/alkaline soils and requires acid soil. Relatively free of insect and disease problems, but bacteria leaf scorch and oak wilt are concerns. Because of low branching habit and large size should only be planted in large landscape areas.*

Quercus phellos- Willow Oak

This medium growing tree reaches 40 to 60' in height with a similar or somewhat smaller spread. Leaves are bright green in spring changing to yellow and dull red in fall. Mature trees have an attractive oval canopy form. Prefers moist, slightly acidic soil, but can grow on very tough sites. Essentially pest and disease free. An attractive street and park tree. *Note: Depending on climate, may be deciduous or semi-evergreen.*

Quercus prinus- Chestnut Oak

This large tree reaches heights of 50 to 70' with a similar spread. Adapts to a wide range of soil conditions and is drought tolerant. Generally a low maintenance tree. *Note: is susceptible to oak wilt.*

Quercus rubra- Northern Red Oak

This fast growing tree reaches 60 to 70' in height with an equal spread. A russet-red fall color is often not outstanding. It has excellent limb structure and strength. *Notes: Performs poorly on limestone/alkaline soils and requires acid soil. Relatively free of insect and disease problems, but bacteria leaf scorch and oak wilt are concerns.*

Quercus shumardii- Shumard Oak

This fast growing tree reaches 60 to 70' in height with an equal spread. A russet-red fall color is often not outstanding. It has excellent limb structure and strength. Adaptable to urban pollutants and relatively free of insect and disease problems. Performs better on limestone/alkaline soils than red oak and can be used as a substitute.

Robinia pseudoacacia 'Purple Robe' - Purple Robe Black Locust

This fast growing tree reaches a height of 50' with a slightly greater spread. The tree offers exceedingly fragrant, pretty, dark rose-pink flowers in May with a yellow-green fall color. Extremely tolerant of varied soils, pollution, salt, and climates. *Notes: Locust borer and plant bug can be insect problems. Limb breakage in storms is a concern.*

Taxodium distichum - Baldcypress

This medium growing tree has an upright growth form and reaches 50 to 70' with a smaller spread. Similar in appearance to dawn redwood, leaves are bright green in spring changing to a soft brown in fall. It has limited insect and disease problems. It is a distinctive specimen tree.

Notes: Performs poorly on limestone/alkaline soils and requires acid soil. May require irrigation when young on dry sites. Plant in full sun.

Tilia americana - American Linden or Basswood

This medium growing tree has a somewhat upright growth form and reaches 60 to 80' in height with a smaller spread. Leaves are dark green above and lighter green below changing to greenish-yellow in fall. Tolerant of a range of soil conditions. A handsome native tree.

Note: Susceptible to verticillium wilt and Japanese beetles.

Cultivar of American Linden: 'Redmond' (fast growing tree with more upright form)

Tilia cordata - Littleleaf Linden

This medium growing tree with a distinct pyramidal form reaches 60 to 70' in height with a smaller spread. The tree offers yellow, fragrant flowers June or July. Leaves are dark green changing to yellow-green in fall. It is tolerant of urban pollution, soil compaction, and limestone/alkaline soils. *Notes: Flowers can attract bees. Susceptible to aphids which cause honeydew and sooty mold. Should not be planted in downtown sidewalks or other sites where heat, drought, or deicing salts are a concern.*

Cultivars of Littleleaf Linden: 'Glenlevin' (distinct pyramidal form); 'Greenspire' (distinct pyramidal form)

Tilia tomentosa 'Sterling'- Silver Linden

This medium growing tree reaches 50 to 70' high with a smaller spread. It is pyramidal when young, remaining pyramidal or oval at maturity. It has interesting, shimmering leaves that are green above and silver below. Leaves can have yellow fall color. It is tolerant of urban pollution, soil compaction, and limestone/alkaline soils. It is more tolerant of drought and heat than other lindens. A beautiful ornamental tree.

Zelkova serrata "Village Green' and 'Halka'- Zelkova

These fast growing cultivars are hardier than trees of Japanese origin reaching 50 to 80' in height with an equal spread. They have dark green leaves in summer turning rusty-red in fall. Adaptable to soil compaction, pH, and drought, they are tough urban trees planted as a substitute for American elm. *Notes: The cultivar 'Halka' has a shape more similar to American elm and less branch breakage during storms.*

TREES FOR MEDIUM LANDSCAPE AREAS (TREES 30 TO 45' IN HEIGHT)

Medium growing landscape trees require planting areas a minimum of 4' wide. Trees should be spaced 20' apart, and the trees must be planted 2' away from any concrete curb, sidewalk, or patio. Soils must be a minimum of 3 to 4' in depth. These trees require adequate soil for root growth and space for canopy growth.

Acer campestre- Hedge Maple

This slow growing tree reaches 25 to 40' in height with a similar spread. Leaves are a handsome dark green in summer changing to yellow-green in fall. Although small, it has an enjoyable tree-like form. The tree transplants readily and is extremely adaptable to soils, pH, drought, compaction, and pollution. It is a very tough and excellent landscape tree that can withstand heavy pruning.

