CITY OF GLOUCESTER

Management Plan for Forests and Trees

Third Edition:
2022 - 2032

Gloucester City New Jersey
Where Great Things Are Happening!

NJ URBAN & COMMUNITY FORESTRY

Prepared by:

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Table of Contents

Figures

Tables

Appendices

Acknowledgments

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Executive Summary

Gloucester City's Management Plan for Forests and Trees outlines the City's vision and prioritized goals to protect and grow its tree cover or "community forest." It describes the current structure of the forest, the function these trees provide to the surrounding community, and goals and actions for the management of these trees. This plan is an important tool for Gloucester City municipal officials, nonprofit staff, private business owners, and the general public as it identifies the challenges and opportunities of the community forest and prioritizes actions for future improvement.

The plan was created in partnership with municipal officials, county and state staff, environmental organizations, local business owners, and private residents as well with the Gloucester City Shade Tree Committee and Green Team. Documents used to prepare this plan include the Gloucester City Code and several Gloucester City plans and documents. The maps contained in this plan illustrate the extent of tree cover throughout the City and how this tree cover relates to a wide variety of community factors such as healthcare facilities, schools, demographic information, and flood prone areas. The plan concludes with goals and actions of the community to improve the quality of the community forest over the next ten years. The top three goals and actions are: developing and implementing a tree-planting plan, engaging partners for planting and maintenance, and helping residents and private property owners better maintain their trees.

This plan still awaits the inclusion of the Gloucester City tree inventory which will give more detailed information on the species, health, and number of trees in the City.

This plan is the third version of Gloucester City's management plan for its urban forest (also known as a "community forestry management plan." The first was approved in 2000 and the second in 2014.

Introduction

Mission Statement

To continue to identify, evaluate, improve, grow, and promote Gloucester City's Community Forest for the benefit and safety of its citizens and for the beautification of the City.

Community Forestry Management Plan Overview

In New Jersey, community forestry management plans are enabled under the New Jersey Shade Tree and Community Forestry Assistance Act of 1996.[1] The New Jersey State Forest Service Urban and Community Forestry Program (NJUCF) and the Community Forestry Management Plan Guidelines Committee oversee the development of the plans and ensure that they meet basic requirements.

Benefits of the Plan

When a community forestry management plan is approved by NJUCF, the municipality becomes eligible for liability protection from legal action related to tree risks, and for grant funding to implement the plan.[2] To continue to be eligible for these benefits, municipalities must update their community forestry management plans regularly, provide annual updates on progress, and undergo continuing education on tree topics.

What is a community forest?

A community forest, also known as an urban forest, includes all of the trees in a municipality. These trees are found in such areas as parks and protected lands, along streets, and in privately owned properties. Together, these individual trees or clusters of trees make up a collective "green infrastructure" in the municipality that is also connected to green infrastructure in the region where the municipality resides. This green infrastructure benefits people and wildlife. Healthy trees in a community forest can help filter air and water, absorb stormwater, cool people and property, provide habitat, increase property values, and provide a calming and beautiful presence to a landscape. Unlike many examples of infrastructure created by humans, these benefits frequently increase over time.

A Healthy Community Forest

Community forestry management plans lay a foundation for healthy trees. Trees that are well-maintained offer the following benefits to a municipality over their lifetimes:

- **Improved Air Quality**: Trees remove pollutants through absorbing particles via stomata— structures on their leaves—or by retaining pollutants on the leaf surface which are later washed off by rain.
- **Stormwater management**: Trees reduce stormwater runoff in several ways. Leaves intercept rainfall before it hits the ground. Tree roots absorb water from the soil and return it to the air via transpiration.

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[1] New Jersey Shade Tree and Community Forestry Assistance Act of 1996.
[2] New Jersey Department of Environmental Protection, "Community Forestry Management Plans," nj.gov/dep/parksandforests/forest/docs/community-forestry-management-plan-guidelines.pdf

Roots, as they grow in the soil, also increase the ability of soil to absorb water. Planting a tree in an enhanced tree pit that is connected to drainage pipes and supported by other stormwater infrastructure, such as permeable pavement, can yield a healthier tree and the absorption of more stormwater.

- **Improved Water Quality**: By reducing the volume of stormwater runoff, trees also protect water quality by reducing soil erosion and the transfer of pollutants into waterways during storms. Tree roots can also absorb trace amounts of harmful chemicals in the soil, which reduces the chance of chemicals entering waterways.

- **Cooling Effects**: Buildings shaded by trees can have less need for air conditioning, resulting in lower energy requirements. A community's tree cover can reduce its heat island effect, a condition of raised temperature that can cause respiratory difficulties, heat exhaustion, heat stroke, and in some instances, death.

- **Psychological Well-being**: Walking through a park or tree-lined area can help quiet and focus mental activity.
- **Carbon Sequestration**: Trees take in carbon from the atmosphere as they grow.
- **Wildlife Protection**: Countless species of wildlife rely on trees throughout their lifecycle (both of the wildlife and the trees) for food and shelter.
- **Increased Property Values**: Trees, as well as parks and open space, can cause property values to increase in neighborhoods, although the degree of increase varies widely.

Planning Process

This version of the plan outlines Gloucester City's vision, goals, and implementation for 2022–2032. The update process began with two kickoff meetings in Gloucester City: one with the Gloucester City Shade Tree Committee in February 2019, and one with the Gloucester City Green Team in March 2019. The Shade Tree Committee was the main point of contact during the planning process, but both groups were closely involved in the development of the plan.

Plan Outreach and Development

Initial outreach to the public and stakeholders included a visit to important tree sites in May 2019, a guided discussion at New Jersey Tree Foundation's Camden TreeKeeper workshop in June 2019 (attendees included several Gloucester City residents), and a public workshop in Gloucester City, also in June 2019. These meetings formed the basis for the first draft of the plan. (See Appendix A for the content of the public workshop meeting).

Following the completion of the first draft, the plan underwent a second draft writing phase to include more data, analysis, and a prioritized list of plan goals and actions, which was facilitated by an additional round of outreach. In this round of outreach, a SurveyMonkey survey of goals and actions was submitted to key project partners in May 2020, and the results were presented to some of the City's key tree advocates at the Gloucester City Green Team meeting in August 2020. (See Appendix B for partial survey results).

