



Community Forestry Management Plan 2017-2021

Township Elected Officials

Carl Suraci, Mayor

Gloria McCauley, Deputy Mayor

Greg Burchette, Committeeman

Frank DelCore, Committeeman

Doug Tomson, Committeeman

Tree Mitigation Advisory Committee

Rich Resavy – Director of Public Works

Robert Wagner – Director of Parks and Recreation

Shawn Lipani – Resident

Marian Fenwick – Resident

Frank Brzyski – Resident

Gloria McCauley – Township Committee

Prepared By:

ForesTree Consultants

NJ Approved Forester and Certified Tree Expert #406, Les Alpaugh

Owner, Andrew Alpaugh

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Stockton, New Jersey

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Preparer Signature: *Les Alpaugh* Date: _____

This plan was prepared in accordance with the New Jersey Shade Tree and Community Forestry Assistance Act, P.L. 1996, Chapter 135.

August 15, 2017

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Township of Hillsborough Community Forestry Management Plan

I. MUNICIPAL/COUNTY INFORMATION FORM

Municipality Township of Hillsborough

County Somerset County

Address 21 East Mountain Road
Hillsborough, NJ 08844

Contact Name and Title Rich Resavy, Director of Public Works

Phone # 908-369-3950

Fax # and E-mail 908-369-5756 DPW@Hillsborough-NJ.org OR rresavy@Hillsborough-NJ.org

Organization Name Township of Hillsborough

Mayor/County
Freeholder's Signature _____

Date of Management
Plan Submission September 2017

Time Period Covered in
Management Plan 2017-2021

Community
Stewardship Incentive
Program (CSIP)
Practices Identified in
Management Plan

- ☒ CSIP #1 Training.
- ☒ CSIP #2 Community Forestry Ordinance Establishment.
- ☒ CSIP #3 Public Education and Awareness.
- ☒ CSIP #4 Arbor Day.
- ☒ CSIP #5 Tree Inventory.
- ☒ CSIP #6 Tree Hazard Assessment
- ☒ CSIP #7 Storm Damage Assessment
- ☒ CSIP #8 Tree Maintenance and Removals
- ☒ CSIP #9 Insect and Disease Management
- ☒ CSIP #10 Wildfire Protection
- ☒ CSIP #11 Tree Planting
- ☒ CSIP #12 Tree Recycling
- ☒ CSIP #13 Sidewalk Maintenance Program
- ☒ CSIP #14 Storm Water Management
- ☒ CSIP #15 Other

Official Use Only Certification

The above named municipality/county has made formal application to the New Jersey Forest Service. I am pleased to advise you that after our review, the NJ Forest Service has concluded that this plan meets the standards set forth by the State and the NJ Community Forestry Council and is approved for the period covered.

Signed _____
State Forester Approved Date _____

II. INTRODUCTION

This is Hillsborough Township's 3rd 5-year Community Forestry Management Plan for the years 2017-2021. Significant accomplishments have been made by following the course set by previous plans. These accomplishments will be reported on in Section III of this plan. This plan is prepared in accordance with "Guidelines for a Subsequent 5-Year Community Forestry Management Plan" as required under the New Jersey Shade Tree and Community Forestry Act, P.L.1996, Chapter 135. Several new challenges, personnel changes and ever changing members of the Tree Mitigation Advisory Committee(TMAC) are supportive of this next 5-year plan.

A meeting between Township representatives and ForesTree Consultants in preparation for writing this 3rd 5-year plan focused on past accomplishments, review of the 1st and 2nd plans, and discussion of ideas and content for future program direction. Approval of this plan by the State Forester, upon favorable recommendation from the NJ Community Forestry Council, will provide continual liability protection to the Township under the New Jersey Shade Tree and Community Forestry Act and will render the Township eligible to apply for grants from the New Jersey Forest Service to help implement this plan.

Mission Statement:

To ensure the health and sustainability of the Township of Hillsborough's forest tree canopy and shade trees for the economic, aesthetic and environmental benefits provided to Township residents, businesses and visitors.

Goals and Objectives:

During the information gathering session with the Township, the following goals and objectives, consistent with previous plans and with renewed enthusiasm, have been agreed upon:

Goal #1:

To assess the health and maintenance needs of all trees along and/or impacting on the Township's roadways.

Objectives of Goal #1:

- a) Continue windshield and/or 'on-the-ground/next-to-the-tree' assessment of all trees on or near municipal roadways at least once per year and following any major storm as needed. Consider segmenting the Township into units of similar uses such as residential, commercial, rural and suburban etc.
- b) Complete an annual 'assessment report' to include recommendations for tree maintenance, tree replacement and needed equipment and/or supplies as required in the Township Ordinance Chapter 101: Tree Mitigation Trust Fund and Advisory Committee (see Appendix #1).
- c) Include a section in the 'assessment report' directed towards observations and recommendations regarding sustaining and increasing tree canopy with a 10-year goal of at least a 10% increase in tree canopy cover.
- d) Develop grant projects for submittal to the New Jersey State Forest Service, Sustainable New Jersey and/or other sources based upon 'assessment reports'.
- e) Record location of trees planted/replaced and trees removed/pruned – start to develop a GIS "tree" layer based upon data collected.

Goal #2:

To sustain healthy and safe forest conditions and to increase tree canopy in Township Parks.

Objectives of Goal #2:

- a) Increase regeneration and afforestation via planting and management of early successional fields and forest now owned by the Township.
- b) Monitor for and take pro-active steps relative to [Emerald Ash Borer \(EAB\)](#).
- c) Increase tree canopy in parklands by at least 10% over the next decade.
- d) Conduct annual windshield surveys for hazardous tree conditions and take corrective action as necessary. A high priority given to bike paths and areas of high recreational use.

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- e) To utilize the municipal forests to educate and inform residents regarding the value of trees and the importance of long-term investments in stewardship.
- f) Continue plantings with Scouts at current annual rate of 500-1,000 seedlings per year.
- g) Continue efforts to plant 50-100 2.5-3" caliper trees each year.
- h) 'Pick-a-Park' to restore as an example – perhaps Stephen Way Park where significant Sandy damage occurred?

Goal #3:

To select and beautify several spots along the boulevards as examples to help gain popular support for Community Forestry.

Objectives of Goal #3:

- a) Tree Mitigation Advisory Committee (TMAC) selects several sites in the median strips and along the side of central boulevards to be beautified. Focus on one or more of the Gateway Districts.
- b) Project to be included in CSIP grant application to N.J. Forest Service and or Sustainable New Jersey in 2017 or 2018. Watch for grant announcements from the New Jersey Community Forestry Program.
- c) Use completed projects to support advocacy for the Township's trees via press release, website, etc.

Goal #4:

To sustain ongoing training, education, awareness and outreach efforts.

Objectives of Goal #4:

- a) The following objectives are related to training:
 - i. Maintain at least two CORE trained persons; 1 municipal employee and 1 volunteer.
 - ii. Obtain at least 8 Continuing Education Units (CEU's) per year.
 - iii. Offer training to Department of Public Works employees in Rutgers' Parks and Shade Tree classes.
 - iv. Maintain membership in the NJ Shade Tree Federation and attend annual meetings of the Federation.
- b) The following objectives are related to Public Education/Awareness/Outreach:
 - i. Apply for recognition as a Tree City, USA.
 - ii. Hold annual Arbor Day celebrations and ensure an annual proclamation of Arbor Day is signed by the Mayor.
 - iii. Provide tree related information in the Township newsletter or on the website.

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- iv. Provide Tree Pruning Standards to public and private contractors as well as homeowners and continue workshops for homeowners on pruning, mulching and species selection, plus Emerald Ash Borer information and detection.
- v. Establish a Tree Award/Green Award recognition program for individuals, students, businesses, public works employees or other entities displaying significant achievement in relation to the mission, goals and objectives of this plan.
- vi. Encourage and support Project Learning Tree(PLT) curriculum in local schools.
- vii. Acknowledge and participate in the mission of Duke Farms Foundation to serve as a model of land stewardship for public education and enjoyment.

Goal #5:

To maintain on-going levels of hazard reductions and level of services to the Township's trees and residents.

Objectives of Goal #5:

- a) Continue excellent DPW detection of tree hazards.
- b) Based upon assessment, develop a hazard tree reduction strategy. Focus efforts on EAB affected ash.
- c) Continue to supply Parks and Public Works Departments with up-to-date equipment such as a bucket truck, stump grinder and chipper.
- d) Be proactive by removing hazardous limbs and resolving structural deficiencies before failure and subsequent potential for damage and/or ash trees with EAB infestation.
- e) Complete a Rapid-Ash-Survey based upon guidelines developed by Rutgers to describe trees at risk and potential costs to remove trees affected by EAB.
- f) Develop and implement recommendations and plans to address sidewalk hazards caused by tree roots (a problem of the Engineering Department).

Goal #6:

To maintain administrative effectiveness relative to Hillsborough's Shade Tree and Community Forestry activities.

Objectives of Goal #6:

- a) Continue to develop the capacity and participation of the Tree Mitigation Committee in Community Forestry affairs.
- b) Complete annual application for Tree City, USA.
- c) Complete and submit annual reports to the NJ Forest Service.

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- d) Prepare several grant applications for CSIP grants from the NJ Forest Service and/or Sustainable New Jersey.
- e) Demonstrate the effectiveness of the CFMP in support of Sustainable New Jersey designation.
- f) Continue the excellent tree/leaf pickup and recycling program conducted by DPW. 100's of yards of mulch are available to residents.
- g) Discuss and recommend changes to the shade tree ordinance to prevent the removal of street trees by homeowners.

Goal 7:

To protect and maintain historic and specimen trees.

Objectives of Goal #7:

- a) Define specimen trees as suggested in the Master Plan.
- b) Locate specimen and historic trees.
- c) Adopt ordinance amendments to protect specimen and historic trees.

Goal #8:

To plant, protect and maintain the Township's trees and character during future growth.

Objectives of Goal 8:

- a) Build on the excellent existing ordinance's (see Appendix #1 and #2) and planning board guidelines pertaining to trees such as utilities pruning, recommended species and standards.
- b) Continue to effectively utilize funds/trees received as mitigation for trees removed during development and/or No-Net Loss projects.
- c) Make recommendations to the Mayor, Township Committee, and Planning Board to improve ordinances and guidelines as needed or requested.
- d) Increase efforts to plant "the right tree in the right place" with respect to future rights-of-way and underground/overhead utilities.

Liability Statement:

The trees in the Township of Hillsborough are a valuable component of the landscape and help to create a pleasing environment for living, work and play. Although street trees are an asset to the community, it is inevitable that they mature and require care, maintenance and eventually replacement. Care and maintenance, in addition to planting the "right tree in the right place" can help ensure community trees not only contribute to the environmental and economic vitality of the area, but also reduce the potential hazards to public safety. The

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Township of Hillsborough must work within a reasonable budget that may not be able to meet each and every need of the community forest immediately. Therefore, it is the intent of this plan to focus available resources on the greatest need and outline a step by step action plan to achieve a healthy forest with commensurate reduced risks to public safety.

The Township of Hillsborough feels, by taking the logical steps outlined in this plan, it will garner public support for plan implementation and demonstrate long-term benefits to the environment and public safety. The Township of Hillsborough's excellent system of constant search and response to hazardous trees by the Public Works Department highlights the Township's commitment to public safety. Through inventory and assessment, the Township will continue to initiate corrective action by the Public Works Department, contracted professionals, or the County prior to structural tree failure and other hazardous tree related conditions. It is acknowledged that not all hazardous conditions will be predicted; however, good maintenance and care will reduce the probability of tree failures. The Township also wants to increase homeowner and school children's awareness, appreciation and knowledge of trees to enable them to contribute well-informed and meaningful efforts towards the health and sustainability of the Township of Hillsborough's trees.

Following this Community Forestry Management Plan will demonstrate that the Township of Hillsborough is devoting reasonable levels of resources in a planned manner to reduce the number of tree related accidents; and thereby, reduce its exposure to liabilities and increase public safety.

III. Community Overview and 5-Years of Progress

A. Overview

The Township of Hillsborough, Somerset County is located in north-central New Jersey. The topography varies from fairly steep sloping land in the Sourland Mountains to a gentle rolling plain in the Hillsborough Valley. The Township is bordered on the northerly side by the south branch of the Raritan River and on the easterly side by the Millstone River. Several small streams dissect the Township. A large portion of the Township, approximately 85%, is underlain by shale, while diabase rock and soils make up the Sourland Mountain portion of the Township. Wetlands and lesser drained soils border the streamsides. The diabase soils are noted for their excellent tree growth properties. Limitations for tree growth in the shale portions of the Township vary. Where depth to bedrock is less than 4 feet, droughty conditions may limit tree growth and locations of shale outcropping will severely limit and often prevent tree planting and growth. Tree resources in the Township are rich and varied.

The Township encompasses approximately 31,500 acres with a population of ~35,000. In 1999; 17,000 acres were recorded as farmland, however, a significant amount of residential development has occurred in the past 15-20 years. Recognizing impacts of too little open space, Hillsborough Township established the state's first open space trust fund, which has resulted in the purchase of more than 1820 acres of publicly owned open space.

The Master Plan reveals that the easterly portion of the Township is highly developed while the westerly portion remains a rural/agricultural area. Future plans encourage the retention of these attributes. A Natural Resource Inventory helps guide decision making. The Township has a designated town center and "main street" along Route 206. Three hamlets, Bellemead, Blackwell Mills, Neshanic and South Branch; and one village, Flagtown; are established in the Township of Hillsborough.