Cultivar of Hedge Maple: 'Evelyn'- Queen Elizabeth Hedge Maple (more upright growth form than true species)

Acer truncatum x A. Platanoides 'Warrenrod'- Pacific Sunset Maple

This fast growing tree reaches 30 to 40' in height with a somewhat smaller spread. Leaves are dark green in the summer changing to orange-red to bright red fall in the fall. It tolerates a wide range of soils and pH, heat, drought, pollutants, and partial shade. A very lovely small maple.

Aesculus c carnea 'Briotii'- Ruby Red Horsechestnut

This medium growing tree reaches 30 to 40' with a slightly smaller spread. The tree offers beautiful red flowers in May. Leaf color is dark green in summer changing to a poor yellow or brown in fall. It is adaptable to pH. *Notes: Not tolerant of heat or drought. Leaves will brown in late summer if exposed to full western sun. Can be difficult to find.*

Betula lenta- Sweet Birch

This medium sized tree grows to 40 to 55' tall with a slightly smaller spread. Prefers moist, slightly acidic soils. Leaves turn a nice yellow color in the fall. *Note: Resistant to bronze birch borer.*

Carpinus betulus 'Fastigate'- Upright European Hornbeam

This slow to medium growing tree reaches 35 to 40' in height with a much smaller spread and a very formal, upright growth habit. Smaller leaves are dark green in summer changing to yellow or yellow-green in fall. Tolerant of a wide range of soil conditions including acidic or alkaline pH. No serious disease or insect problems. Good for narrower planting spaces or screens.

Cladrastis kentukea- American Yellowwood

This medium growing tree reaches 30 to 50' in height with a similar spread. It offers beautiful bark and fragrant white flowers in May to early June. Leaves open yellow and change to bright green in summer and yellow to golden yellow in fall. The tree tolerates acidic and alkaline pH. An excellent tree for flowers and foliage, it is a choice selection for smaller areas. *Notes: Poor branching structure may split during storms. Prefers full sun.*

Gleditsia triacanthos 'Imperial'- Thornless Common Honeylocust

This fast growing tree reaches 30 to 35' in height with equal spread. It withstands a wide variety of soils, is adaptive to pH and urban conditions, and is one of the most salt tolerant of all landscape trees. It is one of the most adaptable native trees ever used in landscapes. *Note: Insect problems, such as plant bug and locust leaf miner, are becoming a concern.*

Halesia carolina- Carolina Silverbell

This small to medium tree reaches heights of 30 to 40' with a spread of 20 to 35'. Prefers moist soil and part shade but can tolerate full sun. Produces white, bell shaped flowers in April. Leaves turn an attractive yellow in the fall, but may drop early. *Notes: No serious insect or disease problems. Can be chlorotic in high pH soils.*

Koelreuteria paniculata- Goldenraintree

This medium to fast growing tree reaches 30 to 40' in height with an equal or greater spread. It has compound, bright green leaves that change to yellow and golden in fall. The tree offers perfect, yellow, and enjoyable flowers in July. The tree has no particularly serious insect or disease problems and it is adaptable to a wide range of soils, is pH adaptable, and withstands drought and urban pollutants. It is a choice and beautiful specimen tree where space is limited.

Ostrya virginiana- American Hophornbeam or Ironwood

This slow growing tree reaches 25 to 40' in height with a similar spread. Leaves are dark green in summer changing to yellow in fall. A handsome urban tree. *Notes: Sensitive to salt, drought, and compacted soils.*

Oxydendrum arboreum- Sourwood

This tree reaches heights of 20 to 50' with a small spread. Prefers well drained soils and full sun. Produces showy white flowers from June to July. Leaves turn a beautiful crimson in the fall. Intolerant of urban pollution. *Notes: Tolerates some shade, with diminished flowering. No serious insect or disease issues.*

Populus tremuloides- Quaking Aspen

This medium sized tree reaches heights of 35 to 50' with a small spread. It adapts to a wide range of soil and shade conditions. *Note: Generally short lived, many insect and disease problems.*

Prunus sargentii- Sargent Cherry

This medium growing tree reaches 30 to 40' in height with an equal spread. The tree offers showy pink flowers April to May. Leaves are an excellent shiny green in summer changing to bronze or red in fall. The tree is adaptable to different soils and planting sites, but short lived. *Notes: Avoid fall planting. Plant in full sun.*

Cultivars of Sargent Cherry- 'Columnar' (much more upright growth form); 'Snow Goose' (smaller height and spread)

Prunus serrulata- 'Kwanzan'- Japanese Flowering Cherry

This medium growing tree reaches 30 to 40' in height with a somewhat smaller spread. It offers showy white to pink flowers April to May famous in Washington, D.C. It is one of the hardiest cherries, but still sensitive to pollution and several insects. Although relatively short lived, it provides great character and beauty. *Notes: Avoid fall planting. Plant in full sun.*