The second draft was completed in November 2020. Following the completion of this draft, the plan was put on hold awaiting completion of the Gloucester City tree inventory. However, due to delays in the execution of the inventory, a decision was made in late 2021 to formally publish the plan without the completed inventory.

Community Forest Overview and Background

This section outlines information about Gloucester City's tree cover challenges.

Tree Cover

According to high-resolution landcover data developed by the University of Vermont Spatial Analysis Lab,[3] Gloucester City has 319 acres of tree canopy, or 20 percent of the City's total area (about 1,599 acres, or 2.5 square miles). This area includes canopy cover over structures, roads, and other impervious surfaces. Table 1 and Figure 1 highlight tree canopy area in relation to other land cover types.

Table 1: Land Cover in Gloucester City

Gloucester City		
Land Cover Type	Area (acres)	Percent of Total Area
Water	109.1	6.8%
Wetlands	54.4	3.4%
Tree Canopy	273.1	17.1%
Scrub-Shrub	9.3	0.6%
Low Vegetation	366.2	22.9%
Barren	37.9	2.4%
Structures	179.4	11.2%
Other Impervious Surfaces	295.5	18.5%
Roads	227.2	14.2%
Tree Canopy Over Structures	0.5	0.03%
Tree Canopy Over Other Impervious Surfaces	14.8	0.9%
Tree Canopy Over Roads	31.1	1.9%
Total	1,598.5	100%

Source: University of Vermont Spatial Analysis Lab, 2016

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[3] University of Vermont Spatial Analysis Lab, 2016. drbproject.org/products/

Figure 1: Tree Canopy and Neighborhoods
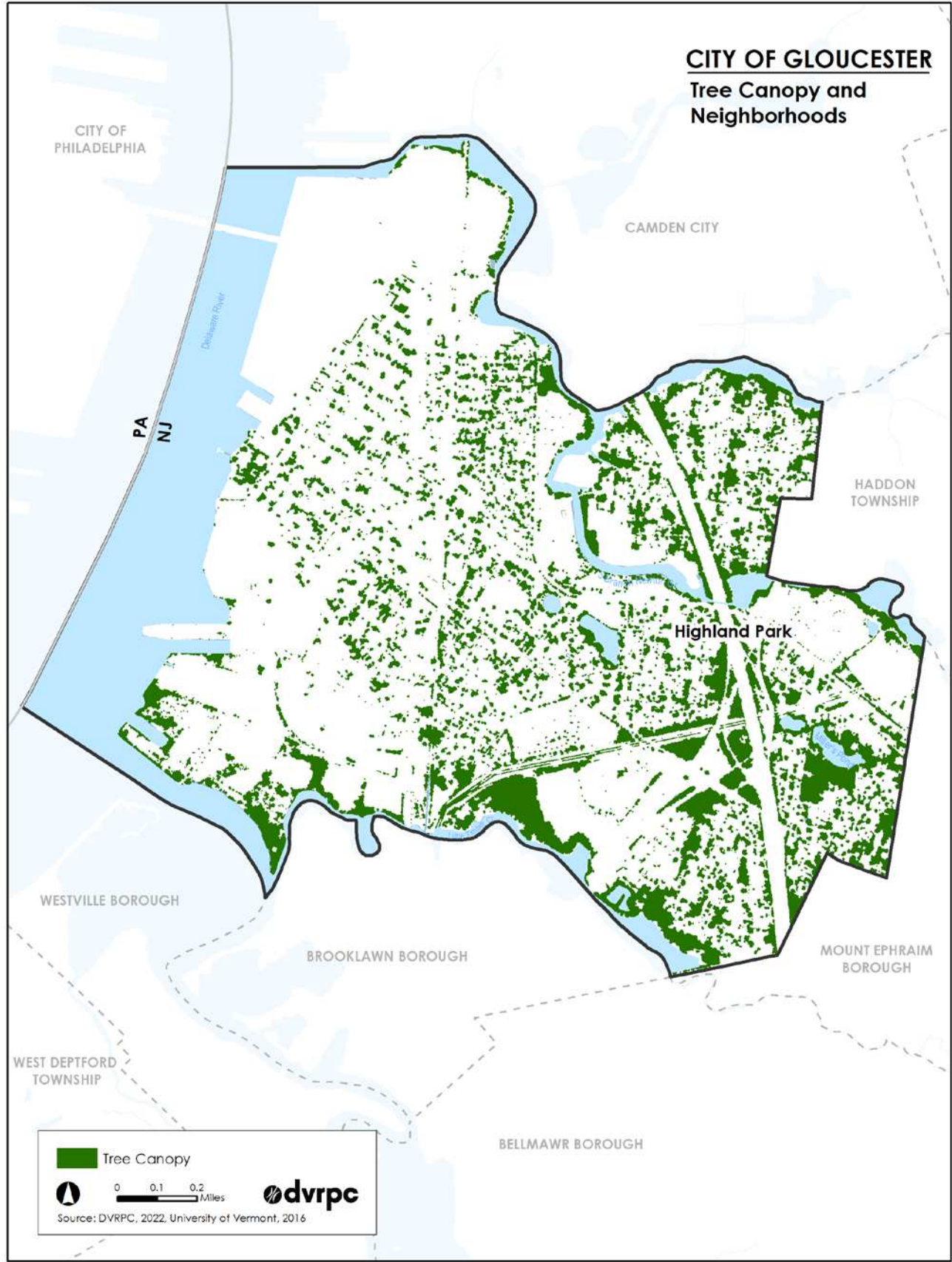
Addressing Community Challenges with Trees

Schools and Childcare Facilities

Figure 2 illustrates the density of tree canopy cover within a quarter-mile radius of school and childcare facilities in the City of Gloucester. The map was created using land cover data from the University of Vermont (UVM) Spatial Analysis Laboratory (SAL).[4] For the purposes of this analysis, several land cover types were combined and classified as 'Other Land Cover Types' as displayed in the map legend; these include pervious surfaces like emergent wetlands, scrub-shrub, barren, and low-vegetation land as well as impervious surfaces such as roads, structures, and parking lots. The tree canopy classification includes all types of tree cover, i.e., tree canopy, tree canopy over structures, tree canopy over roads, and tree canopy over other impervious surfaces.