Planning and zoning documents of the Township contain standards for many separate districts – most contain specific standards relative to tree buffering, mitigation for removals and other positive priorities during development. There are thousands of young trees that have

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been planted in the last decades in new developments, along municipal roadways, schools, parks and municipal complexes. Many of these trees have been made available through developer's mitigation requirements. All of these tree should be evaluated for pruning needs and minor replacements due to death or unacceptability of form, species, or location. Corrective pruning at a young age is relatively inexpensive and is one of the most important tasks to ensure the long-term health, form, and suitability of urban trees.

The Township of Hillsborough owns land that is wooded. To best ensure long-term stewardship of these lands each parcel should be evaluated and have a plan meeting stewardship standards prepared for the parcel. Tree planting, insects such as Emerald Ash Borer, diseases, invasive plants, thinning, wildlife management, and other stewardship practices are all considerations necessary to ensure long-term forest health. If sufficient interest is generated to create these individual parcel plans, funding could be sought from various State sources including CSIP or other DEP programs. Further guidance is available through ForesTree Consultants.

The Township of Hillsborough has a Greenways Plan which provides the vision necessary to ensure that new development is directed towards accommodating the long-range goals of the community. The Hillsborough Greenways Plan was designed to provide interconnections between the natural resources in the Township, as well as providing connections to the adjacent Townships of East Amwell and Montgomery which have prepared similar plans. Greenways are parks or corridors consisting of public land or easements across privately owned land that can be utilized for passive or active recreation. These Greenways interconnect natural areas and, where possible, schools to provide access to these areas to the public.

The Township of Hillsborough published a Master Plan Reexamination Report dated June 1999, amended September 1999. It is clear after reading this report that aesthetics, open space, and environmental concerns are paramount in the Township. The Township vision for the future includes retained open space, sustained natural resources, and planned development. Increasing tree canopy will help secure these benefits. The tone of the Master Plan vision for Hillsborough Township is captured in a 2002 Master Plan amendment by Banish Associates which lists a goal to "protect and maintain the existing tree canopy, as well as to

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promote the replanting of areas where the existing tree canopy have been lost.” This Community Forestry Management Plan identifies tree related activities to augment realization of this vision. In several other Master Plan Amendments statements concerning planting of trees along Main Street, maintaining tree cover, stewardship, buffer plantings and protecting natural vegetation are mentioned throughout.

Overall, even casual observers must appreciate the Township’s efforts made on behalf of trees. The Township has an excellent program of hazard tree identification and is fortunate to have experienced persons in the Public Works and Parks Departments to identify potential problems and take corrective action.

B. 5-Years of Progress

The implementation of the previous Community Forestry Management Plans has resulted in some significant accomplishments. The same time period witnessed changes in program administration with improved efficiencies and focus. Not each and every objective of former plans was achieved, but many were completed and some are ongoing. Highlighted achievements during the previous plan periods include:

- Implementation of the Tree Mitigation Trust Fund and a Tree Mitigation Advisory Committee, Chapter 101. (See Appendix #1).
- Effective and efficient administration of the Tree Mitigation Trust Fund by the TMAC and oversight of the Community Forestry Program.
- Attendance at the New Jersey Shade Tree Federation meetings.
- CORE training requirements met.
- Annual accumulation of 8 continuing education units (CEU’s) sustained.
- Annual Arbor Day celebrations conducted by the Township schools.
- Tree Planting
 - Somerset County Parks Commission finished 1st Phase of restoration at the Bellemead site. Landscaping and planting in progress.
 - The 1st of three phases on the Route 206 No-Net Loss project has been completed of the road project with over 1,000 2 in. caliper trees planted.
 - Over 1,500 trees have been planted over the past 10-years.
 - 2008 -- Columnar maple trees planted along new library; several other groups of trees planted throughout the municipal complex; 50 trees planted throughout the Township using mitigation funds and numerous trees planted in new developments.

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- 2007 -- 125 pine/deciduous tree sound buffer planted along baseball park; 50 shade trees replaced throughout the Township and some trees planted by developers.
- 2006 -- Year spent planning for tree planting as sound barriers around disruptive areas in parks; naturalizing drainage basins; creating boulevards; and replacement of dead street trees.
- 2004 -- Some work done to focus on replacement of dead street trees and methods to inventory planting needs.
- Continuance of the hazard tree program with an emphasis on becoming more pro-active and planning to conduct an inventory of hazardous trees.
- Over 1,000 trees have been pruned or removed to reduce hazards over the past 10-years.

Hillsborough Township used the former Community Forestry Management Plans as references and guides, especially after the Tree Mitigation Advisory Committee was formed. A lingering challenge is to find a way to establish a volunteer public education and awareness component compatible with efforts of the Department of Public Works, Department of Parks and Recreation, and the Tree Mitigation Committee. The ordinance establishing the Tree Mitigation Committee calls for 5 members – a volunteer is needed! Also the division of duties and responsibilities relative to trees, tree maintenance and standards is spread between the Planning Board, Board of Adjustment, Engineering, Tree Mitigation Committee, Parks and Recreation Department, and the Department of Public Works. This fact may lead to inconsistent decision making and accountability confusion if there is not clear, consistent direction via local ordinance or purposeful administrative directives.

The overall benefits to Hillsborough Township realized by following the former Community Forestry Management Plans included:

- Establishing a strong partnership with the New Jersey Forest Service Community Forestry Program.
- Participating in training and informational opportunities at the New Jersey Shade Tree Federation meetings.
- Increased tree related liability protection under the New Jersey Shade Tree and Community Forestry Act.
- Eligibility to apply for Community Stewardship Incentive Grants (CSIP).

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- A written, pro-active plan to help guide the Township in the enhancement of its tree resources.

The tree resource in Hillsborough has not changed too much over the past 10-years. The real value of the Township's trees and impact of current policies/ordinances is the expected realization of a desired future condition of increased tree canopy, tree vigor and safety.

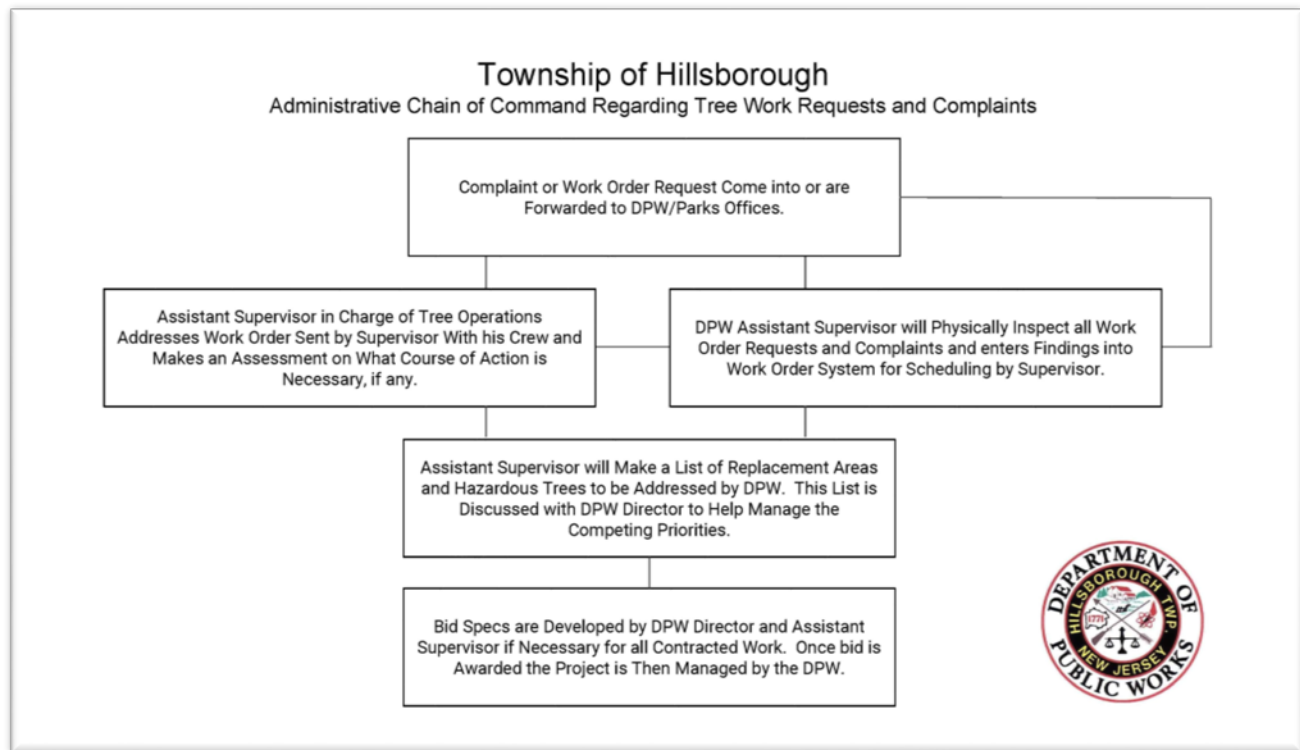
Linkages between many planning elements at the Township level is facilitated by persons serving on municipal committees with associated and sometimes overlapping interests. The Township website lists Boards, Commissions and Departments with interest, responsibility and vision for the Township trees, forests and tree canopy. Many entities have something to say about the subject of trees. The TMAC has the capacity to provide the "umbrella" for focusing efforts of all entities when supported by the authority and clear direction provided by the Mayor and Committee. This Community Forestry Management Plan provides a link to the Master Plan by focusing on the environmental value of the Township's trees and the actions necessary to sustain the Community Forest.

IV. Community Forestry Program Administration

The Mayor and Township Committee are responsible for setting policy and final decisions for tree related expenditures. However, responsibility for preparation of the Community Forestry Management Plan and functioning of the Tree Mitigation Committee and Trust Fund has been assigned to the Director of Public Works. The Tree Mitigation Committee administers a tree fund resulting from contractor and developer contributions for tree replacement during development.

The Director of Public Works is responsible for the maintenance of the Township's trees. Park trees remain the responsibility of the Parks Department. The Township owns a bucket truck and has experienced persons working for DPW. Equipment and personnel are shared between the Department of Public Works and Parks Department. The majority of trees planted in the developments are planted just inside the private property line adjacent to the public right-of-way. Tree pruning along the right-of-way is only done where potential for obstruction of the roadway or a dangerous condition exists. Otherwise tree maintenance is the responsibility of the property owner adjacent to the right-of-way.

Administrative Flowchart:

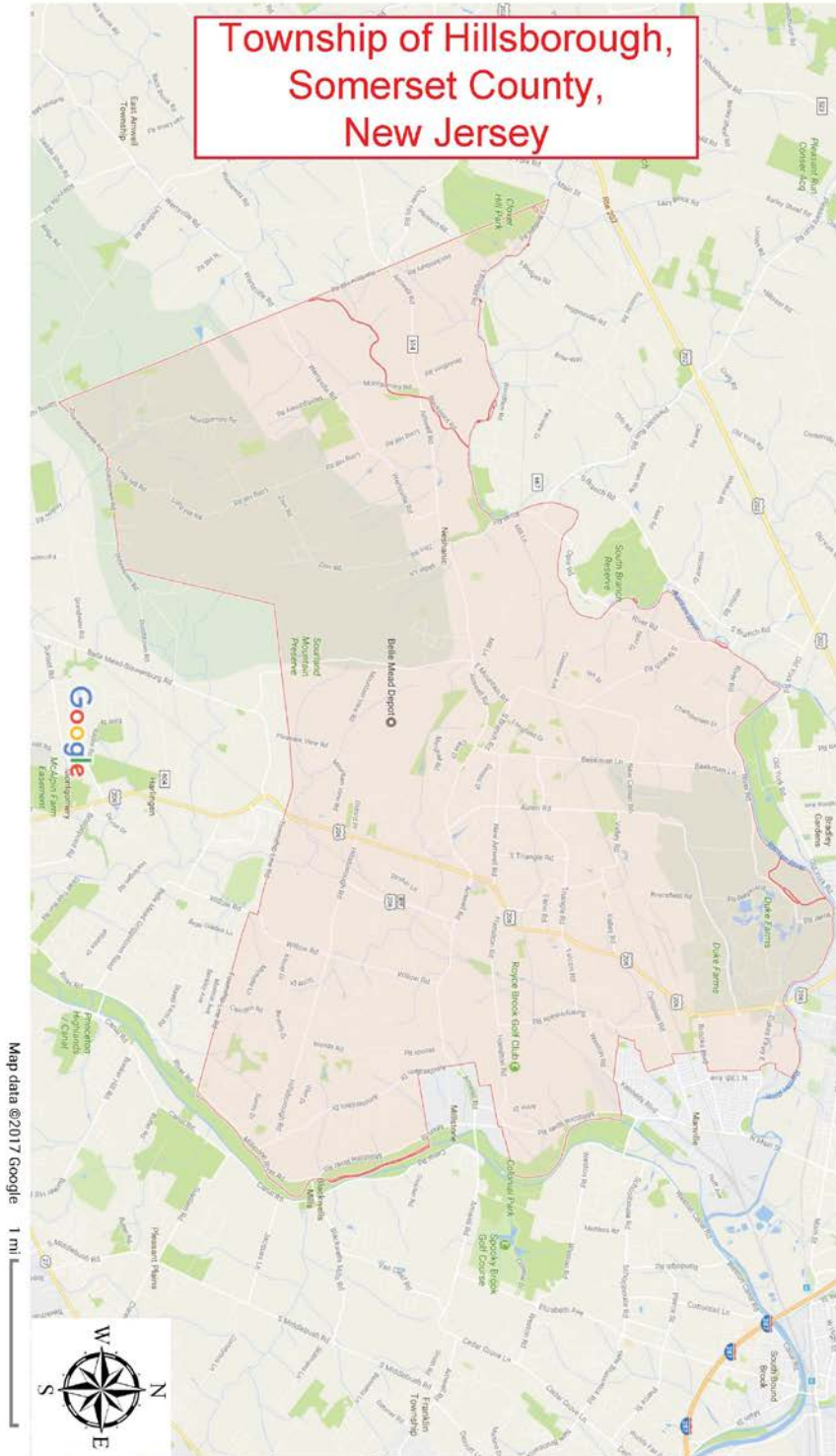


V. Community Maps

3/10/2017

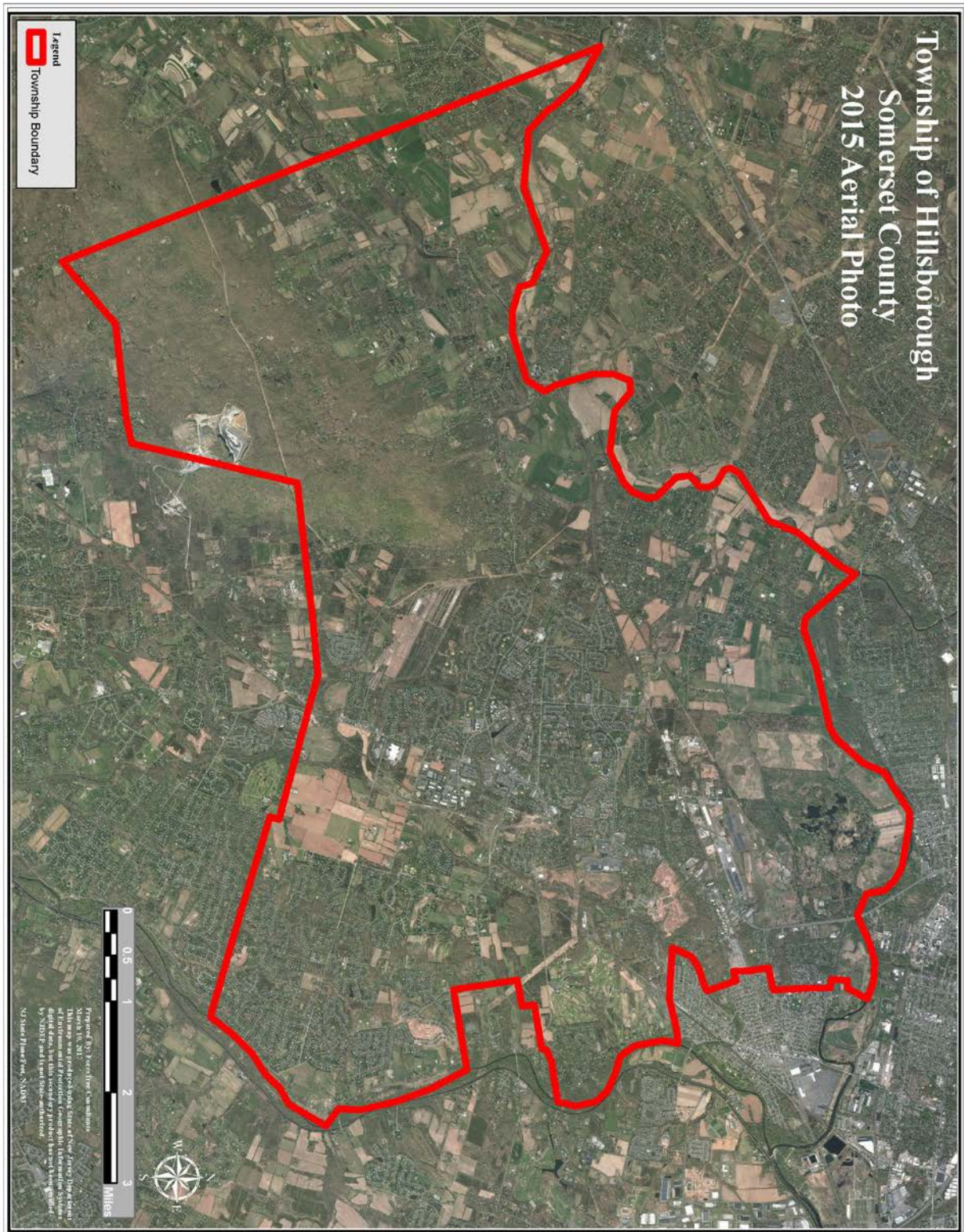
Hillsborough Township - Google Maps

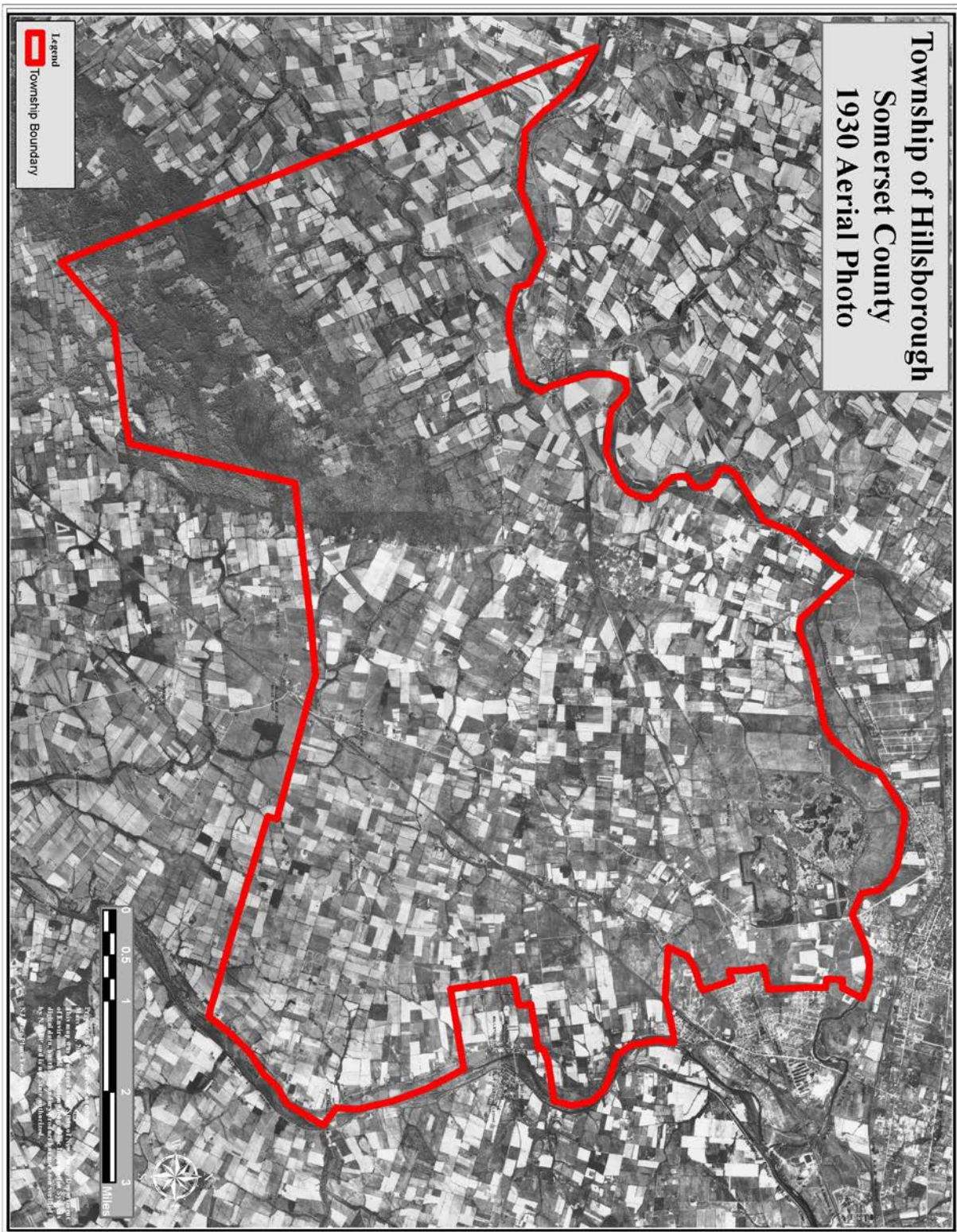
Google Maps Hillsborough Township



<https://www.google.com/maps/place/Hillsborough+Township,+NJ/@40.4590378,-74.674735,13z/data=!4m5!3m4!1s0x88c3a6c70d3de3a67d1f6b8m23d4d510632214d:74.6475222>

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VI. Training Plan

Some training is required by the State to retain “approved” status for the Township under the Act and other training is elective based upon Township needs and/or individual interests and assessment of need. Training is usually limited by available time, interest, funding and/or opportunities. Whatever the cost in time or money, the knowledge gained through training will improve program success. Representatives of the Township of Hillsborough attend the Federation meeting on an annual basis.

Required Training:

CORE training is required by the New Jersey Shade Tree and Community Forestry Act for municipalities seeking approved status under the Act. The purpose of CORE training is to familiarize persons with the background of community forestry and shade tree commission, the legal aspects of managing trees, recognition of hazardous tree conditions and state planning and implementation assistance. To gain and retain approved status a municipality must have at least two persons CORE trained; one volunteer and one municipal employee (ideally someone from public works responsible for trees).

The Township of Hillsborough has 11 CORE trained persons at this time:

- Rich Resavy
- John Crossen
- Nick Caputo
- Ernesto Gonzalez
- Peg Van Patten
- Fred Tenore
- Robert Dowches
- Jim Snyder
- Frank Scarantino

It is the intent of the Township to maintain at least the minimum CORE trained persons. In addition to CORE training there is a continuing education requirement of 8 Continuing

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Education Units (CEU's) per year. Any individual can obtain these credits for the municipality and credits are not limited solely to those persons whom are CORE trained. These credits can be most easily obtained by attending the NJ Shade Tree Federation meeting in October each year or attending individual classes offered by Rutgers. In 2016, 15 CEU's were obtained.

Notice of upcoming training opportunities can be found at the NJFS website:

<http://www.nj.gov/dep/parksandforests/forest/community/act.html>.

Elective Training:

Currently, the Township provides workers on the tree crew with periodic tree climbing training and other safety training courses. Additional training is planned in the areas of tree removal and pruning techniques as well as hazardous tree identification. The Township plans to utilize a local Certified Tree Expert to conduct on-the-ground training via 'in house training days' on topics such as:

- Pruning and elevation of smaller trees.
- Tree friendly sidewalk repair techniques.
- Hazardous tree assessment.
- Tree climbing, pruning, chainsaw, power-line and tree removal safety.
- Existing and emerging insect and disease threats to include [Emerald Ash Borer](#), [Asian Long-horned Beetle](#), [Bacterial Leaf Scorch](#) and others ([Gypsy moth](#), [leaf-rollers](#), [cankers](#), [bagworms](#), etc.)

These basic training elements have been proven to increase employee effectiveness and also develop employee interest in the Township's trees. Both the Director of Public Works and Director of Parks understand and devote time and energy towards keeping the "tree crews" informed and certified via ongoing training. Sending one or more DPW employees to the NJ Shade Tree Federation meeting where they can network with DPW employees from other municipalities has proven to be beneficial to morale and interest in caring for trees.

Since Hurricane Irene and Hurricane Sandy the United States Forest Service and New Jersey Forest Service have been working on a new method of thinking and acting in relation to storm management – a 3-Rs Program (readiness, response and recovery). A good document to review on this topic can be found at <http://www.na.fs.fed.us/spfo/pubs/uf/sotuf/sotuf.htm>

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More information relative to storm readiness and response is embedded in the new versions of *i-Tree* (see <http://www.itreetools.org/>). The Arbor Day Foundation also has some good outreach materials for storm preparedness. A detailed storm readiness, response and recovery plan with a training component is beyond the scope of this plan, but may be a consideration for a CSIP grant in the future.

VII. Public Education, Awareness and Outreach

The Township of Hillsborough has several Departments, Committees, Commissions and Boards concerned about its trees and open space. Each understands the importance of public education, awareness and outreach. The elements listed below form the core of the Township's public education, awareness and outreach program.

Tree Awards/Green Awards Recognition Program:

One of the acknowledged rewards for good work is receipt of an award, plaque, or memento in recognition of a job well done. This program applies to individuals, businesses, public employees or other entities displaying an outstanding contribution towards achieving the mission, goals and objectives of the Township of Hillsborough Community Forestry Management Plan. The award program is administered by the Mayor and Tree Mitigation Committee.

Homeowner Information:

An element of this plan is to provide homeowners with up-to-date information and knowledge about tree care. It is envisioned to include information in the township newsletter and web site. Suggested topics include:

- Updates and info on the Emerald Ash Borer(EAB).
- Recommended Tree Species
- Proper pruning of newly planted and young trees
- Mulching
- Watering
- Identification and treatment for common insects and diseases
- Planting standards.

Another homeowner educational opportunity is to continue the small tree pruning clinic accompanied by a pamphlet diagramming and explaining proper small tree pruning. The

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Homeowner Information Program is administered by the Department of Parks and Recreation and Tree Mitigation Committee.

Arbor Day:

The Township of Hillsborough holds regular Arbor Day celebrations in the schools. Arbor Day celebrations are ideal opportunities to explain the value of a vibrant tree canopy and ways students can contribute to helping sustain healthy trees and forests. Arbor Day programs are administered by the local schools. Arbor Day Proclamations must be prepared annually (see Appendix #3 for example) and signed by the Mayor. Arbor Day is the fourth Friday in April.

Tree City U.S.A.:

The Township of Hillsborough has not achieved Tree City U.S.A. status. Implementing this plan will help them qualify and share this significant accomplishment with other municipalities dedicated to trees in New Jersey. Tree City USA is a program created by the Arbor Day Foundation in cooperation with the NJ Forest Service to recognize municipalities of all sizes. The Tree City program is a national award given to small towns, townships, counties, and cities in recognition of outstanding stewardship in dealing with the community's tree resource. The rewards for the Township of Hillsborough for attaining Tree City status are:

- Signs for community entrances.
- A Tree City USA flag.
- A walnut-mounted plaque.
- Recognition of stewardship and the gratitude of future generations.