Quercus acutissima- Sawtooth Oak

This medium growing tree reaches 35 to 45' in height with great variation in spread. It has dark lustrous leaves in the summer that change to a good yellow or golden brown fall color. It has no serious insect or disease problems. A nice, wide spreading shade or lawn tree for small planting areas. *Notes: It can be grown over a wide variety of sites, but requires acidic soil.*

Sassafras albidum- Common Sassafras

This medium to fast growing tree reaches 30 to 60' in height with a smaller spread. The tree offers attractive pink flowers April to May. Leaves are dark green in summer changing to deep orange to scarlet and purple in fall. One of the best native trees for fall color. *Notes: Performs poorly on limestone/alkaline soils and requires acid soil.*

TREES FOR SMALL LANDSCAPE AREAS (TREES UNDER 30' IN HEIGHT)

Small growing landscape trees require planting areas a minimum of 3' wide. Trees should be spaced 10' apart, and the trees must be planted 2' away from any concrete curb, sidewalk, or patio. Soils must be a minimum of 3 to 4' in depth. These trees require smaller amounts of soil for root growth and space for canopy growth. These trees can be planted near, but not adjacent, to buildings. They should be planted under utility lines.

Acer buergeranum- Trident Maple

This slow growing tree reaches 20 to 30' in height with an equal spread. Leaves are rich bronze in spring changing to dark green in summer and yellow, orange, and red in fall. It tolerates drought and other urban stresses, but prefers well-drained acid soil. *Notes: Avoid fall planting. Plant in full sun.*

Acer griseum- Paperbark Maple

This slow growing tree reaches 20 to 30' in height with an equal or smaller spread. It offers a beautiful cinnamon or red-brown bark that becomes extremely attractive as the bark exfoliates. It has dark or bluish green leaves that change to bronze or russet-red in fall. It is tolerant of pH and withstands a variety of soils, but prefers slightly moist soils. It has no serious insect or disease problems. It is an interesting and beautiful small landscape tree. *Note: Prefers full sun.*

Acer tataricum – Tatarian Maple

This slow to medium growing tree reaches 15 to 20' in height with a similar spread. Leaves are dark green in summer changing to yellow and red in fall. Tolerant of limestone/alkaline soils and drought. *Note: Susceptible to verticillium wilt.*

Amelanchier sp.- Serviceberry

This small tree reaches 15 to 25' in height with a similar spread. Adapts well to most soil conditions, and produces a showy white flower before bud break in the spring. Leaves turn a nice fall color. *Note: Root suckers can be a problem if not maintained.*

Carpinus caroliniana- American Hornbeam or Muscle Wood

This slow growing tree reaches 20 to 30' in height and spread, often with multiple trunks. Leaves are dark green in summer changing to a nice yellow or orange-red in fall. The tree offers an interesting fluted bark. One of the only landscape trees that can perform well in full shade.

Note: Prefers slightly acidic, moister soils. Avoid fall planting. Plant in partial shade.

Cercis canadensis- Eastern Redbud

This medium growing tree reaches 20 to 30' in height and spread, often with multiple trunks. It offers showy reddish-pink flowers which open in March to April. Fall color is usually a poor yellow-green, but can be an excellent yellow. It does well in many soils and light shade, but prefers moister soils. It is a beautiful, tough, and favorite native plant. *Notes: Relatively short lived. Performs best in partial shade.*

Cultivars of Eastern Redwood: 'Alba'- white flowering redbud (white flowers); 'Forest Pansy'- (leaves are reddish purple)

Cornus florida- Flowering Dogwood

This small tree grows to 15 to 30' in height with a similar spread. It prefers moist acidic soils and part shade. Produces a showy white flower in April, and provides a nice fall color. *Note: Suceptable to dogwood anthracnose and powdery mildew.*

Cornus kousa- Kousa Dogwood

The medium growing tree reaches 20 to 30' in height with the same spread. It flowers with creamy-white pointed bracts in early summer and has reddish purple to scarlet fall color. Not a good tree for tough planting sites, it prefers rich, acidic, and well drained soils. The tree offers beautiful flowers and foliage. *Notes: Performs poorly on limestone/alkaline soils and requires acid soil. Avoid planting in fall. Performs best in partial shade.*

Cultivar of Kousa Dogwood: 'Rutcan' (flowers before Kousa)

Cornus mas- Cornelian Cherry Dogwood

Similar to kousa dogwood, the medium growing tree reaches 20 to 30' in height with the same spread. One of first trees to bloom in spring with small yellow flowers and a reddish purple to scarlet fall color. Not a good tree for tough planting sites, it prefers rich, acidic, and well drained soils. The tree offers beautiful flowers and foliage. *Notes: Performs poorly on limestone/alkaline soils and requires acid soil. Avoid planting in fall. Performs best in partial shade*

Crataegus punctata 'Ohio Pioneer'- Ohio Pioneer Hawthorn

This slow to medium growing tree reaches 20 to 25' in height with a similar spread. It offers large clusters of white flowers in spring, but little fall color. A dark red fruit ripens and drops in fall. The tree is resistant to fire blight and has a reduced number of thorns. A tough urban tree it tolerates a variety of soils and drought. *Notes: Avoid fall planting. Plant in full sun.*