Figure 2 shows that tree cover density near these facilities is unevenly distributed. Some areas near these facilities have parks that are well-forested, some have nearby streets lined with trees, but others have few to no trees. Because they often serve populations that are especially vulnerable to adverse health outcomes due to environmental factors, school and childcare facilities that exist in areas with low tree cover are ideal locations for focused tree planting.

Table 2 provides the total percentage of tree canopy cover along with the density of tree cover near schools and childcare facilities (within a quarter-mile radius):

Table 2: Tree Cover in Relation to Schools and Childcare Facilities

Total Tree Cover (% of total land area)	Average Tree Cover Density near Schools (%)	Average Tree Cover Density near Childcare Facilities (%)
16.6	18.9	17.7

Sources: University of Vermont Spatial Analysis Lab, 2016; DVRPC

According to our analysis, the overall average density of tree cover relative to school and childcare facilities is slightly higher than the overall City average. However, the average tree cover density and distribution of trees near individual schools and childcare facilities varies within the City. Unsurprisingly, the facilities with the lowest density of tree cover (for each respective facility type) exist in neighborhoods with more limited tree cover such as west of Broadway. Facilities with the highest tree cover density are clustered in the south-central part of the City, between Gloucester High School and Cold Springs Elementary.

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[4] University of Vermont Spatial Analysis Lab, 2016. drbproject.org/products/

Figure 2: Tree Cover Density near Schools and Childcare Facilities
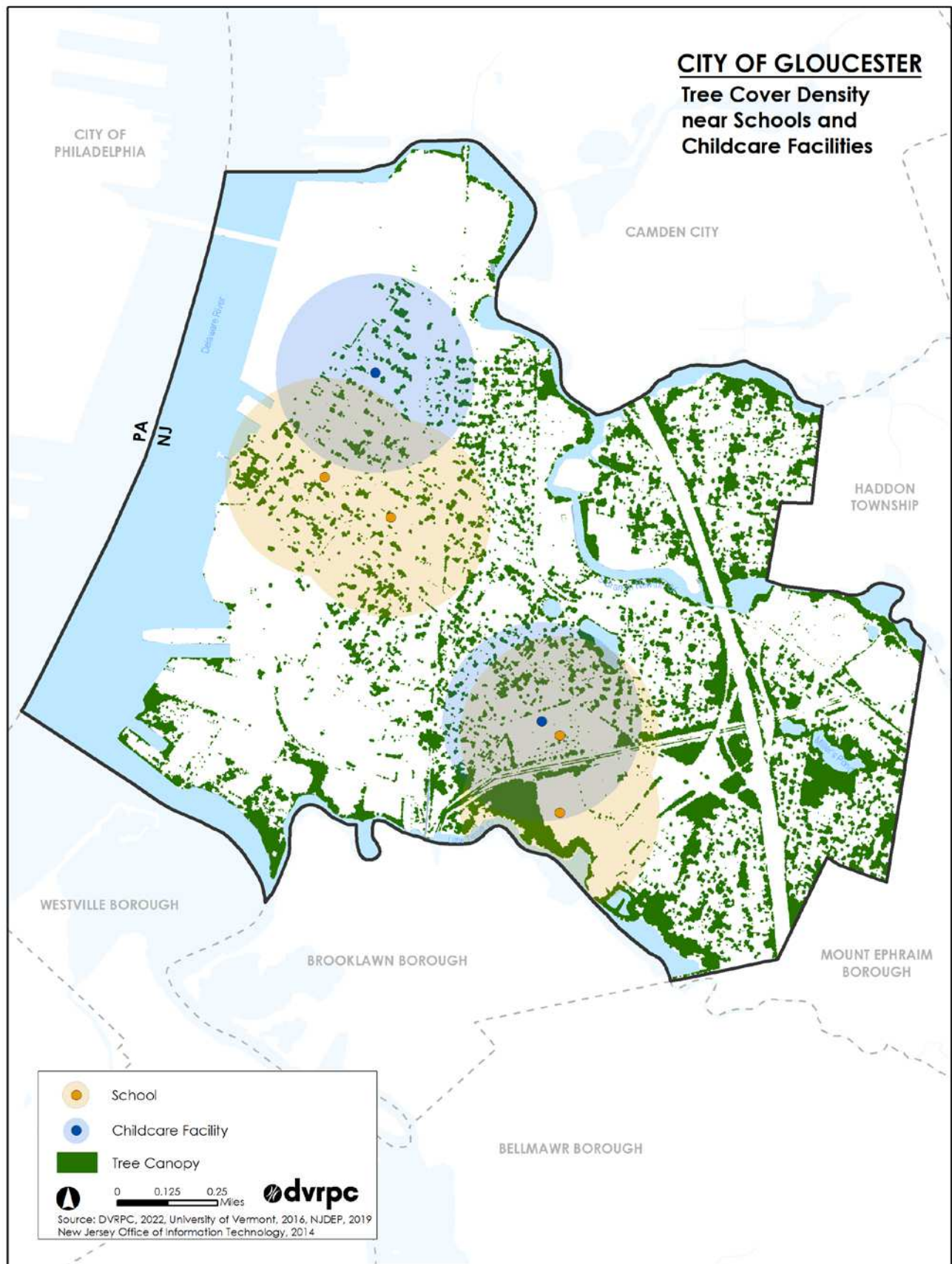
Heat Island Effect

Figure 3 illustrates the potential urban heat island effect (HIE) in Gloucester City. The urban HIE categories ('Low,' 'Low-Medium,' 'Medium,' 'Medium-High,' 'High') were created based on grid cell values that were developed using the NJDEP's 2012 Land Use/Land Cover dataset. Each cell in a 100-meter grid covering the map area was populated with a point value based on the percent of impervious surface in that cell, where the amount of impervious surface was assumed based on the type of land use/land cover that NJDEP mapped.