To achieve Tree City USA status there are requirements and standards that must be met by the Township. These are:

- A Tree Board or Department.
- A Community Tree Ordinance.
- A Community Forestry Budget with at least \$2 per capita devoted to trees.
- An Arbor Day observation proclamation.

Seedlings for School Children:

The Township of Hillsborough will participate in the New Jersey Forest Service's free trees for 3rd graders. These seedlings are available by contacting New Jersey Forest Service

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Tree Seedling Nursery @ 732-928-0029. Local schools will be informed of this program by the Tree Mitigation Committee and coordinated by the Parks Department.

Sustainable New Jersey:

The Township has been awarded the certification for Sustainable New Jersey. Having this approved Community Forestry Management Plan adds credit to the score necessary for the designation and may underwrite the opportunity to seek grant funding from the Sustainable New Jersey organization for elements associated with the approved CFMP.

Forest Stewardship Program:

All owners of private woodlands, especially the owners of woodlands in the more open and rural western section of the Township of Hillsborough should be made aware of the New Jersey Forest Service's Stewardship Program. Many of these properties are already enrolled and probably have a long history of involvement with the State Forestry Agency. Local acknowledgement of landowners following the Stewardship Program guidelines should be made in the local paper or newsletter and may inspire other landowners to enroll in the program.

VIII. Statement of Tree Budget

The Township of Hillsborough does not have a separate budget item for shade trees or Community Forestry. Any money spent on trees or Community Forestry elements is 'buried' in other areas such the Department of Public Works. The Township was the recipient of No-Net Loss funds made available as part of the Route 206 widening and construction by the NJ Department of Transportation. 1,000+ 2 in. caliper trees have been planted during the first phase of the Route 206 project. Remaining phases of the Route 206 project will be administered by the State without Township involvement. The plantings are compensation for tree cover lost due to construction and are to be used to plant trees in the construction area and throughout the Township.

Examples of typical expenditures for the Township's tree work include:

1. Salaries for a minimum of 3 to 4 personnel to work on the Tree Crew for routine removals and maintenance pruning. During storms that result in severe tree damage, the entire public works department may be utilized to respond to such emergencies to help open and clear roads and walks.
2. Overhead, upkeep and maintenance of a 2 bucket trucks, various chainsaws, stump grinder and hand tools. During storms resulting in severe tree damage, many more vehicles and heavy machinery are used to help as needed. Machinery includes several backhoes and front end loaders, as well as large roll off boxes and dump trucks for tree material disposal. The costs associated with large storms, like Sandy, can and have reached in excess of \$100, 000.
3. Tree Replacement plantings typically range from \$100 to \$300 per tree depending on how many road improvement project plantings and development plantings are taking place. Approximately 50-100 trees are planted annually and 1,500+ trees have been planted in the last 10 years.
4. Occasionally, the Township may contract out some tree spraying on municipally owned properties when certain pest issues arise.

Municipal Tree Budget

The Township of Hillsborough does not have an adopted tree budget. The Township manages a Tree Mitigation Fund paid into by developers to support tree related activities such as planting, pruning and hazard removal. The fund is managed to address competing priorities

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and concerns as they arise. The fund currently contains \$250,000 and has been/will be used to address the following:

1. Attendance at the annual NJ Shade Tree Federation meeting and for other training as needed to obtain the required Continuing Education Units necessary for the Township to retain 'approved' status.
2. DPW training in subjects such as tree maintenance, safety, chainsaw use, pruning standards/techniques, tree identification, recycling, mulching, planting standards and methods, chipper use/maintenance/safety, electrical hazards and hazard tree identification.
3. Implementation of Public Outreach programs such as an Arbor Day Celebration, seminars on proper pruning, mulching, planting and tree care and school children's programs relating to trees.
4. Tree planting on municipal lands and/or along municipal streets. 50-100 trees planted per year.
5. Hazard reduction removals and pruning. Storm preparedness and response.

IX. Statement of Plan Implementation

This is the third 5-year Community Forestry Management Plan (CFMP) prepared for the Township of Hillsborough. It builds upon the accomplishments and experience of the previous planning periods. This statement of plan implementation outlines the short and long-term objectives for the 4 most important action elements of this plan. These elements are supported by the training objectives in Section VI and Public Education, Awareness and Outreach objectives in Section VII. Information covered in these other sections will not be reiterated here. The following are the 4 primary elements of a Community Forestry Management Program:

- Tree Inventory and Assessment
- Tree Hazard Identification and Management
- Tree Maintenance and Care
- Tree Planting

Tree Inventory and Assessment:

Throughout the past two planning periods (10+ years) the Director of Public Works and the Director of Parks have been seeking an economical, time efficient approach to collecting and storing tree data for the Township. The many challenges include:

- A large Township
- Great diversity in the community forest ranging from rather dense housing developments to suburban and rural wooded roadsides.
- The constant competition for funding and employee assignments to projects with apparent greater priority.

During the most recent meeting with Township representatives a great deal of time was spent discussing Tree Inventory and Assessment. The discussions concluded by acknowledging that it will be quite some time (if ever) before a complete/comprehensive GIS tree layer or inventory/map is finalized. The 'ideal' future condition is to work with the Hillsborough Geographic Information (GIS) department to record data as collected by the ongoing observations and work completed by the Department of Public Works and Parks Department.

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Depending upon the existing equipment owned by the Township and/or cell phone apps, selected DPW and DP employees could be instructed to record data such as hazardous trees, trees to be pruned, planting spots and other information/detail as the Township feels is needed. The GIS work will be ongoing, constantly updated and perhaps never totally finalized. If resources are found through grants or other sources a more robust approach may be considered following one of several listed approaches below or combinations thereof. See the USDA “Guide to Assessing Urban Forests” in Appendix #5.

Identification of End Use and Data Collection Needs:

The first and most crucial step in all tree inventory projects is the identification of the purpose and intended use of the inventory data. The Township of Hillsborough is interested in developing a method by which tree information can be collected and stored on an ongoing basis as a function of daily tree work in the Township. Initial focus will be on recently planted street trees and vacant planting spots. Data collected via a windshield survey for hazardous trees will also be included. Intended end use of the data may include:

- Identification and location of hazardous conditions, pruning needs, sidewalk conflicts and maintenance needs.
- Classification of trees by condition class.
- Classification of trees by species and size.
- Identification of planting sites and planting site conditions (ie: overhead wires, planting strip width, small or large species recommendations, ideal location on public or private property?)
- Production of various reports needed for grant applications, prioritizing work and demonstrating need to public officials and Township residents.
- Production of a tree layer for the Township’s GIS system.
- Possible scheduling of the work flows and work order generation.

Selection of Inventory System and Method:

Selection of an appropriate data collection and storage system that meets the needs of the municipality currently and into the future is essential to a successful inventory project. There are several alternatives currently available for consideration.

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Selection of the best alternative will depend heavily upon the Township's GIS department's involvement and assistance if alternative #1 is used.

Alternative #1, Utilize current Township GIS/GPS capability:

The Township of Hillsborough has an impressive and well-equipped Geographic Information Systems (GIS) Program. GIS layers currently maintained by the Township include such things as streets, parcels, fire hydrants, surface water, critical areas, Township facilities, schools, parks, etc. The data collection methods and GPS equipment used to create the existing layers could be adapted for the creation of a "Tree and Planting Spot Layer" and/or a "Priority Tree/Work History Layer" in the Township GIS. This alternative will require significant assistance, training and input from the GIS department. The benefits of tree layers in the Township GIS include:

- Integration with other infrastructure layers for layout and planning purposes.
- Graphic representation of data for visualization and presentation purposes.
- Data accessibility to multiple departments including planning, engineering and DPW.
- Support of funding requests to the Township, State and Federal governments and in support of grant opportunities.
- Canopy cover assessment in support of Sustainable NJ initiatives.

Alternative #2, Standalone Inventory- i-Tree:

This alternative could be used if the Township wishes to create a standalone inventory that does not require or reside on the Township GIS system. A free software suite, produced by the U.S. Forest Service, called *i-Tree* is available and recommended as the standalone platform of choice. The following is information directly from the *i-Tree* website at <http://www.itreetools.org/index.php> where additional information, training and software downloads are available:

“i-Tree is a state-of-the-art, peer-reviewed software suite from the USDA Forest Service that provides urban forestry analysis and benefits assessment tools. The i-Tree Tools help communities of all sizes to strengthen their urban forest management and advocacy efforts by quantifying the structure of community trees and the environmental services that trees provide. Developed by USDA Forest Service and numerous cooperators, i-Tree is in the public domain and available by request through the i-Tree website (www.itreetools.org). The [Forest Service](#), [Davey Tree Expert Company](#), [National Arbor Day Foundation](#), [Society of Municipal Arborists](#), [International Society of Arboriculture](#), and [Casey Trees](#) have entered into a cooperative

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partnership to further develop, disseminate and provide technical support for the suite. The i-Tree suite includes the following urban forest analysis tools and utility programs.

Analysis Tools

[i-Tree Eco](#) provides a broad picture of the entire urban forest. It is designed to use field data from complete inventories or randomly located plots throughout a community along with local hourly air pollution and meteorological data to quantify urban forest structure, environmental effects, and values to communities.

[i-Tree Streets](#) focuses on the benefits provided by a municipality's street trees. It makes use of a sample or complete inventory to quantify and put a dollar value on the street trees' annual environmental and aesthetic benefits. Streets also describes urban forest structure and management needs to help managers plan for the future.

[i-Tree Hydro](#) (beta) is an application designed to simulate the effects of changes in tree and impervious cover characteristics within a watershed on stream flow and water quality. The latest version of i-Tree Hydro offers users options for qualitative scenario modeling at the county or city scale.

[i-Tree Vue](#) allows you to make use of the freely available National Land Cover Database (NLCD) satellite-based imagery to assess your community's land cover, including tree canopy, and some of the ecosystem services provided by your current urban forest. The effects of planting scenarios on future benefits can also be modeled.

[i-Tree Design](#) is a simple online tool that provides a platform for assessments of individual or multiple trees at the parcel level. This tool links to Google Maps and allows you to see how tree selection, tree size, and placement around your home affects energy use and other benefits.

[i-Tree Canopy](#) offers a quick and easy way to produce a statistically valid estimate of land cover types (e.g., tree cover) using aerial images available in Google Maps. The latest version of Canopy also estimates values for air pollution reduction and capturing atmospheric carbon. Canopy can be used by urban forest managers to estimate tree canopy cover, set canopy goals and monitor canopy change over time. Canopy can also be used to estimate inputs for use in i-Tree Hydro and elsewhere where land cover data are needed.

Utility Programs

[i-Tree Species](#) is a free-standing utility designed to help urban foresters select the most appropriate tree species based on environmental function and geographic area.

[i-Tree Pest Detection Module](#) is a portable, accessible and standardized protocol for observing a tree for possible insect or disease problems. The i-Tree Pest Detection module is currently available within the i-Tree Streets and i-Tree Eco programs. Pest Detection can be adapted to other external tree inventory programs also.

[i-Tree Storm](#) provides a method for a community to assess widespread storm damage in a simple, credible, and efficient manner immediately after a severe storm. It is adaptable to various community types and sizes and provides information on the time and funds needed to mitigate storm damage.”

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Hazard Tree Identification and Management:

Hillsborough Township does a good job of identifying hazardous tree conditions and taking proactive steps before tree failure. However, several high wind events over the past few years have shown that hazardous tree conditions are hard if not impossible to predict. The experience of the past few years points out the value of taking a closer look at Township trees on a planned, systematic schedule. Future efforts to identify tree hazards will rely heavily on the existing system of Department of Public Works surveillance via “windshield surveys”. These surveys go beyond casual observation and should be conducted at least annually on a systematic/street-by-street basis. The results of the windshield survey should be documented in a report noting hazardous tree conditions and recommended corrective actions. Additional windshield surveys should be undertaken following any major storm event. Observations and recommendation from windshield surveys should be incorporated into the ‘tree layers’ or inventory system once implemented.

Tree Planting:

Tree planting is an ongoing practice in Hillsborough. Developers must plant trees in accordance with site plan review by the Planning Board and also mitigate against tree loss by replanting and/or payment to a tree mitigation fund. The Township also plants 50-100 trees per year. A list of planting locations and planting spots will be one product of the data collection and assessment work. This list should be arranged by priority and form the basis for a planting plan which outlines a planting timeline, location of plantings and species. Funds for these plantings can come from the Tree Mitigation Fund or grant funds.

The first of three phases of the Route 206 No-Net Loss Project has been completed with 1,000+ 2 in. caliper trees planted in the Township. Further phases of the project will be handled entirely by the State of New Jersey.

Tree Maintenance and Care:

The Township employs “tree crews” to complete tree maintenance in Parks and along roadways. Many tree removals and any insect control are completed by a Certified Tree Expert

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Company. The Township maintains a leaf and wood debris recycling center at the Department of Public Works facility.

Tree maintenance and care is one area where the Township needs to take additional action with both younger and older trees. Many new trees have been planted by developers in the past 25 years. Some years in the 1990's saw 1000+ trees planted. If these trees are to be sustained and functional in the landscape they must be pruned to produce a single central stem and be elevated as they grow. Left untended; many will fail, become less than attractive and eventually become a liability. Much of the dialogue in the previous 5-year plans is still applicable for the relatively young trees. During the windshield surveys and assessments special note should be made whether young trees are Township or privately owned. Once the number of Township trees needing pruning and elevation is determined, a strategy for developmental pruning and elevation should be discussed and implemented. As noted in Section IV, most of the trees planted in the developments are on private property with great potential to impact the public R.O.W. in the future. If a large number of the trees needing pruning are on private property and affect public rights-of-way, suitable ordinances for the care of the trees should be formulated.