Crataegus viridis 'Winter King'- Winter Green Hawthorn

This slow to medium growing tree reaches 25 to 30' in height with a similar spread. It offers clusters of white flowers in spring and yellow fall color. An abundant, red-orange fruit persists through winter. A tough urban tree, it tolerates a variety of soils and drought. *Notes: The tree can have problems with rust, and thorns can be a problem in some situations. Avoid fall planting. Plant in full sun.*

Other Hawthorns (many species): Crataegus crus-galli var. inermis- Thornless Cockspur Hawthorn; Crataegus phaenopyrum- Washington Hawthorn

Magnolia 'Galaxy'- Galaxy Magnolia

This slow growing tree reaches 20 to 30' in height with a smaller spread. Provides pink flowers May to June. Leaves are dark green in summer changing to yellow to bronze in fall.

Notes: Prefers full sun and acidic soils. Little insect or disease problems. Susceptible to verticillium wilt. Avoid fall planting. Plant single trunk only.

Magnolia stellata- Star Magnolia

This slow growing tree reaches 15 to 20' in height with a somewhat smaller spread. Provides white flowers May to June. Leaves are dark green in summer changing to yellow to bronze in fall. Little insect or disease problems. *Notes: May not do well in full sun or exposed sites, plant in partial sun. Susceptible to verticillium wilt. Avoid fall planting.*

Magnolia virginiana- Sweetbay Magnolia

This semi-evergreen to deciduous tree reaches 10 to 20' in height with a similar spread. It offers attractive white, lemon scented flowers May to June and is often multi-stemmed with a spreading form. An attractive, graceful tree. *Note: Intolerant of limestone/alkaline soils and requires acid soil.*

Cultivars of Sweetbat Magnolia: 'Henry Hick'- (may remain evergreen in northern climates);

'Moon Glow'- (may remain evergreen in northern climates)

Malus- Crabapple

There are many cultivars of this tree available that are fast growing 10 to 30' in height with somewhat smaller spread. Depending on cultivar, they provide white, pink, or red flowers and red, orange, or yellow fruit. Although adaptable to many soil types and conditions, they prefer acidic soils. A tough urban tree. *Notes: Root suckers may need to be removed. Some cultivars are highly susceptible to apple scab, fireblight, and cedar-apple rust. Fruit can cause litter problem. Plant in full sun.*

Cultivars of Crabapple: 'Prairiefire'(resistant to disease, pink flowers); 'Sugar Tyme' (disease resistant, white flowers, good street tree)

Prunus 'Okame'- Okame Cherry

This medium growing tree reaches 20 to 30' in height with a similar spread. It offers pink flowers in early May. Leaves are green in summer changing to reddish purple in fall. More upright growth form than other cherries. *Note: Avoid fall planting.*

Prunus virginiana 'Shubert'- Common Chokecherry or Canada Red Cherry

This fast growing upright tree reaches 20 to 30' in height with a somewhat smaller spread. It provides white flowers April to May. Leaves are green in summer changing to reddish purple in fall. *Note: Avoid fall planting.*

Syringa reticulata 'Ivory Snow'- Japanese Tree Lilac

The tree grows 20 to 30' in height and 20 to 25' in spread. It can be considered either a small tree or large shrub. It offers white, lilac type flowers in early to mid-June which can look untidy after they have died. The tree is adaptable to soils and pH, but prefers slightly acidic, moist, and well drained soils. The most trouble free lilac. An excellent small tree and a good choice for extremely small planting areas. *Note: Plant in full sun for best flowering.*

CONIFERS FOR PARKS AND OTHER VERY LARGE PLANTING AREAS

Conifers provide larger stormwater management values than deciduous trees. They also provide color and interest in the winter. They are appropriate for very large planters or park landscapes.

Picea abies- Norway Spruce

This medium to fast growing spruce reaches 40 to 60' in height with a smaller spread. It offers a pyramidal form with graceful hanging branches. Prefers moist, sandy, acidic, and well drained soils, but can be successful in other fertile soils if moisture is adequate. *Notes: Young trees may require irrigation. Does not perform well in heavy shade.*

Picea pungens- Colorado Blue and Green Spruce

This slow to medium growing tree reaches 30 to 60' in height with a smaller spread. The tree offers a narrow to broadly pyramidal form with stiff branches. It is often planted for its leaf color which is from gray-green to blue-green. Prefers rich, moist soils in full sun. *Notes: Overused and most likely will be infected by Cytospora canker. Plant in limited, dispersed numbers.*

Pinus bungeana- Lacebark Pine

This slow growing pine reaches 30 to 50' with a smaller spread. The tree offers a broad spreading form and very attractive bark. It prefers sun and well drained soils. Tolerant of limestone soils. One of the most beautiful of ornamental pines.

Pinus flexilis- Limber Pine

This slow growing pine reaches 30 to 50' in height with a smaller spread. It has a pyramidal form when young, changing to broad and flat-topped when mature. The tree has demonstrated good adaptability to different sites, but prefers most, drained soils and full or partial sun. An attractive ornamental tree.