Comparison of this map with the tree cover map reveals that in general, areas with a higher density of tree canopy have lower potential for urban heat island effect. The HIE map shows that the area west of Broadway has at least Medium potential HIE, and a significant amount of Medium-High to High HIE. Tree cover in this area is relatively sparse, with the exception of some vegetated sites such as Proprietors Park and Union Cemetery, which exist in areas of lower potential HIE. Portions of South Gloucester, especially the area of Gloucester City High School and Crescent Mobile Home Park, exhibit higher potential HIE. Areas of lower HIE and denser tree cover include the banks of Little Timber Creek along the southern border of Gloucester, as well as the area of Miller's Pond in the east. The banks of Newton Creek just north of Highland Park also have lower potential for urban heat island effect.

Figure 3: Potential Urban Heat Island Effect
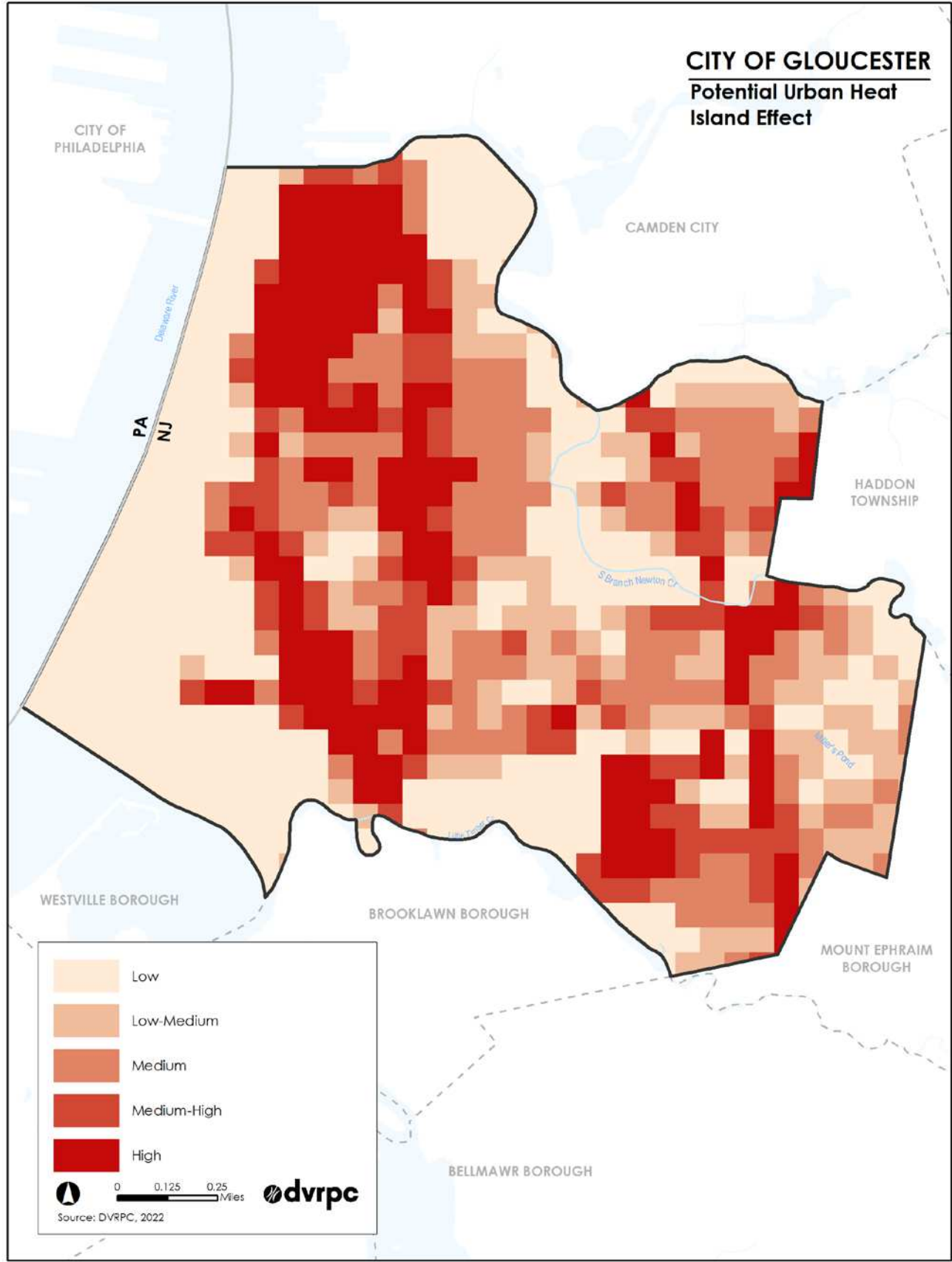
Asthma

An important vulnerability to consider when assessing the air quality benefits of increased tree cover is asthma, which is extremely prevalent in Camden County as a whole, but especially in Gloucester City. According to the New Jersey Department of Health (NJDOH), as of 2014 the rate of asthma prevalence among adults in Camden County was ~3.4 percent higher than the state average of 8.8 percent.[5] In Gloucester City, asthma-related emergency department visits were between 101-150 percent higher than the state average, as illustrated in the Figure 4.[6]

Because trees are proven to improve air quality, increasing the tree canopy cover in these areas may benefit community members that suffer from asthma.