As maintenance needs of larger diameter trees (18"+ DBH) are quantified by the inventory and assessment. A Community Stewardship Incentive Program (CSIP) Grant application could be made to help with the costs for contracted tree experts.

Implementation by Year:

The implementation of any plan is dependent upon many factors. It is unlikely the exact path to success can be laid out for any 5-year period. Many tasks are ongoing as expressed in the Overview Section, plus sections VI and VII addressing training, education, awareness and outreach activities.

The following suggests actions to be followed over the next 5-year timeline.

2017 –

This year begins with conversations between ForesTree Consultants and Township representatives to review former Community Forestry Management Plans and to chart a course

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for the next 5-years. A frank and revealing discussion concluded with the collection of needed information for the next plan; the realization that the attainment of a desired future condition for the Township's trees and canopy is forever changing; and a reminder regarding the changes to both tree care programs and administration priorities for the Township's tree infrastructure occurs with slow uncertainty over time.

The responsibility for trees along the Township rights-of-way and in parks falls primarily on the Department of Public Works and Department of Parks respectively. As stated previously, many other entities become involved as well. Chapter 101: Tree Mitigation Trust Fund and Advisory Committee is established by Township ordinance and provides a platform for advocacy, program direction and funding. During this year, emphasis will be renewed to increase the committee's effectiveness. It is important to meet the standards of the ordinance by keeping the Committee membership at the prescribed number of 5 members and to hold quarterly meetings. During this year, the Department of Public Works will schedule the meetings, confirm membership (seek Mayor appointments for vacancies), appoint a Secretary to the Committee and issue recommendations and assessment reports as necessary.

In addition to ongoing Community Forestry Management Plan activities, discussions will focus tree planting plans for selected parks and gateways, expenditures from the Tree Mitigation Fund, and an assessment related to the potential impacts from the Emerald Ash Borer(EAB) – perhaps a 'Rapid Ash Survey Team' report. See Department of Agriculture guidelines – "For Communities – Emerald Ash Borer" in Appendix #4. References to these objectives are found under Goal #1-b; Goal #2 – a, b, g, h, i; Goal 7 – a, b, c.

2018-

This year will continue the activities listed as on-going. Two plans to demonstrate good practice will be completed – one for a Park and one for a Gateway/Boulevard district. Production of each plan will require input from many Township entities and could be a work product of the Tree Mitigation Fund Advisory Committee. Implementation of these plans will stretch over the remaining plan period – completed by the end of 2021.

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During this year, the 1st documented “windshield survey” for hazardous trees will be completed. Some thought will be given to dividing the Township in segments such as – residential development, rural/suburban, Gateway Districts, Bellemead GSA Depot, etc.

Observations made during the “windshield surveys” combined with aerial photography and existing GIS layers will enable estimating of existing tree canopy in the various segments – using these observations as a baseline will allow the Township to measure increases/decreases of tree canopy over time. A 10-year goal to increase tree canopy by 10% is somewhat subjective, but will provide a target for monitoring and emphasis. See the USDA “Guide to Assessing Urban Forests” in Appendix #5.

References to these objectives are found under Goal #1 – a, b, c and Goal #2 – c.

2019-

Ongoing elements of the Township’s Community Forestry Management program will be sustained.

By this year, the Township will have completed some assessment of the potential threat from the Emerald Ash Borer either by completion of a RAST report and/or ‘windshield survey’. The EAB was first observed in Hillsborough Township in 2014 by the NJ Department of Agriculture and was one of the first observations of this pest in New Jersey. Additionally, and if the EAB spreads as predicted, the ash trees will be dying and creating hazards on both public and private lands. Insecticide treatment will be limited only to a few of the most noteworthy trees. The Township will start removing the most hazardous trees and could consider preemptive removals along the busiest R.O.W.’s, bike paths and town centers. Residents will be informed of EAB via the Township website and by reference to the NJ Department of Agriculture website. Grants from the NJ Department of Agriculture and/or NJ Forest Service may become available to assist with EAB (see several references in Appendix #4).

References to these objectives are found in various appendices and under Goal #2 – a & b; Goal #5 – d and Goal #6 – a, b, c, d, e.

2020-

In addition to attention to all ongoing CFMP activities; this year will reveal a priority listing of projects by the Tree Mitigation Advisory Committee. Some results from the efforts to

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develop a GIS tree layer, progress on several “special” projects to demonstrate the value of tree replacement in Parks and/or selected Districts, “windshield assessments” and experience with the threat of EAB will help inform the development of a “mid-term” listing of priority projects/efforts above and beyond all the core work of the ongoing CFMP program of tree planting, tree maintenance, side walk repair, administering the Tree Mitigation Fund, education and training, tree removal, storm clean-up, tree removal, tree recycling(mulch, Christmas trees, leaf pickup). The priority listing may consider existing canopy percentages and strategies to meet the decade goal to increase the tree canopy by an average of at least 10%. Most of the goals and objectives in the CFMP will be addressed during this year’s work.

2021-

It is now time a to reflect on past accomplishments and to devote energy to completing tasks stated previously while continuing to meet the core requirements of the Community Forestry Management Plan.

By now, the effects of EAB should be apparent regarding the extent, emergency expenditures and overall impacts on tree canopy and forest health. Restorative plans and actions will be in force. Beginning in March-April 2021 the Tree Mitigation Advisory Committee will begin making arrangements to update the CFMP for 2022 through 2026. The updated CFMP will be completed by December 31, 2021.

X. Timeline of Activities

The following is a list of Ongoing Activities that are planned and recur regularly throughout the plan period:

- ☐ Maintain the Tree Mitigation Advisory Committee membership at the authorized level of 5 and hold the required 4 meetings per year. Seek a resident volunteer to serve on the Advisory Committee. Complete TMAC reports to the Mayor and Township Committee annually.
- ☐ Continue to amass tree information and start keeping a record of data in the Township GIS or via selected standalone data storage.
- ☐ Continue “windshield surveys” and assessments of tree health, maintenance needs, hazards and planting needs.
- ☐ Focus on being aware of and responsive to insect and/or disease threats – especially EAB.
- ☐ Attend to the administrative and training requirements of State ‘Approved Status’:
 - Annual reports to New Jersey Forest Service Community Forestry Program.
 - Obtaining a minimum of 8 Continuing Education Units (CEU’s) – most easily accomplished by attending the NJ Shade Tree Federation meeting each fall.
 - Maintaining membership in the NJ Shade Tree Federation.
 - Applying for grants.
 - Apply for Tree City, USA designation.
 - Hold Arbor Day Programs and other educational events as outlined under Goal 4b, i-viii.
- ☐ Concentrate on several “special projects” to gain advocacy for and demonstrate value of planting the “right-tree in the right-place” and to show the benefits of restorative tree planting in parks.
- ☐ Seek resolution of the “sidewalk issue” and clarification of homeowner responsibility for privately owned hazardous trees impacting on the public right-of-way by adjustments to the Township ordinances. Re-visit ordinance to protect historic and specimen trees and modify as needed.
- ☐ Continue to express the value of increasing the tree canopy and work towards monitoring the progress to meet a 10-year goal of a 10% increase in canopy cover.
- ☐ Continue to meet the annual tree planting goal of at least 100 trees per year or higher as established by the TMAC.
- ☐ Continue to supply the Department of Public Works and Department of Parks with employees and equipment necessary to sustain the Township’s valuable tree infrastructure.
- ☐ Continue support and advocacy for educational opportunities and stewardship at Duke Farms.

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The following timeline table outlines the previous descriptions of work by year. Cross-checking this table with the reference objectives defines the year's expectations.

Township of Hillsborough CFMP Timeline 2017-2021

| Goal/Objective: | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|------|------|------|------|------|
| Goal #1: Assessment | | | | | |
| Objective (a) | | | | | |
| (b) | | | | | |
| (c) | | | | | |
| (d) | | | | | |
| (e) | | | | | |
| Goal #2: Reforestation and Canopy Increase | | | | | |
| Objective (a) | | | | | |
| (b) | | | | | |
| (c) | | | | | |
| (d) | | | | | |
| (e) | | | | | |
| (f) | | | | | |
| (g) | | | | | |
| (h) | | | | | |
| Goal #3 | | | | | |
| Objective (a) | | | | | |
| (b) | | | | | |
| (c) | | | | | |
| Goal #4(a) Training | | | | | |
| Objective (i) | | | | | |
| (ii) | | | | | |
| (iii) | | | | | |
| (iv) | | | | | |
| Goal #4 (b) Public Education, Awareness & Outreach | | | | | |
| Objective (i) | | | | | |
| (ii) | | | | | |
| (iii) | | | | | |
| (iv) | | | | | |
| (v) | | | | | |
| (vi) | | | | | |
| (vii) | | | | | |
| Goal #5 Hazard Identification and Reduction | | | | | |
| Objective (a) | | | | | |
| (b) | | | | | |
| (c) | | | | | |
| (d) | | | | | |

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Township of Hillsborough CFMP Timeline 2017-2021

| Goal/Objective | 2017 | 2018 | 2019 | 2020 | 2021 |
|--|------|------|------|------|------|
| Goal #5 (cont.) | | | | | |
| Objective (e) | | | | | |
| (f) | | | | | |
| Goal #6 Administration | | | | | |
| Objective (a) | | | | | |
| (b) | | | | | |
| (c) | | | | | |
| (d) | | | | | |
| (e) | | | | | |
| (f) | | | | | |
| (g) | | | | | |
| Goal #7 Historic and Specimen Trees | | | | | |
| Objective (a) | | | | | |
| (b) | | | | | |
| (c) | | | | | |
| Goal #8 Ordinance Review | | | | | |
| Objective (a) | | | | | |
| (b) | | | | | |
| (c) | | | | | |
| (d) | | | | | |

X. Community Stewardship Incentive Program Practices

Upon approval of this plan and completion of the core training requirements, the Township of Hillsborough will be qualified to apply for Community Stewardship Incentive Program (CSIP) grants to help offset the cost of implementing this plan. The following is an index of CSIP practices listed in this plan. Additional or revised grants may become apparent as plan implementation progresses.

Community Stewardship Incentive Program Practice Index:

1. CSIP #1 - Training

- a. Goal #4a
 - i. Meet CORE and CEU training Requirements
 - ii. Attend additional training as outlined in a) i-iv.
- b. Section VI, Page 18-20

2. CSIP #2 – Ordinance Establishment

- a. Goal #7 – Specimen and Historic Trees
- b. Goal #8 – Review Ordinances and Site Plan Requirement
- c. Section IV, Page 13-14 and Appendices

3. CSIP #3 – Public Education and Awareness

- a. Goal #4b – Tree City, USA; Arbor Day, newsletter/website, pruning standards, EAB information, Project Learning Tree curriculum, Duke Farms
- b. Section VII, Page 21-23

4. CSIP #4 – Arbor Day

- a. Goal #4b– Continue Arbor Day Ceremony and Proclamation
- b. Section VI, Page 22

5. CSIP #5 – Tree Inventory

- a. Goal #1 & #2 – Determine tree canopy %, windshield survey for hazards and design and implement tree data storage/GIS layer.
- b. Section IX, Page 26-34. Appendix #5

6. CSIP #6 – Hazard Tree Assessment

- a. Goal #1 and #5 – Windshield survey, inventory and address hazardous tree conditions.
- b. Section IX, Page 26-34

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7. CSIP # 7 – Storm Damage Assessment – Readiness, Response & Restoration

- a. Goal #5 – Windshield surveys following major storm events.
- b. The Township of Hillsborough includes trees in its Emergency Management Plan and thus will not be addressed further by this plan.

8. CSIP #8 – Tree Maintenance and Removals

- a. Goal #5– Establish pruning cycle for elevation and structure of young trees. Deadwood removal in larger trees. Remove hazardous trees.
- b. Section IX, Page 26-34

9. CSIP #9 – Insect and Disease Management

- a. Goal #2, #4 & #5 – Training on incipient insect and disease problems. Resident information. Monitoring of Emerald Ash Borer and developing proactive response to EAB damage. Do not plant any more ash species.
- b. Pages 3, 5, 21, 32-34

10. CSIP #10 – Wildfire Protection

- a. Wildfire is not addressed by this plan.

11. CSIP #11 – Tree Planting

- a. Goal #2 – Regeneration and reforestation in parks(Sandy damage), residential areas and roadways. Increase canopy cover by 10% in next 10 years.
- b. Section IX, Page 26-34

12. CSIP # 12 – Tree Recycling

- a. The Township of Hillsborough provides tree debris and leaf recycling to its residents with mulch available at the DPW facility.

13. CSIP #13 – Sidewalk Maintenance Program

- a. Goal #4a – Training on ‘tree friendly sidewalks’. Goal #5
- b. Pages 19, 27, 35

14. CSIP #14 – Storm Water Management

- a. The Township of Hillsborough has a Storm Water Management Plan. Storm Water Management will not be addressed further by this plan.

15. CSIP #15 – Other

XI. Appendix

1. Chapter 101: Tree Mitigation Trust Fund and Advisory Committee Ordinance
2. Chapter 188, Article IX: Tree Preservation Ordinance
3. Sample Arbor Day Proclamation and 2016 Hillsborough Arbor Day Announcement
4. Emerald Ash Borer Information from NJ Department of Agriculture
5. USDA/USFS's "A Guide to Assessing Urban Forests"

Use of Information:

The content of this Community Forestry Management Plan has been purchased by the subject municipality to guide a 5-year effort to manage its shade trees and publicly owned forests. The content, structure and organization remains the property of the authors, ForesTree Consultants, and may not be infringed upon by copying, adapting or sharing for use by another municipality or in future plans by the subject municipality without the expressed written consent of ForesTree Consultants.