Pinus ridgida- Pitch Pine

This medium to slow growing pine reaches 40 to 60' in height with a somewhat smaller spread. Young trees offer a pyramidal form growing into an irregular, gnarled crown when mature. Tolerant of poor soils and able to survive the driest, sandiest, and most unproductive sites. Tolerant of salt and salt spray.

Pinus taeda- Loblolly Pine

This fast growing pine reaches 40 to 50' in height with a somewhat smaller spread. Young trees have a pyramidal form growing into an oval-rounded crown when mature. Easy to transplant and very adaptable to a wide variety of soils, but prefers acidic soil.

Pinus virginiana- Virginia or Scrub Pine

This slow growing pine reaches 15 to 40' in height with a somewhat smaller spread. Young trees offer an open pyramidal form growing into a straggling and scrubby form. Performs well in poor dry soils where other pines will not grow.

TREES REQUIRING PERMISSION OF PUBLIC WORKS DIRECTOR

Because of severe problems with certain soil types, insects and diseases, and tree structures, the following trees can only be planted on Township property with the permission of the Public Works Director.

PERMISSION REQUIRED: LARGE LANDSCAPE AREAS (TREES OVER 45' IN HEIGHT)

Acre saccharinum- Silver Maple

This fast growing tree has an upright growth form reaching 50 to 70' in height with a somewhat smaller spread. Fall color is limited to a green-yellow combination. Tolerant of a wide range of soil conditions, it is one of the easiest trees to transplant. A large growing tree with massive spreading branches that some people consider very beautiful. Shallow root system. *Notes: Because of the large size and problems with decay and branching habit in older trees, only plant in riparian areas or other large open spaces. Susceptible to verticillium wilt.*

Acer saccharum- Sugar Maple

This slow growing tree has a somewhat upright growth form reaching 60 to 75' in height with a smaller spread. It offers beautiful brilliant yellow, burnt orange, and red fall color. Somewhat adaptable to pH, but prefer slightly acidic soils. Beautiful large trees in fall color. *Notes: Poor street and parking lot trees, do not plant where heat, drought, soil compaction, or salt is common. Susceptible to verticillium wilt.*

Cultivars of Sugar Maple: 'Bonfire'- (broader crown); 'Green Mountain'- (more upright growth habit); 'Legacy'- (faster growing)

Sophora japonica- Japanese Pagoda or Scholar Tree

This medium to fast growing tree reaches a height of 50 to 75' with the same spread. The tree offers beautiful white flowers July to August. Leaves are deep green in summer with little fall color. Tolerant of a wide variety of soils and relatively disease and insect free. *Notes: Flowers and fruit can be messy and slippery on steeper sidewalks and other slopes. Plant in full sun.*

Ulmus Americana- American Elm

This medium to fast growing tree reaches 60 to 80' in height with a somewhat smaller spread. Leaves are lustrous green in summer changing to yellow in fall. The tree is famous for a classic multiple trunk and vase shape growth form, interesting bark, and a massive and interesting winter form. It transplants easily in a variety of soils, is pH adaptive, and drought resistant.

Notes: Because of poor limb attachment, large limbs can be lost on mature trees during severe weather. Over the past 25 years, researchers have been involved in selecting and breeding American elms for tolerance to Dutch Elm Disease (DED), and more recently elm yellows. Two cultivars, 'Valley Forge' and 'New Harmony' have exhibited good tolerance to DED, but are most likely susceptible to elm yellows. A number of cultivars from the Morton Arboretum, 'Accolade', 'Triumph', 'Danada Charm', and 'Commendation' are resistant to DED and may be resistant to elm yellows; although no documentation of this has been made. These trees should be planted selectively in very small numbers with permission of the Public Works Director until resistance to elm yellows is proven.

Tsuga canadensis- Eastern Hemlock

This medium growing tree reaches 40 to 70' in height with a smaller spread. The State Tree of Pennsylvania, it offers a beautiful pyramidal form in youth and maturity. More tolerant of limestone soils than any other hemlock, tolerates shade well, and can be pruned into hedges. *Notes: Almost certainly will be infected by woolly adelgid. Do not plant unless this insect will be addressed.*

PERMISSION REQUIRED: MEDIUM LANDSCAPE AREAS (TREES 30 TO 45' IN HEIGHT)

Acer saccharum 'Goldspire'- Goldspire Sugar Maple

This slow growing tree has an upright growth form reaching 40 to 50' in height with a smaller spread. It offers beautiful brilliant yellow, burnt-orange, and red fall color. Somewhat adaptable to pH, but prefer slightly acidic soils. A beautiful tree in fall color. *Notes: A poor street and parking lot tree, it absolutely cannot be planted where heat, drought, soil compaction, or salt is common. Susceptible to verticillium wilt.*

Acer saccharum 'Reba'- Belle Tower Sugar Maple

This slow growing tree has an upright growth form reaching 40 to 45' in height with a much smaller spread (18'). It has one of the most upright forms of all sugar maples. It offers beautiful brilliant yellow, burnt-orange, and red fall color. Somewhat adaptable to pH, but prefer slightly acidic soils. A beautiful tree in fall color. *Notes: A poor street and parking lot tree, it absolutely cannot be planted where heat, drought, soil compaction, or salt is common. Susceptible to verticillium wilt.*

SUGGESTED TREES FOR FULL OR PARTIAL SHADE

Most, if not all, large growing ornamental hardwoods prefer full sun. This limits tree selection to a few medium and small trees and conifers such as hemlock.