Figure 4: Asthma Emergency Department Visits for Camden County Residents (2008–2012)
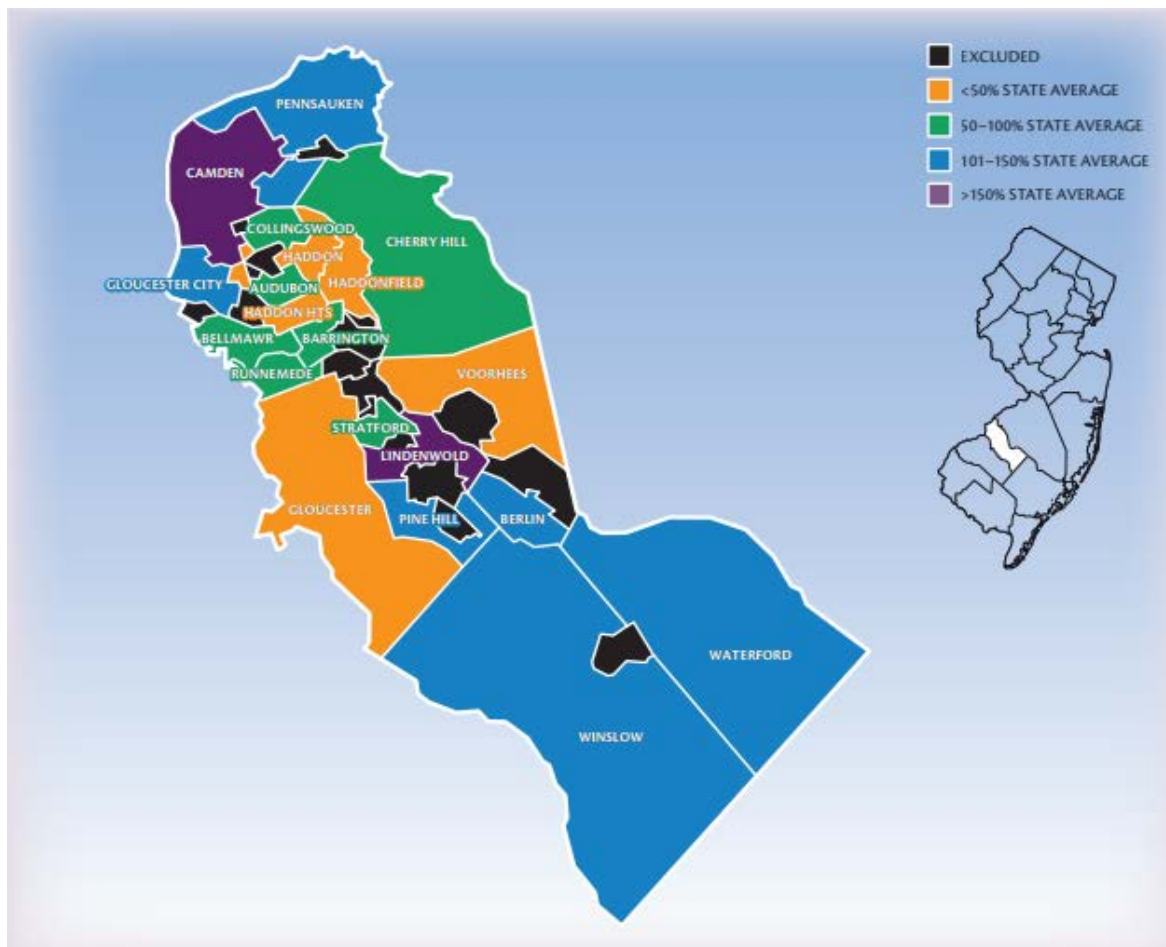
Source: New Jersey Department of Health, 2014

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[5] nj.gov/health/fhs/chronic/documents/asthma_profiles/camden.pdf
[6] nj.gov/health/fhs/chronic/documents/asthma_profiles/camden.pdf

Stormwater

Due to increased amounts of impervious surfaces, overwhelmed drainage systems, runoff from other places, and changing weather conditions, managing stormwater is a challenge for urban areas. Surrounded by the Delaware River and Newton Creek, Gloucester City experiences repeated flooding particularly along King Street, Brooklawn Circle, and along Newton Creek. These floods have caused widespread traffic issues, extensive property damage, and destroyed historical archives. Two recent projects such as the rain garden at the intersection of Cherry Street and Division Street and tree plantings at the elementary and high schools have helped reduce these problems, but substantial issues remain.

Primary causes of this flooding are the high amount of impervious surfaces (43 percent) and the City's combined sewer system which struggles to handle heavy rainfall. This translates into millions of gallons of water flooding streets, homes, businesses, and government buildings every year.

Although solving stormwater runoff issues is a substantial undertaking beyond the scope of any one solution, trees are an important part of any stormwater mitigation strategy. Most useful during periods of slow and steady rainfall where water sits long enough to absorb into the ground, a single tree can consume thousands of gallons of water per year. Trees also help during heavy rain storms because they slow down the flow of water and because their roots reduce the amount of soil erosion.

Illustrating the topography, distribution of impervious surfaces, and location of floodplains are Figures 5, 6, and 7. These three maps define areas where trees could potentially be more impactful. Many of the lowest lying and floodplain prone areas are adjacent to the Delaware River and Newton Creek. On the Delaware River side, this low-lying floodplain extends to the Walt Whitman Bridge in the North and Gloucester City Middle School in the south. Impervious surfaces are spread throughout the City, but especially heavy concentrations of parking lots and big buildings are located at the port facilities on the northern side of the City. Although the terrain in Gloucester City is relatively flat, trees should also be planted in areas with steeper slopes to reduce erosion and slow the rate of runoff. This combination of factors can help prioritize tree plantings in areas where they might help mitigate stormwater the most effectively.