Appendix #1:

Chapter 101 – Tree Mitigation Trust Fund and Advisory Committee

Chapter 101

TREE MITIGATION TRUST FUND AND ADVISORY COMMITTEE

GENERAL REFERENCES

Tree preservation — See Ch. 188, Art. IX.

§ 101-1. Fund established; use for tree plantings and equipment purchases.

- A. There is hereby established a reserve in the general capital fund which should be noted and designated as the "Tree Mitigation Trust Fund." A separate bank account to hold this reserve shall be established and maintained that is entitled the "Hillsborough Tree Mitigation Trust Account."
- B. As directed by the Township Committee, funds from the Tree Mitigation Trust Fund may be utilized to purchase trees to be planted where determined to be appropriate and for the purchase of equipment/supplies necessary to plant and/or maintain these trees until they become established/self-sufficient.

§ 101-2. Funding of Tree Mitigation Trust Fund.

All funding for Hillsborough Tree Mitigation Trust Fund shall be derived solely from developer contributions pursuant to Article IX of the Hillsborough Development Regulations Ordinance.¹

§ 101-3. Establishment of Tree Mitigation Advisory Committee.

- A. There is hereby established a Tree Mitigation Advisory Committee (TMAC).
- B. The mission of the TMAC is to:
 - (1) Plan for, recommend and to review the replacement of trees that have been removed by development in such a way as to most effectively enhance the quality of life in the Township.
 - (2) Evaluate the need for, recommend as necessary and review all Township purchases of equipment and/or supplies that would be used to plant and/or maintain replacement trees until they become established/self-sufficient.
 - (3) Exercise prudent responsibility in making plans and recommendations with regard to the resources available from the Hillsborough Tree Mitigation Trust Fund.

§ 101-4. Composition; terms; vacancies; removal.

- A. The TMAC shall consist of five members appointed by the Township Committee by resolution. One member shall be the Township's Director of Public Works. **[Amended 8-10-2004 by Ord. No. 2004-29; 4-22-2014 by Ord. No. 2014-06]**
- B. In regard to the other four members:

1. Editor's Note: See Ch. 188, Land Use and Development.

- (1) All must be residents of the Township.
 - (2) A minimum of two must have professional certification or similar occupational and/or educational background as a landscape architect, arborist, forester or other directly related area of expertise.
 - (3) All shall be appointed for terms of four years, staggered evenly by reason of the original appointments.
 - (4) All vacancies shall be filled for the unexpired term in the same manner by the Township Committee.
- C. The Township Committee may remove any member of the TMAC for cause. Cause for removal may be found where:
- (1) A member is absent for three consecutive meetings or 50% of regularly scheduled meetings within a calendar year.
 - (2) A member does not take a proper part in carrying out the mission of performing the duties of the TMAC.

§ 101-5. Organization.

- A. The TMAC shall organize within 30 days after the appointment of its total membership, and thereafter annually each January, by the election by its membership of one of its members as Chairman and one a Secretary.
- B. The (Deputy) Supervisor of Parks is not eligible to serve as either Chairman or Secretary; otherwise, he shall be a full voting member.
- C. The TMAC shall meet at least four times per year, but may choose to meet more often as necessary.

§ 101-6. Powers and duties.

- A. The TMAC shall prepare and submit to the Township Committee, upon recommendation of the Planning Board, an annual Tree Mitigation Budget and Implementation Plan for the Township Committee's approval, which shall include:
 - (1) A recommendation of the number, type and location of all trees to be planted, and, if necessary, the type of equipment/supplies to be purchased by the Township to plant and maintain, as deemed desirable and appropriate, whatever number of said trees.
 - (2) The projected cost of the trees and of associated planting and maintenance activities.
 - (3) A plan for the planting and maintenance of replacement trees, which would include but not necessarily be limited to the planting schedule, and the recommendation of which entity or entities (public and/or private) would be best tasked to perform which planting and maintenance duties.
- B. The TMAC shall oversee the annual tree planting program to ensure that all plantings and maintenance were made according to the approved budget and implementation plan.

- C. Revisions to the approved budget and implementation plan may be recommended by the TMAC during the year, as appropriate, and submitted to the Township Committee, upon recommendation of the Planning Board, for the Township Committee's approval.
- D. The TMAC shall annually review the Tree Mitigation Program and submit to the Township Committee a brief report describing the activities performed under the program and their results. The report may also include any general recommendations the TMAC may have in regard to the future direction of the program.
- E. In the event that no funds are deposited into and available from the Tree Mitigation Trust Account under Article IX of the Hillsborough Development Regulations Ordinance² for a period of five consecutive years, then the Township Committee shall conduct a review and issue a report with recommendations and conclusions concerning the continuation of the Tree Mitigation Trust Fund and the TMAC.

2. Editor's Note: See Ch. 188, Land Use and Development.

Appendix #2:

Chapter 188, Article IX: Tree Preservation Ordinance

ARTICLE IX
Tree Preservation

[Adopted 11-22-2000 by Ord. No. 2000-38; amended in its entirety 11-12-2002 by
Ord. No. 2002-39]

§ 188-160. Purpose.

It shall be the purpose of this article to preserve and protect the environment, aesthetics and rural character of the Township of Hillsborough by restricting and otherwise controlling the removal of mature trees throughout all land within the Township.

§ 188-161. Definitions.

As used in article, the following terms shall have the meanings indicated:

TREE — Any nursery stock tree with a caliper measurement of 2.5 inches, any flowering or ornamental tree with a caliper measurement of three inches or greater, any deciduous or coniferous tree of six-inch caliper or greater or any coniferous tree eight feet or greater in height.

CALIPER — The diameter of a trunk as measured at a height of four feet above grade.

CROP — To cut off the branches, top or trunk of a tree.

CRITICAL FOOTPRINT AREA — An area of new home construction that includes the portions of a private residential lot reserved for driveways and the actual building foot print plus an additional 40 feet beyond the perimeter of the building footprint and septic field.

PRUNE — To cut off or remove living or dead parts or branches of a tree.

UNDERSTORY — The plant growth on the ground beneath the canopy, or upper branches of trees.

§ 188-162. Applicability.

A. The following activities shall be regulated by this article:

- (1) Removal of more than three trees per calendar year on properties that can be subdivided, multifamily parcels and unimproved lots; provided, however, that on lots eligible to qualify for farmland assessment, three trees per acre on the overall tract may be removed per year without replacement except where those lots are otherwise exempt under the terms and provisions of Subsection B below.
- (2) Removal of any tree on an improved nonresidential lot. Nonresidential lots shall include, but not be limited to, the following: commercial retail or wholesale, office, industrial and warehousing properties.

- (3) Cropping or trimming of trees or other activities that will adversely affect the life span of the tree.

B. Exemptions. The following activities are exempt from the provisions of this article:

- (1) Removal of trees on developed single- and two-family residential lots that cannot be subdivided, other than removal of trees that were planted as part of an approved subdivision or municipal street tree planting program. Trees that were planted as part of an approved subdivision or as part of a municipal street tree planting program that have been removed for any reason must be replaced in a like number and in the approximate location as originally planted.
- (2) Routine maintenance, such as trimming, that will not adversely affect the lifespan of the tree.
- (3) Removal of trees of any size shown to be dead or diseased or that are otherwise damaged and a threat to the health, safety and welfare of the public.
- (4) Selective thinning in conjunction with a management plan approved by the State Forester.
- (5) On land zoned for and/or used as a Township approved mine or quarry, removal of any tree located on that portion of land used or to be used for the actual extraction of mine or quarry materials or for a function essential to the actual extraction of mine or quarry materials. Upon termination of the mine or quarry operation, a reclamation plan shall be submitted in accordance with Township Code § 188-108E(7).

§ 188-163. Board approval required.

- A. Planning Board or Board of Adjustment, as the case may be, approval for tree removal shall be required except where otherwise exempted herein. In deciding whether to approve an application for tree removal, the Planning Board or Board of Adjustment, as the case may be, shall consider the following factors:
 - (1) Whether the removal of trees is justified and is related to an aesthetic and economic improvement of the land that is in the best interests of the citizens and property owners of the Township of Hillsborough.
 - (2) Whether the design of improvements maximizes tree preservation. Tree removal on new residential lots shall be restricted to inside the critical footprint area. Removal of trees outside this area requires a waiver from Planning Board or Board of Adjustment, as the case may be.
 - (3) Whether the applicant has attempted to preserve stands of trees and existing understory in logical locations.
 - (4) Whether appropriate measures will be taken to protect remaining trees during the construction period.

- (5) Whether the mitigation or tree replacement plan is satisfactory.
- B. Mitigation Required. Mitigation for tree removal shall be required in accordance with § 188-164, Mitigation shall be required for the removal of trees on any residentially zoned lot or any non residentially zoned lot in accordance with site plan approval as provided in Subsection A above. However, in no case shall more than up to 20% of all the count of trees on a residential zoned lot or up to 60% of the count of all trees on any nonresidential lot be removed even with mitigation measures.
- C. Tree preservation plan submission requirements. In addition to the standard development application form, the following information shall be required for approval for tree removal:
 - (1) A rider explaining why each tree is to be removed.
 - (2) A tree preservation plan that depicts:
 - (a) The location, species and caliper of all trees to be removed on a surveyed drawing.
 - (b) The location, species and caliper of each tree within the dripline of each tree to be removed.
 - (c) The quality, quantity and limits of vegetation on the remainder of the site and within 200 feet of the property line.
 - (d) The location of existing and proposed structures, including parking areas, detention basins and other stormwater facilities.
 - (e) Existing contours and proposed grading.
 - (f) Proposed preservation methods of trees to remain.
 - (g) The location of replacement trees, including a replacement schedule indicating species, quantities and size in accordance with § 188-164, Mitigation required, below.
- D. Variance required. Deviation from the requirements of this article shall require variance approval in accordance with N.J.S.A. 40:55D:70(c).

§ 188-164. Mitigation required.

Replacement trees are required for the removal of any tree as regulated herein.

- A. Number of replacement trees. Replacement shall be required in accordance with the following schedule, and are exclusive of the shade trees required as per § 188-80:

| Caliper of Removed Tree | Number of Replacement Trees |
|--------------------------------|------------------------------------|
| 6 to 12 inches | 2 |
| 13 to 24 inches | 4 |
| 25+ inches | 6 |

- B. Replacement species. Trees shall be replaced with the same species. In the case where the species is known to be disease-prone or is otherwise not ecologically or aesthetically appropriate, other species shall be permitted with the approval of the appropriate Board.
- C. Planting standards. All replacement trees shall be nursery grown, certified and guaranteed and shall have a minimum caliper of 3.0 inches, or the industry standard equivalent for the species if ornamental. All trees shall be balled and burlapped and planted as per Township of Hillsborough standards.
- D. Off-site contribution. If all required replacement trees cannot be provided on the subject lot(s), an off-site contribution to the Township of Hillsborough Parks Department of a like number of trees or cash equivalent to be placed in a dedicated fund to be used for the purchase of replacement trees by the Township of Hillsborough or for the purchase of equipment for the Township of Hillsborough to plant and/or maintain trees which are purchased by the Township of Hillsborough with these dedicated funds for use on public property and/or public right-of-way shall be considered by the Planning Board or Board of Adjustment, as the case may be. **[Amended 2-10-2004 by Ord. No. 2004-02]**
- E. Economic hardship waiver. In the case of commercial development, the Planning Board or the Board of Adjustment, as the case may be, will reduce the replanting requirement if the commercial developer can prove mitigation costs more than 1.5% of total site improvements for a commercial development. This reduction will limit the mitigation cost to 1.5% of the site improvements. In the case of residential development, the Planning Board or the Board of Adjustment, as the case may be, will reduce the replanting requirement if the residential developer can prove mitigation costs more than 1.5% of the total site improvements for a residential development. This reduction will limit the mitigation cost to 1.5% of the site improvements. The reduction in replanting will be approved at the site plan application stage. For the purpose of this section, the total site improvement costs shall include the estimated cost of construction for any proposed dwelling(s), commercial building(s) and any other structure(s) associated with the proposed development in addition to those costs normally associated with site preparation, soil erosion control, paving, utility work, landscaping and related site improvements. **[Amended 2-10-2004 by Ord. No. 2004-02]**

§ 188-165. Pruning and removal of trees in utility easements.

Pruning and removal of trees in utility easements or rights of way shall be the minimum necessary to protect the property of the applicable utility company. Pruning shall be performed in a manner than will serve to improve the shape of the tree and stimulate growth. The Township Engineer's office shall be informed by the applicable utility company of the time and location of any tree pruning or removal activities in rights-of-way or easements.

§ 188-166. Penalty and enforcement.

Violation of the provisions of this article shall be considered a Class C violation for each tree illegally removed, and for each day the offense continues without mitigation and application to the Planning Board or Board of Adjustment, as the case may be. A mitigation plan is required to be submitted for corrective action where any violation of the requirements of this article occurs.

Appendix #3:

Sample Arbor Day Proclamation & 2016 Hillsborough Arbor Day Announcement



Whereas, In 1872, J. Sterling Morton proposed to the Nebraska Board of Agriculture that a special day be set aside for the planting of trees, and

Whereas, this holiday, called Arbor Day, was first observed with the planting of more than a million trees in Nebraska, and

Whereas, Arbor Day is now observed throughout the nation and the world, and

Whereas, trees can reduce the erosion of our precious topsoil by wind and water, cut heating and cooling costs, moderate the temperature, clean the air, produce life-giving oxygen, and provide habitat for wildlife, and

Whereas, trees are a renewable resource giving us paper, wood for our homes, fuel for our fires and countless other wood products, and

Whereas, trees in our city increase property values, enhance the economic vitality of business areas, and beautify our community, and

Whereas, trees, wherever they are planted, are a source of joy and spiritual renewal.