Acer truncatum x A. Platanoides 'Warrenrod'- pacific sunset maple (partial shade)

Carpinus caroliniana- American hornbeam (full shade)

Cornus kousa- kousa dogwood (partial shade)

Cercis canadensis- Eastern redbud (partial shade)

Eucommia ulmoides- hardy rubber tree (partial shade)

Tsuga Canadensis- eastern hemlock (partial shade)

SUGGESTED TREES FOR SIDEWALK AND PATIO PLANTINGS

Planter cutouts must be a 5 by 5' minimum. Larger trees can be considered if structural or other engineered soils are being used.

Acer. xfreemaniana (hybrid maples)- A. xfreemani 'Autumn Blaze', A. xfreemani 'Celebration', and A. xfreeman 'Scarlet Sentinel'

Eucommia ulmoides (hardy rubber tree)

Ginkgo bilboa (gingko)- 'Autumn Gold', 'Princeton Sentry' and 'Lakeview'

Gleditsia triacanthos (thornless common honeylocust)- 'Imperial' and 'Skyline'

Platanus X acerfolia (London plane tree)- 'Bloodgood'

SUGGESTED TREES TO PLANT UNDER UTILITY LINES

To avoid severe pruning only small trees should be planted under utility lines.

Acer buergerianum- trident maple

Acer griseum- paperbark maple

Acer tataricum – tatarium maple

Carpinus caroliniana- American hornbeam or muscle wood

Cercis canadensis- Eastern redbud

Cornus kousa- Kousa Dogwood

Crataegus punctata 'Ohio Pioneer'- Ohio pioneer hawthorn

Crataegus viridis "Winter King"- winter green hawthorn

Magnolia "Galaxy"- galaxy magnolia

Magnolia stellata- star magnolia

Malus- crabapple (many cultivars)

Prunus 'Okame'- okame cherry

Prunus virginiana 'Shubert'- common chokecherry or Canada red cherry

Syringa reticulata 'Ivory Silk'- Japanese tree lilac

TREES NOT TO BE PLANTED

Because of severe problems with certain soil types, insects and diseases, and invasiveness, some tree should not be planted on Township property.

Acer ginnala - amur maple (extremely invasive)

Acer platanoides- Norway maple (extremely invasive, poor structure in older trees)

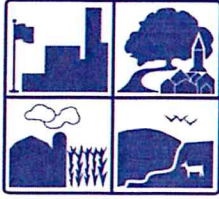
Corylus colurna- Turkish filbert (unresolved disease problems)

Fraxinus- ash (emerald ash borer)

Pyrus calleryana- ornamental pear (extremely invasive, poor branch structure)

RESOLVED this 19th day of October, 2015.

**FERGUSON TOWNSHIP
BOARD OF SUPERVISORS**



TOWNSHIP OF FERGUSON

3147 Research Drive • State College, Pennsylvania 16801

Telephone: 814-238-4651 • Fax: 814-238-3454

www.twp.ferguson.pa.us

PERMIT APPLICATION FOR MUNICIPAL TREE WORK

Applicant Information

Applicant's Name: _____

Applicant's Address: _____

Telephone Number: _____

Contractor Information

Contractor's Name: _____

Contractor's Address: _____

Telephone Number: _____

Address or Location of Work: _____

Type of work for which this permit is being requested (check all that apply):

- | | |
|---|--|
| ☐ Plant tree(s) | ☐ Provide treatment, as described below |
| ☐ Remove tree(s) | ☐ Work under tree canopy/dripline |
| ☐ Prune tree branches and/or roots | ☐ Other |

Tree(s) Affected (species, size, and number): _____

Detailed Description of Work: _____

If awarded, permit will be valid for a period of one year from the date issued. If proposed work includes tree planting or work under the tree canopy, a plan or sketch of the proposed work must be submitted with the application showing roadway, location of trees, tree lawn, sidewalk, existing facilities and proposed work with dimension using the centerline of the road for baseline. All work must be performed in accordance with the attached Permit Conditions, and any Supplemental Conditions attached to the permit. If working under a tree canopy, it may be necessary to also obtain a Pave Cut and Right-Of-Way Occupancy Permit.