Figure 5: Shaded Topography

CITY OF GLOUCESTER
Shaded Topography

Figure 6: Impervious Surfaces

City of Gloucester
Impervious Surfaces
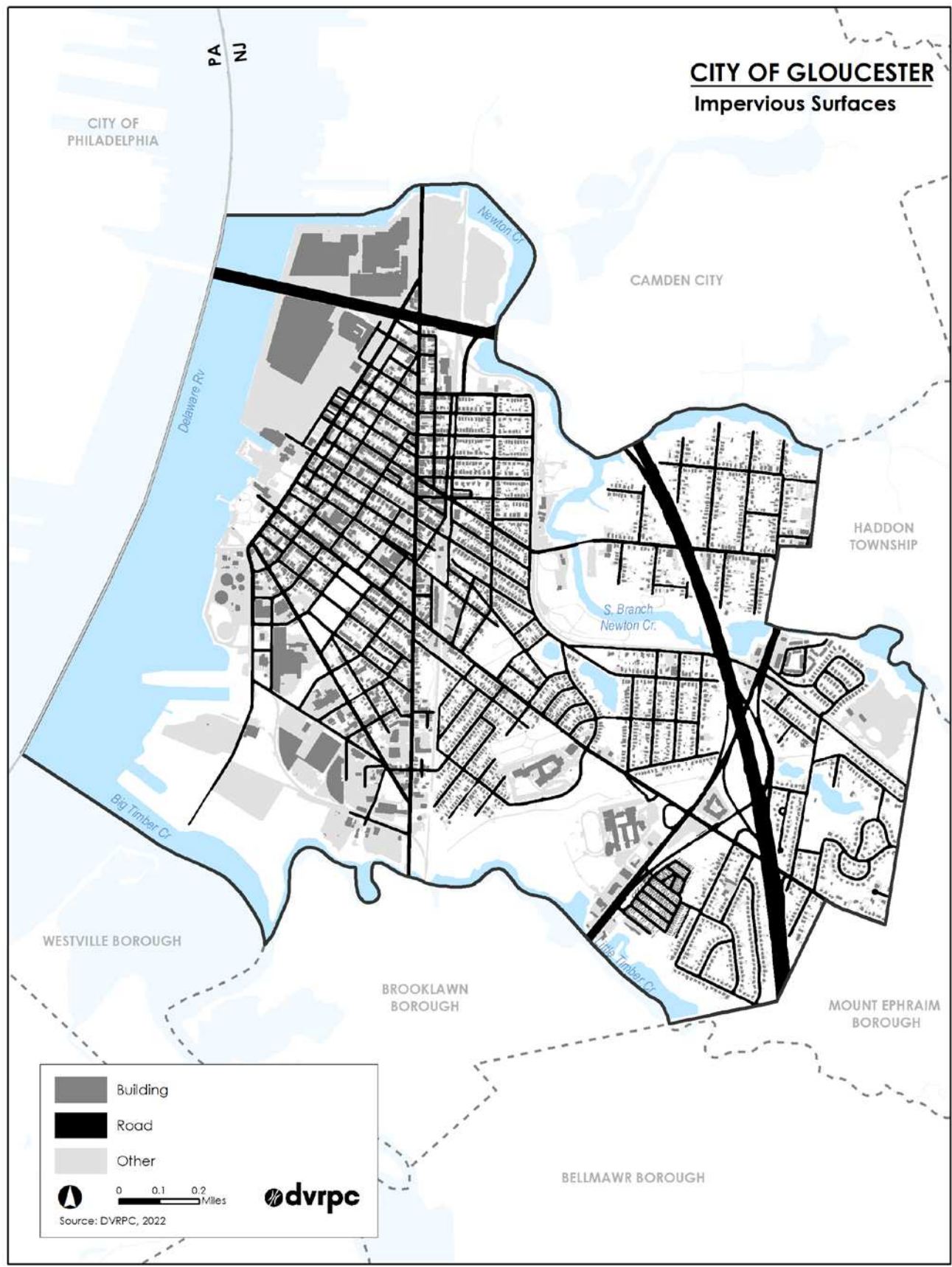
Figure 7: Floodplain
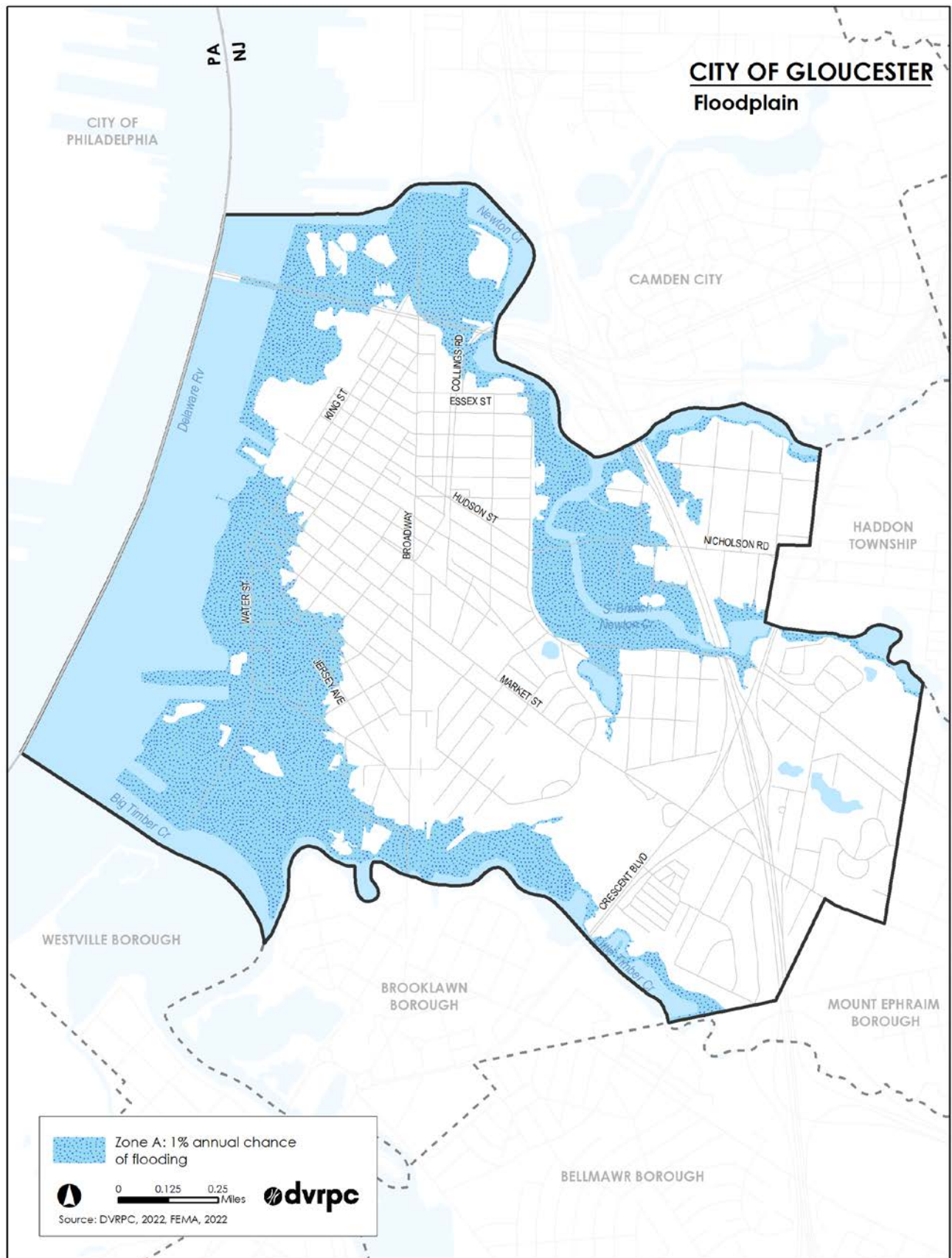
Available Land for Planting and Maintaining Trees