Now, Therefore, I, _____, Mayor of the City of _____,
_____, do hereby proclaim
_____ as

Arbor Day

In the City of _____, and I urge all citizens to celebrate Arbor Day and to support efforts to protect our trees and woodlands, and

Further, I urge all citizens to plant trees to gladden the heart and promote the well-being of this and future generations.

Dated this _____ day of _____
Mayor _____



TOWNSHIP OF HILLSBOROUGH

379 South Branch Road
Hillsborough, NJ 08844
Phone (908) 369-4313
Fax (908) 369-6034

News Release

Contact: Mayor Frank DelCore
Committeeman Doug Tomson
Phone: (908) 369-3535

FOR IMMEDIATE RELEASE
April 26, 2016

Two Arbor Day Events in Hillsborough Township on Saturday, April 30th

*Township Partners Once Again with New Jersey Recovery Campaign to
Offer Free Tree Seedlings to Participants and
Tree Planting Ceremony on Ground of Municipal Complex at 10 am*

Once again Hillsborough Township has partnered with New Jersey Recovery and will be distributing up to 5 seedling per resident who participates in the Township's Annual Clean Up on Saturday, April 30th.

"We are happy to announce this partnership is still going strong and we are able to offer not only the free service of access to the facility, but also the seedlings program through New Jersey Recovery," stated Committeeman Greg Burchette, Liaison to the Department of Public Works. DPW administers the Township's Annual Free Clean Up Program.

The first 200 residents who visit the Auten Road Facility on April 30th will receive five seedlings to plant on their property as a replacement in the event that they lost any trees during Superstorm Sandy or any subsequent weather events. This initiative is to provide communities throughout the state an opportunity to replace damaged and dead trees that have fallen victim to weather events.

"Additionally, in honor of Arbor Day, on Saturday, April 30th at 10 am there will be a ceremonial tree planting on the grounds of the Municipal Complex by Christian Plunkett,

ISA Board Certified Master Arborist,” announced Committeeman Doug Tomson, Liaison to the Hillsborough Branch of the Somerset County Library System.

Earlier this month, Mr. Plunkett hosted a program at the Library where he educated guests about tree planting and care. He discussed species selection, site preparation, tree planting technique and care.

The tree planting ceremony will take place on the grounds of the Hillsborough Municipal Complex on Saturday, April 30th at 10:00 am, rain or shine. The planting will be followed by a tree tour and discovery outing on the Complex grounds. There will be door prizes that will be raffled off at the completion of the planting.

As a reminder to resident, coupons are required for drop off at the Auten Road facility and are issued through the Department of Public Works, located at 21 East Mountain Road. This program is for Hillsborough Residents only and proof of residency is required. The drop off site is open rain or shine.

The purpose of the clean-up program is to allow residents the opportunity to dispose of old furniture, toys, rugs, appliances, bicycles, yard debris, etc. Please note electronics and hazardous materials are NOT accepted. For information on recycling electronics, hazardous waste and materials not permitted at the Auten Road facility, residents can contact Somerset County Recycling Department at 732-469-3363 or visit their website at www.co.somerset.nj.us/recycle .

###

Appendix #4:

Emerald Ash Borer Information from NJ Department of Agriculture

EAB Detections in New Jersey

SUSSEX

2017 Montague Twp

WARREN

2017 Harmony Twp
2017 Hardwick Twp

HUNTERDON

2016 West Amwell Twp
2017 Alexandria Twp
2017 Delaware Twp

SOMERSET

2014 Bridgewater Twp
2014 Hillsborough Twp
2015 Franklin Twp
2016 Bound Brook Boro
2016 South Bound Brook Boro

MERCER

2014 Ewing Twp
2015 Hamilton Twp
2015 West Windsor Twp
2015 Princeton Boro
2015 Hopewell Boro
2016 Pennington Boro
2016 Hopewell Twp
2017 Robbinsville Twp
2017 Trenton City

BURLINGTON

2014 Westampton Twp
2015 Edgewater Park Twp
2015 Moorestown Twp
2016 Bordentown City
2016 Cinnaminson Twp
2016 Delanco Twp
2016 Eastampton Twp
2016 Mt. Laurel Twp
2016 Hainesport Twp
2017 Delran Twp
2017 Willingboro Twp
2017 Southampton Twp
2017 Mansfield Twp

BERGEN

2015 Hillsdale Boro
2016 Mahwah Twp
2016 Ho-Ho-Kus Boro
2017 River Edge Boro
2017 Paramus Boro
2017 Rockleigh Boro

MORRIS

2017 Morris Twp
2017 Chester Twp
2017 Hanover Twp
2017 Randolph Twp

HUDSON

2016 Hoboken City

ESSEX

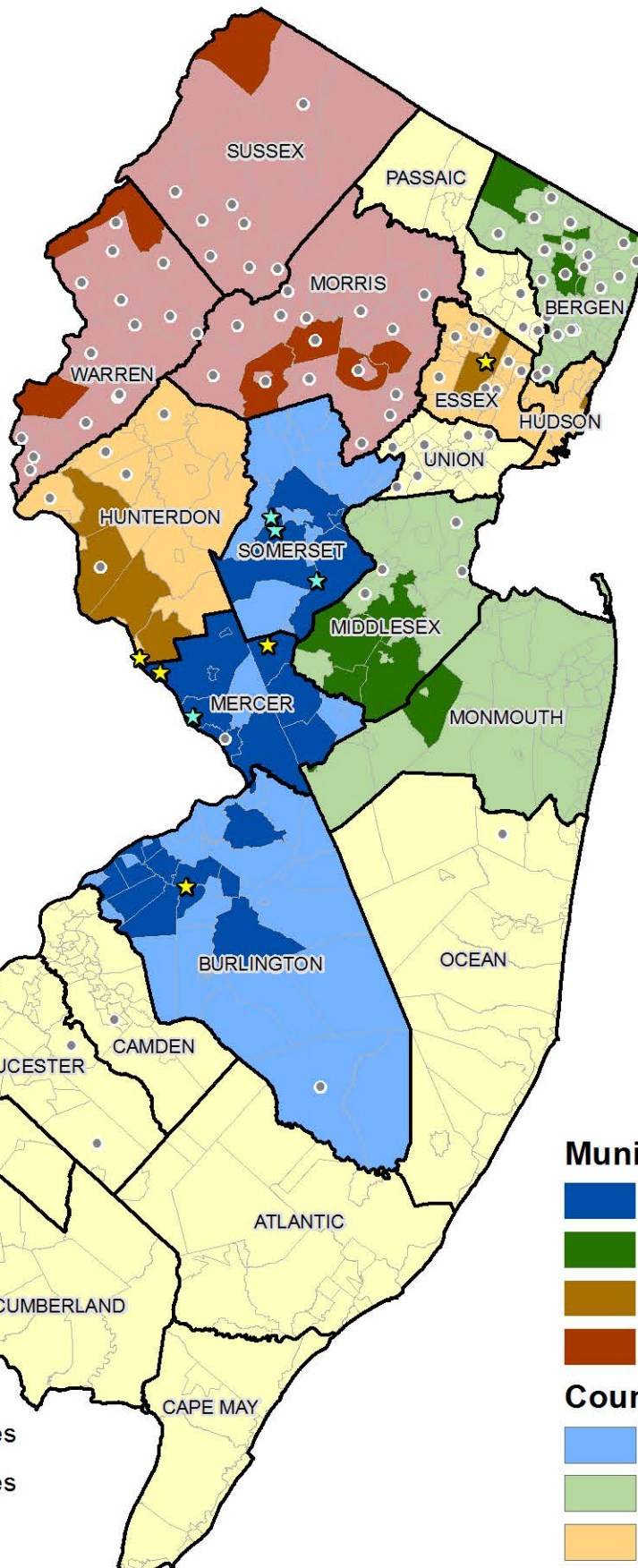
2016 Montclair Twp
2017 West Orange Twp

MIDDLESEX

2015 South Brunswick Twp
2015 Monroe Twp
2016 Cranbury Twp
2016 East Brunswick Twp

MONMOUTH

2015 Allentown Boro
2017 Manalapan Twp



Activity locations

- ★ 2016 Bio-control release sites
- ★ 2017 Bio-control release sites
- 2017 trapping sites

Municipalities with EAB

- 2014 county detection
- 2015 county detection
- 2016 county detection
- 2017 county detection

Counties with EAB

- 2014 detection
- 2015 detection
- 2016 detection
- 2017 detection

Pest Alert

Emerald Ash Borer *Agrilus planipennis*



The exotic emerald ash borer (EAB) has been killing ash trees across North America. Native to China, eastern Russia, Japan, and Korea, it was first discovered near Detroit in 2002 and has since spread to 25 states, including New Jersey.



Damage

This metallic green insect infests and kills ash trees—all ash species are susceptible, with the exception of mountain ash. EAB larvae feed on the inner bark and disrupt the movement of water and nutrients, essentially girdling the tree. This insect often infests the upper branches of the tree first and may affect branches as small as 1" in diameter. It takes 2-4 years for infested trees to die, but mortality is imminent.

Images by David Cappaert



Adult beetle



D-shaped exit hole



Larva



Woodpecker damage on an EAB infested tree

Signs and symptoms

Often the first sign that a tree is infested is woodpecker damage. When feeding on EAB, woodpeckers scrape off outer bark, leaving smooth, light colored patches. Under the bark of an infested tree, you can often see S-shaped galleries weaving back and forth on the surface of the wood. The beetles also leave 1/8" D-shaped exit holes. Between May and August, you may find the 1/2" long metallic green adult beetles which have a copper color abdomen under the wing covers.

Emerald Ash Borer in New Jersey

Since its discovery in North America, EAB has spread rapidly. It occurs in 25 states and 2 Canadian provinces. It was first discovered in NJ in 2014. The greatest impact will be for community trees and privately owned trees.

The beetles are strong fliers, and good at finding ash trees. When the beetle first arrived in Maryland, the infested area expanded about 1/2 mile per year.

Often people unintentionally spread this insect when they move firewood from an infested area to a new location. Beetles and larvae also hitchhike to a new area in nursery trees and saw logs.

**Over the next few years,
99% of NJ ash trees
will die due to emerald
ash borer infestations**

Ash in New Jersey Facts

- Forests contain 24.7 million ash trees
- 24% of all forested land contains ash
- Ash is found in forests throughout the state, but concentrated in northern New Jersey
- Ash has been commonly planted as a street and landscape tree throughout the state

Managing Your Ash Trees

For Landowners

EAB is in New Jersey. Plan for EAB now if you have ash. Know what's at risk: how much ash you have, its size and quality, and where it's located. Consider the ecological, aesthetic, and economic value of your ash, your tolerance of risk, and your objectives for ownership.

Forest Management Plan

If your land is enrolled in Farmland Assessment or the Forest Stewardship Programs, you must follow your approved forest management plan or an approved amendment.

Contact your consulting forester if you wish to change your planned activities, treatment schedule, or management objectives. Remember that the state forester needs to approve any changes before the management activity begins.

With an approved forest management plan that addresses EAB, you can salvage and restore ash in riparian areas when they follow the prescribed Best Management Practices.

Reassess your plan if EAB is detected in or near your county. To date, EAB has been found in Somerset, Mercer and Burlington Counties. The threat of imminent tree mortality increases when EAB is within 10 miles of your property.

Salvaging Ash Logs

Work with a consulting forester or Certified Tree Expert to get the most from your forest. Studies have shown that owners who use professional forestry services before they cut make more money and are more satisfied with the results than owners who sell timber on their own.

More information www.myhealthywoods.nj.gov

For Municipalities

If your municipality or county currently has an approved Community Forest Management Plan and ash is a major component of your community's forests along streets or in parks, consider including a section in your plan that addresses your community's response to EAB. Contact a Certified Tree Expert for assistance.

Municipalities with ash trees should:

- Conduct a tree inventory: know the size, health status, and where ash trees are located
- Begin to remove ash trees that are in decline and replace with non-host species
- Identify high value ash trees that you would like to treat to protect them from EAB
- Determine how infested ash tree removals be handled
- Identify a contact for EAB management issues (i.e.; Shade Tree Commission, Department of Public Works, Environmental Commission)
- Plan for restoration efforts with non-host species

More information on the community forestry management plan program
www.communityforestry.nj.gov

More information on the emerald ash borer
www.emeraldashborer.nj.gov



EAB infested ash wood

Take action

Identify ash trees. Ash species have opposite branches and leaves and a compound leaf with 5-11 leaflets. The bark has a unique diamond-shaped ridge bark on older trees, but younger trees may have smoother bark.

Monitor your ash trees for EAB, you will know when the risk of mortality becomes urgent. Look for the dying branches at the top of the tree, woodpecker damage, galleries under the bark, D-shaped holes, green adult beetle, and sprouting.

Spread the message, "Don't Move Firewood." Visitors who bring infested firewood to second homes or campgrounds near you put your trees at risk. Talk with neighbors and campground owners in your community.

Report EAB sightings to the NJ Department of Agriculture. Collect and/or photograph any suspect insects and larvae. Note that several insects look similar to the EAB.



White ash leaf and bark



S-shaped galleries

New Jersey EAB Task Force



More information

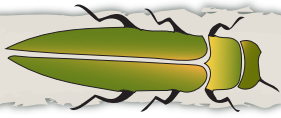
www.emeraldashborer.nj.gov

Report sightings to Department of Agriculture
State Forestry Services Forest Health

609.406.6939
609.984.3861

Info from USDA
Look-alike beetles

www.stopthebeetle.info
www.nyis.info/index.php?action=identification



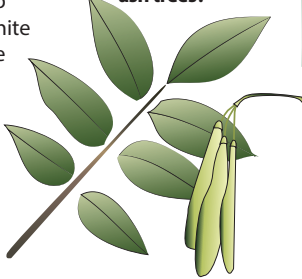
Assess Ash Trees for Emerald Ash Borer

START



Please note:
emerald ash
borer also
infests white
fringetree

**Do you have
ash trees?**



- ☒ Compound leaves with 5-9 leaflets
- ☒ Seeds are samaras in clusters in August
- ☒ Opposite Branching

NO

Your trees are not susceptible to emerald ash borer infestation. This invasive pest only targets ash species.