General Permit Conditions for Municipal Tree Work:

1. All work shall be done in accordance with Chapter 25 of the Code of Ordinances as amended, ordinance #991, resolution 2014-25 (Regulations and Standards for Arbor Work), and resolution 2014-24 (Township Tree Planting List).
2. Permittee shall provide the Township Arborist with a Work Start Date at least three days in advance and shall notify the Township Arborist when all work is complete.
3. Any contractor or subcontractor performing work under this permit must first have a current certificate of insurance (C.O.I.), in conformance with the Township's C.O.I. policy, on file at the Township at least three days prior to the beginning of work. Without a current C.O.I. on file with the Township, this permit is not valid and no work may be performed.
4. This permit must be on-site at all times while work is being performed.
5. The Township may, at any time, revoke or annul this permit for non-performance of or non-compliance with any of the conditions, restrictions, and regulations of the Township.
6. Disturbed area shall be restored to Township specifications and warrantied for a period of 2 years.
7. Contractor responsible for traffic control and worker safety in accordance with PennDOT Publication 213.
8. Road closures shall not be permitted.

2017 Street Tree Operating Budget			
455.114 Arborist Salary	\$ 56,150.00		
455.115 Part Time Wages	\$ 39,312.00		
455.220 Operating Supplies	\$ 1,000.00		
455.240 General Expense	\$ 1,500.00		
455.245 Supplies and Materials	\$ 1,000.00		
455.260 Small Tools	\$ 2,000.00		
455.370 Repairs and Maintenance	\$ 1,000.00		
455.375 Street Tree Replacements	\$ 70,500.00		
455.420 Dues, Subscriptions, Training	\$ 4,500.00		
455.450 Contracted Services	\$ 65,300.00		

AN ORDINANCE OF THE TOWNSHIP OF FERGUSON, CENTRE COUNTY, PENNSYLVANIA AMENDING THE CODE OF ORDINANCES CHAPTER 25 TREES, SECTION 5, HAZARDOUS AND NUISANCE TREES ON PUBLIC AND PRIVATE PROPERTY. AND SECTION 10, VIOLATIONS AND PENALTIES

The Board of Supervisors of the Township of Ferguson hereby ordains:

Section 1: Chapter 25 – Trees, Section. 5.00. Hazardous and Nuisance Trees on Public and Private Property is hereby amended by amending and adding the following paragraph:

In any instance of private property trees within the regional growth boundary and trees outside the regional growth boundary in zoning districts R1 and RR being infected with oak wilt, and upon the recommendation of the Township Arborist, the Public Works Director determines that immediate abatement measures are required in the best interest of the public to stop the spread of the disease, the Board of Supervisors authorizes the Public Works Director to take immediate action to abate the oak wilt disease within the annual township budget, or other amount as later determined by the Board of Supervisors, at no cost to the private property owner, subject to agreement between the Township and the private property owner.

Section 2: Chapter 25-Trees, Section 10. Violations and Penalties is hereby amended by adding the following paragraphs:

(D) Unlawful to prune oak trees during certain times of the year. To prevent the spread of oak wilt, within the regional growth boundary, it shall be unlawful for any person, resident, contractor, utility company, to prune, or allow to be pruned, any private or public oak trees from April 1st to October 31st, without first obtaining a tree permit from the Township Arborist which may be issued to address emergency conditions. Any person who violates the provisions of this section shall upon conviction thereof be guilty of a summary offense and be subject to a fine of not less than \$500 nor more than \$5,000.

(E) Unlawful to climb oak trees with boot spurs or spikes. To prevent the spread of oak wilt, within the regional growth boundary, it shall be unlawful for any person, resident, contractor, utility company, to climb, or allow to be climbed, any private or public oak trees at any time with boot spikes or spurs, except to remove the tree in its entirety. Any person who violates the provisions of this section shall upon conviction thereof be guilty of a summary offense and be subject to a fine of not less than \$500 nor more than \$5,000.

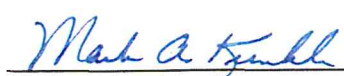
ORDAINED and ENACTED this 17th day of October, 2016.

**FERGUSON TOWNSHIP
BOARD OF SUPERVISORS**


Steve Miller, Chairman

[SEAL]

ATTEST:


Mark A. Kunkle, Secretary

RESOLUTION # 2016-32

**A RESOLUTION OF THE TOWNSHIP OF FERGUSON, CENTRE COUNTY, PENNSYLVANIA
ESTABLISHING A PROGRAM AND PROCESS TO EDUCATE AND MITIGATE OAK WILT
INFESTATION**

WHEREAS, the Township of Ferguson has identified instances of Oak Wilt on private properties,
and

WHEREAS, the Board of Supervisors desires to establish an educational program to assist
property owners to identify oak wilt symptoms, measures to avoid the infestation of oak wilt fungus, and
the Township's response measures to identified infestation of oak wilt.

Section 1: Education and Outreach:

- a. Staff will provide educational information in fall and spring newsletters on oak wilt identification and measures to prevent the spread of oak wilt. Notification may include publishing a separate newsletter once a year highlighting tree facts and disease issues in the township.
- b. Educate residents to prune oak trees only during the dormant period, which runs from November 1 through March 31. Pruning at any other time may attract beetles to the fresh wounds and possibly transfer the fungus.
- c. Educate tree trimmers not to use climbing spikes or spurs strapped to their boots when climbing a tree to prune it. Spiking opens fresh wounds in the bark that can attract beetles. The spikes or spurs themselves can also carry the fungus as climbers move from one tree to another.