Protected Open Space and Trail Corridors

Illustrated in Figure 8, Gloucester City has 77 acres of protected open space and almost 3 miles of potential trails that are part of the regional Circuit trail network. These existing parks make up a major portion of the City's outdoor recreational resources. Although they do not cover all recreation amenities in Gloucester City, parks and proposed trail corridors are prime areas for trees to be planted and maintained to provide cooling shade and appealing views for park users, walkers, runners, and cyclists.

According to the tree cover data from the University of Vermont (UVM) Spatial Analysis Laboratory (SAL), Gloucester City has a range of density of tree cover in its parks and along future potential trail corridors. Parks such as Proprietor's Park and Martin's Lake have relatively abundant tree cover that should continue to be maintained. Other parks, such as Division Street Playground and Lane Avenue Park would benefit from having more trees to provide additional shade. Substantial tree cover already exists along the potential trail segment of the West Jersey-Seashore Trail just south of Cold Springs Elementary School. Other segments, such as the Gloucester County Light Rail with Trail that run through the middle of downtown are candidate segments for more trees to provide shade.
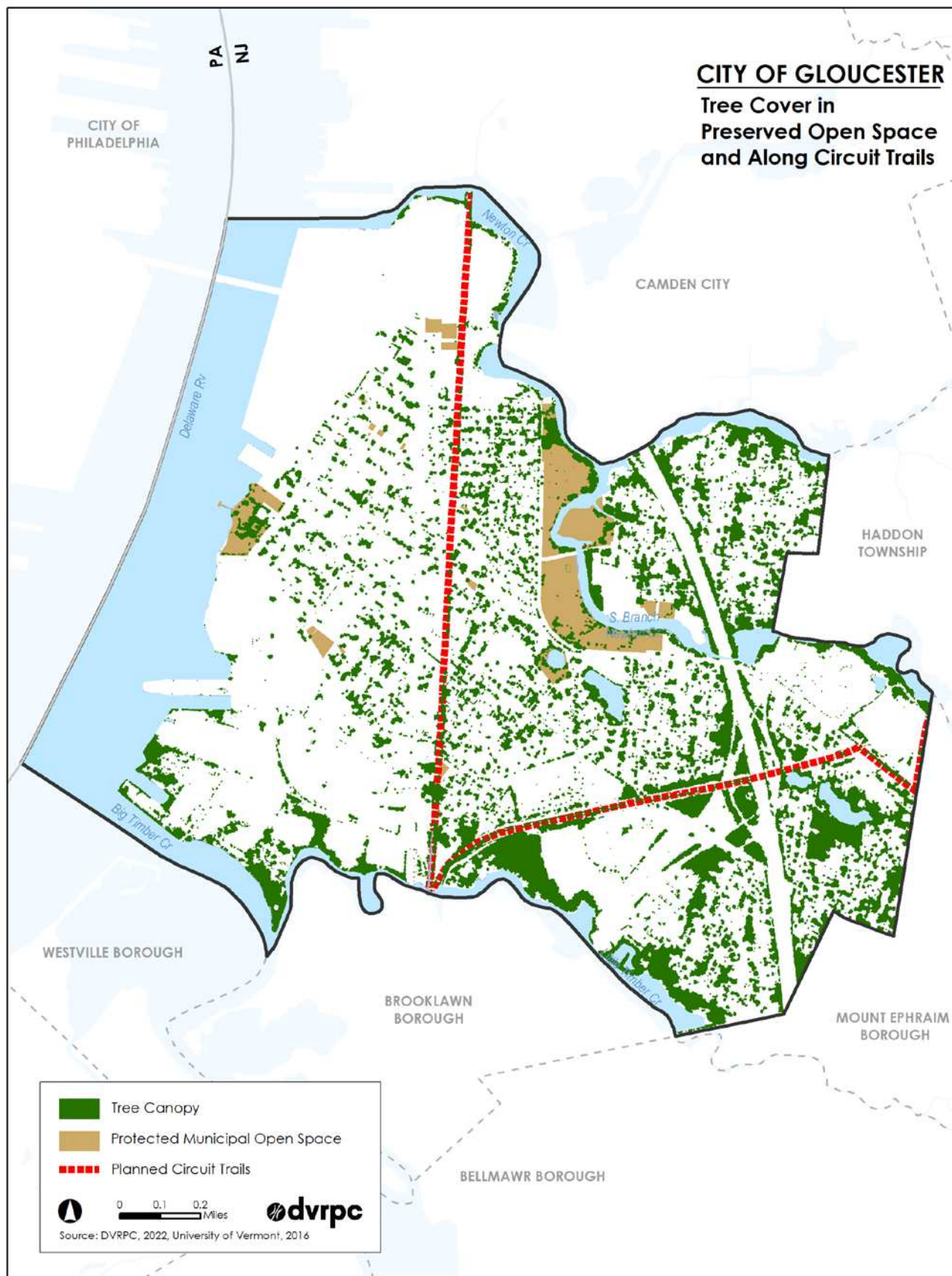
Community Forestry Management

During the public outreach for this plan, residents praised the trees in their neighborhoods, noting that "*these trees provided shade so their kids could safely play outdoors,*" "*absorbed stormwater,*" "*helped them save money by cooling their homes during the summer,*" and "*were beautiful and helped them be in touch with nature.*" Mayor Spencer commented that one of his favorite aspects of trees was the way in which raking leaves in the fall resulted in a close-knit neighborhood, commenting that "*trees bring a neighborhood and a community together.*"