YES

**Are your trees in
good condition?**

NO

- ☒ Unhealthy, planted on poor sites
- ☒ Missing more than 1/2 its leaves
- ☒ Exhibits insect damage, split bark and/or woodpecker damage

Remove

Call a Tree Professional to:

- Remove at-risk trees
- Remove infested trees

Find a NJ Certified Tree Expert:
www.NJTreeExperts.org

Get at least two estimates and ask for insurance and references

not sure

- ☒ Healthy and vigorous
- ☒ Has more than 1/2 its leaves
- ☒ No signs of insect damage

YES

**Are your trees
in a good
location?**

**not sure
NO**

YES

- ☒ Enough room to it to grow to over 50' tall
- ☒ Enough room for crown to spread over 45'

- ☒ Will hit overhead utility lines at 50' tall
- ☒ Will hit side obstructions with crown spread of 45'

Evaluate

Call a Tree Professional to:

- Treat trees larger than 60"
- Evaluate tree health or site

Find a NJ Certified Tree Expert:
www.NJTreeExperts.org

Get at least two estimates and ask for insurance and references

**Is the circumference of
the tree more than 60"?
(Measure at 4.5 feet from the ground.)**

YES

NO

Treat & Monitor

Call a Tree Professional to apply a preventative treatment to your ash tree with a circumference less than 60".

Timing April 1 - May 15
Treatment Soil drench (1.47% imidacloprid)
Precautions Follow label directions
Reapply Yearly (as long as EAB are active)

Find a NJ Certified Tree Expert:
www.NJTreeExperts.org

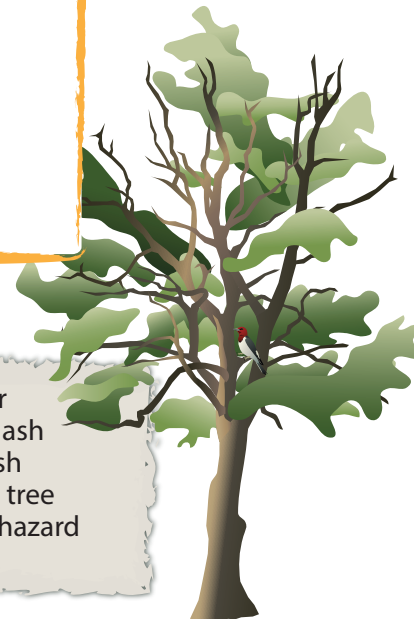
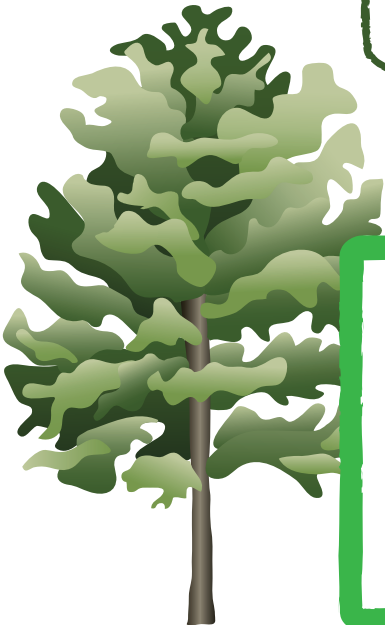
Get at least two estimates and ask for insurance and references

No Action

Minimally, identify your ash, and monitor them. Even if you take no action, your ash trees are still susceptible to emerald ash borer infestations. Once infested, your tree will become weak and may even be a hazard to your home or family.

learn more:

www.emeraldashborer.nj.gov



Appendix #5:

USDA/USFS – ‘A Guide to Assessing Urban Forests’

A Guide to Assessing Urban Forests



INTRODUCTION

Urban forests provide numerous ecosystem services. To quantify these services and guide management to sustain these services for future generations, the structure or composition of the forest must be assessed. There are two basic ways of assessing the structure or composition of the urban forest:

Bottom-up approach. Field-based assessments to measure the physical structure of the forest (e.g., species composition, number of trees)—typically used for strategic resource management or advocacy by connecting forest structure, functions and values with management costs, risks, and needs.

Top-down approach. Assessments of canopy cover using aerial or satellite images—used to determine amount and distribution of tree cover, potential planting space and other cover types.

These two approaches provide different types of urban forest information. The purpose of this guide is to outline the advantages, disadvantages and costs associated with various common assessment alternatives under these two approaches.



THE BOTTOM-UP APPROACH: FIELD-BASED ASSESSMENTS

The bottom-up approach involves collecting field data on vegetation. It provides the most detailed information needed for urban forest management and to assess urban forest structure and its associated ecosystem services and values (Table 1). To aid in sampling or inventorying urban trees and forests, and for calculating their ecosystem services and values, the free i-Tree Eco and Streets models were developed (www.itreetools.org).



Advantages:

- ◆ Provides good estimates of basic forest information needed for management (e.g., number of trees and locations, species composition, tree sizes, tree health, risks)
- ◆ Provides estimates of numerous ecosystem services and their values
- ◆ Can be used for monitoring changes in forest composition and values

Disadvantages:

- ◆ Must collect accurate field data using technical metrics
- ◆ Cost of data collection

Cost:

Varies with size and scope of project. Volunteers, in-house crews and hired consultants have all been employed for collecting data. Hiring a consultant to carry out a typical i-Tree Eco sample of 200 plots could cost \$40,000 at a contracted rate of \$200 per plot. Costs would decrease with volunteers or student labor (e.g., \$20,000 with students; even less with volunteers). Sampling intensity is determined by the user based on accuracy desired and resources available.

Accuracy:

Varies with sample size and accuracy of data collection; 200 one-tenth acre plots typically produces a relative standard error less than 15 percent for the total population estimate.

THE TOP-DOWN APPROACH: URBAN TREE CANOPY COVER ASSESSMENTS

There are three common top-down approaches for assessing urban tree canopy cover and all three methods will produce estimates of tree and other cover types in an area, but with differing resolution, costs, and accuracy. The three methods are:

- ◆ NLCD analyses
- ◆ High-resolution image analyses
- ◆ Aerial photo interpretation

NLCD analyses

The National Land Cover Database (NLCD) has tree and impervious cover maps (30-m resolution) for the entire contiguous 48 states with percentage tree and percentage impervious cover estimated for each pixel. These maps and data are available for free and can be loaded into the free i-Tree Vue program to estimate tree cover and general ecosystem services.

Advantages

- ◆ Free
- ◆ Wall-to-wall coverage of lower 48 states
- ◆ Maps ecosystem services in addition to tree cover distribution

Disadvantages

- ◆ Relatively coarse resolution (cannot see trees)
- ◆ Better suited for state or regional analyses rather than city scale or below
- ◆ Typically underestimates tree cover, on average, by about 10 percent. That is, if tree cover is 30 percent, NLCD tends to estimate 20 percent
- ◆ Data from circa 2001 (updated maps are being developed)

Cost:

Free

Accuracy:

Varies with mapping zone, but tends to underestimate tree cover by about 10 percent on average; user can adjust canopy cover percentage in individual pixels in i-Tree Vue to improve accuracy.

High-resolution land cover

With this approach, land cover features are extracted from high-resolution aerial or satellite imagery using automated techniques. This process yields a detailed map of tree and other cover types for a given area. This approach is used for Urban Tree Canopy (UTC) Assessments. For more information go to: <http://www.nrs.fs.fed.us/urban/utc/>

Advantages

- ◆ Produces accurate, high-resolution cover map
- ◆ Complete census of tree canopy locations
- ◆ Integrates well with GIS



High resolution (below) vs. 30-m imagery.



Example of high-resolution land cover map.

- ◆ Allows the data to be summarized at a broad range of scales (e.g., parcel to watershed), enabling tree canopy to be related to a host of demographic, planning, and biophysical data
- ◆ Locates potentially available spaces to plant trees
- ◆ Can be used to monitor locations of cover change
- ◆ The source imagery needed for the mapping is available for the entire United States free of charge from the USDA

Disadvantages

- ◆ Can be costly if the data are low quality or incomplete
- ◆ Requires highly trained personnel along with specialized software
- ◆ Significant effort and time needed to produce quality maps
- ◆ Change analyses can locate false changes due to map inaccuracies
- Does not include ecosystem services reporting

Cost:

Variable depending upon available data. Development of city cover maps are on the order of \$5,000 to 40,000+ depending upon size of city and availability of source data.

Accuracy:

Depends on the processor and available data, but is typically 90 percent accurate for tree cover. The incorporation of additional data, such as LiDAR, and/or the implementation of manual corrections can increase the accuracy to over 95 percent. Error matrix of map can detail actual accuracy of the map.

Photo-interpretation

Uses digital aerial images and a series of random points that are interpreted to determine the cover type at each point center. This process produces statistical estimates of cover with a known error of estimation. A free tool (i-Tree Canopy)

can be used to photo-interpret cover across the globe using Google Maps™. Photo interpretation has been used for accuracy assessments of the other top-down methods.

Advantages

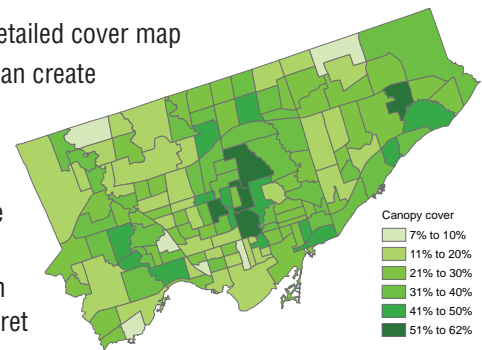
- ◆ Low cost – most images can be acquired freely (e.g., Google Earth or from cities or counties)
- ◆ Cover assessment can be done quickly (e.g., available planting space, tree, impervious)
- ◆ Accuracy can be increased by adding more points and can be calculated quickly
- ◆ Can produce sub-area analyses and maps (e.g., tree cover by neighborhood)
- ◆ Multi-date paired imagery can be used to assess change



Photo-interpretation involves classifying randomly located points within preselected cover classes (e.g., tree, impervious, water).

Disadvantages

- ◆ Does not produce detailed cover map
- ◆ Photo-interpreters can create errors though misclassifications (training and quality checking are recommended)
- ◆ Leaf-off imagery can be difficult to interpret
- ◆ i-Tree Canopy interpretation limited to high quality Google images
- ◆ Poor image quality in some areas
- ◆ Resulting data cannot be summarized at multiple, user-defined scales



Neighborhood tree cover in Toronto, Canada, determined through photo-interpretation.

Cost:

At \$10 per hour, cost is about 10 cents per point (e.g., 1,000 points = \$100). Costs involve set up and interpretation time.

Accuracy:

A sample of 100 points will produce an estimate with a standard error of about 4.6 percent (assuming 30 percent canopy cover) and can be interpreted in about 1 hour. A sample of 1,000 points will produce an estimate with a standard error of about 1.4 percent (assuming 30 percent canopy cover).

Table 1.—Summary of features of four types of urban forest analyses

| Urban Forest Attribute | i-Tree Eco ^a | i-Tree Vue ^b | i-Tree Canopy ^c | Cover Map (UTC) ^d |
|--|-------------------------|-------------------------|----------------------------|------------------------------|
| Cover | | | | |
| Amount or percent tree cover | ✓ | ✓ | ✓✓ | ✓ |
| Specific locations and distribution of tree cover | | ✓ | | ✓✓ |
| Amount or percent potential planting space | ✓ | ✓ | ✓✓ | ✓ |
| Specific locations and distribution of plantable space | | ✓ | | ✓✓ |
| Maps of tree cover and plantable space | | ✓ | ✓ | ✓✓ |
| Urban Forest Composition and Management | | | | |
| Total number of trees / tree density | ✓✓ | | | |
| Species composition | ✓✓ | | | |
| Diameter / size distribution | ✓✓ | | | |
| Species diversity | ✓✓ | | | |
| Species importance values | ✓✓ | | | |
| Leaf area and biomass | ✓✓ | | | |
| Tree health | ✓✓ | | | |
| Native vs. exotic composition | ✓✓ | | | |
| Invasive trees | ✓✓ | | | |
| Risk to insects and diseases | ✓✓ | | | |
| Ground cover attributes | ✓✓ | | ✓ | ✓ |
| Ecosystem Services and Values | | | | |
| Air pollution removal / human health | ✓✓ | ✓ | ✓* | ✓* |
| Carbon storage and annual sequestration | ✓✓ | ✓ | ✓* | ✓* |
| Effects on building energy use | ✓✓ | | | |
| Rainfall interception | ✓✓ | | | |
| Structural value | ✓✓ | | | |
| Mapping of ecosystem services | | ✓✓ | ✓* | ✓* |
| Monitoring | | | | |
| Change in tree cover | ✓ | | ✓✓ | ✓ |
| Locations of tree cover change | | | | ✓✓ |
| Change in species composition, services and values | ✓✓ | | | |

✓ - procedure calculates attribute

✓✓ - recommended procedure based on resolution, accuracy, and cost

✓* - broad estimates of services could be calculated based on procedures in i-Tree Vue

^ai-Tree Eco – free program to assess ecosystem services and values from field data^bi-Tree Vue – free program that uses NLCD cover data to map cover and estimate ecosystem services^ci-Tree Canopy – free photo-interpretation tool to assess canopy cover and monitor change^dCover map - high-resolution cover maps generated as part of a UTC assessment

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