For specific cases of oak wilt:

Notify the property owner of the affected tree immediately.

Prepare a press release for the media and web site within 2 days.

Notify the Board of Supervisors prior to or at the next regular meeting.

Hand deliver or send notices to property owners within 100 to 150 feet of the infected tree within 7 days.

Send notices to the greater neighborhood within 14 days.

**Section 2: Actions Steps (Identification, Prevention, Control) for future cases of Oak Wilt in the
urbanized area of Ferguson Township:**

Identification – Suspected cases of oak wilt should be reported to the Township Arborist. In our area, oak wilt is identified by rapid leaf discoloration, with wilting often first visible in the upper portion of the tree occurring usually in late June and early July. Leaves fall rapidly and the tree can be defoliated in 3 weeks. The Township Arborist will confirm the oak wilt and likely take a sample of the tree for confirmatory laboratory analysis.

Notification to Board of Supervisors – Upon confirmation by the Township Arborist of Oak Wilt, the property owner and the Board of Supervisors will be notified.

Prevention – Once a tree becomes infected with oak wilt, there is no known cure. The development of new instances of oak wilt can be prevented by taking the following actions:

- a. Immediate work by Purchase Order – Staff will take immediate action by purchase order in an amount up to \$10,000 to abate the oak wilt on site. This action will likely involve the removal and proper disposal (no firewood to remain on site) of the diseased tree to prevent the development of spore mats and transfer of fungal spores to healthy trees, trenching around the tree to break root grafts, and injection of a fungicide into the base of oak trees immediately surrounding the diseased tree.

- b. Resident Notices and Authorization to Enter Agreements – The Arborist will consult with the Community Communication Coordinator (public relations specialist) to provide information updates to all residents via press releases and electronic media outlets. Residents with oak trees within a 100 to 150 foot radius, or other area as determined by the Township Arborist, of the infected tree will be provided authorization to enter forms which upon signature by the property owner will allow the township or its contractor to enter the property and treat the oak trees with a fungicide, with conditions (see attached form). If residents do not agree to the conditions or do not sign the form and a tree on their property develops oak wilt, the township will require the property owner to remove the tree at the cost of the property owner and if it is not removed and abated within 30 days, the Township will remove the tree and affect oak wilt abatement and bill the property owner for the cost of the removal and abatement.
- c. Authorization of Expenditures by BOS – The Public Works Director or Arborist will prepare a budget estimate for the cost of treatment of oak trees in the neighborhood, present the estimate to the Board of Supervisors who may decide to allocate additional funds (budget amendment or utilization of a savings account) for contract services.
- d. Contract Work by Bidding – The Public Works Director or Arborist will prepare and let a contract for treatment services. Once awarded, the contractor will treat oak trees within a 100 to 150-foot radius, or other area as determined by the Township Arborist, of the infected tree. Should more than one tree be infected, the Township Arborist will determine the limits of treatment. Other municipalities may piggyback on the contract. The contract may include hourly rates for additional oak wilt abatement services, such as tree removal, disposal, and trenching, if required.

Control – Oak wilt can be controlled by avoiding injury to healthy trees, education and outreach, ordinance enactment and enforcement, and monitoring.

Since beetles are attracted to injuries and can transport fungal spores to freshly wounded (cut or pruned) trees during certain conditions and times of the year, limit pruning oak trees to the dormant season.

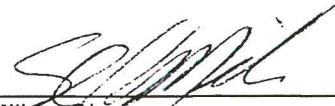
Continue education and outreach efforts identified above.

Identify oak wilt cases early and take immediate abatement measures such as tree removal, trenching, proper disposal, and injections.

Monitor the results of the treatment and control program.

RESOLVED THIS 17TH Day of October, 2016

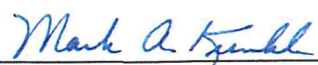
FERGUSON TOWNSHIP BOARD OF SUPERVISORS



Steve Miller, Chairman

[SEAL]

ATTEST:

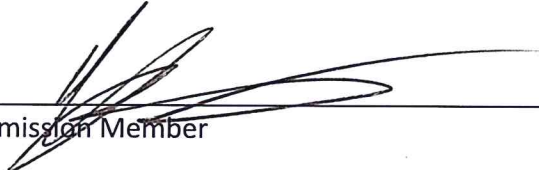


Mark A. Kunkle, Secretary

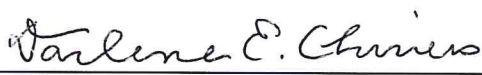
Revised April 2017


Chairman 4/17/2017
Date


Vice-Chairman 4/17/2017
Date


Commission Member 4-17-17
Date


Commission Member 4.17.17
Date


Commission Member 4/18/17
Date


Ferguson Township Arborist 4/17/17
Date