This appreciation has helped keep the City's urban forest in a state of good health. There are a variety of groups of people involved with supporting the City's trees, and their planting and maintenance efforts have enabled the City to earn a Tree City USA designation for five years in a row. Published in 2015, the City's previous community forestry management plan, describes the state of the community forest as "fair to good," noting that "there are numerous street trees residing in curb strips," as well as in "parks and other public spaces."[7] The 2015 plan recorded typical street tree species, including sycamore; white and northern red oak; black locust; red, silver, and Norway maple; Bradford pear; and Japanese flowering cherry. The plan, as well as various residents, also highlighted the presence throughout the City of "*large, mature, and/or unique*" trees that should be noted and cared for."[8]

This plan must acknowledge the role of the pandemic in the care of the City's community forest. Although this coronavirus does not directly affect trees, it will undeniably affect the City's community forestry program. Because COVID-19 has taken a toll on economies at all scales, municipalities have been forced to reduce their budgets, reallocate their funding, and rely on volunteers and alternative funding sources to run a variety of programs, and community forestry is no exception. Much of this plan was developed before the pandemic and it remains to be seen to what degree and how quickly municipal operations and finances will recover from the pandemic.

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[7] Gloucester City, Second Community Forestry Management Plan, prepared by MJS Forestry Consultants, December 2014, p. 7.
[8] Gloucester City, Second Community Forestry Management Plan, prepared by MJS Forestry Consultants, December 2014, p. 7.

Program Administration

Table 3 outlines the City groups and individuals that provide support for the City's trees.

Table 3: Tree Program Support

Person/Organization	Role
Local Government	
Mayor and Council, through the City Clerk/Administrator	Appoints members to the Shade Tree Committee, has authority to have high-risk trees removed in emergencies, reviews Shade Tree Committee's annual budget, approves ordinances and policies related to trees.
Department of Community Development	Oversees Shade Tree Committee's activities.
Planning Board	Reviews land development applications to ensure that they meet the requirements of municipal ordinances, including ones related to tree planting or removal.
Public Works Department	Removes and prunes City owned trees in parks, other public properties, and schools; removes privately owned trees in emergencies; and collects tree materials for recycling at Gloucester Township Municipal Utilities Authority or Peach Tree Country Tractor, a tractor and mulch sales company in Mullica Hill.
Water Department	Addresses water quality issues and stormwater improvements, which sometimes involve tree planting and maintenance.
Office of Emergency Management	Coordinates activities to mitigate, prepare for, respond to, and recover from disasters.
Code Enforcement Officer/Construction Department	Can deem a tree hazardous and notify the homeowner to remove it within 30 days. The City has the authority to remove the tree and have a lien placed on the property for the cost of removal.
Public Library	Provides educational resources to the community; can be a source for sharing information on trees with residents.
School District	Works with the Shade Tree Committee to educate students on tree benefits, especially during Arbor Day.
County Government	
Camden County Municipal Utilities Authority	Assists with green stormwater infrastructure projects, which may include tree planting.
Private Organizations	
Shade Tree Committee	Established in 2005 and is the primary municipal group that holistically protects and manages the City's community forest. Takes care of City trees on public property; conducts tree-related outreach to residents; and provides the mayor, City council, and City government with advice on tree-related issues. Responsible for the implementation of the community forestry management plan. Members are listed in the Acknowledgments (p. 1).

Green Team	Includes City staff, local business owners, members of environmental organizations, and residents. Its focus is to plan for and implement environmentally sound practices in the City, especially the design and construction of green infrastructure projects to address local water quality and quantity issues.
Private Property Owners	Maintain trees on their own property and along the street, as required by City Code (Chapter 25-1C).[9]
New Jersey Tree Foundation	A statewide nonprofit organization that plants trees in Gloucester City and conducts educational workshops for residents on tree care.
Rutgers University Water Resources Program	Works with Gloucester City to study and manage the City's stormwater runoff; trees play a role in the City's management strategies.
Utility Companies	PSE&G, Transco, and Conrail trim trees along utility corridors where tree and wire conflicts exist.

Care of Public Trees

Typical maintenance activities include removing dead trees from streets or parks, cutting limbs from street trees for truck access, and recycling leaves.[10] Proactive tree work includes trimming tree limbs and watering trees.

The Shade Tree Committee supplements the City's maintenance work by conducting cleanups of downed limbs. It also conducts proactive maintenance, holding annual tree trimming days to prune trees for risk/hazard reduction, to provide clearance, and for aesthetics.

Due to the maturity of the City's trees and the planting of very large trees in small areas, many sidewalks are currently damaged by tree roots. There is no program to replace sidewalk slabs due to tree damage for residents, but ordinances require that the homeowner replace any sidewalk that has been identified as damaged. During the public outreach residents voiced concerns about property damage from root invasions into pipes, as well as property damage or personal injury from old trees falling during storms.

In the past, the City has hired a private tree contractor to handle tree planting, tree pruning/removal, landscaping, project supervision, consulting, difficult trees, or other activities. Factors affecting this decision may include the size or seasonal nature of a project, the availability of City personnel and equipment, the availability of internal expertise, safety concerns, project funding source, or work rules.

Tree care along utility corridors is an important issue. Utility companies need to ensure that power lines are clear of entanglements in order to reduce damage and ensure continuity of operations. As such, they have adopted tree care standards to help maintain healthy trees around their infrastructure and have also worked with the City Planning Board on tree planting plans along Station Avenue and Route 130. The tree care work itself is often contracted to different companies, which results in a wide range of quality of tree care.

[9] Gloucester City, Gloucester City Code Chapter 25-1.C, Accessed October 21, 2019.
ecode360.com/35211662
[10] Gloucester City, Second Community Forestry Management Plan, prepared by MJS Forestry Consultants, December 2014, p. 7.

Gloucester City residents and staff have encountered situations where trees were removed and not replaced, trees were cut to 20-foot stumps that residents then had to deal with on their own, and trees were illegally removed on private property without notifying the owner. Continuous and open communication between the utilities and their contractors and the City staff and resident is important in regard to balancing proper pruning strategies with the need to keep utilities operational.

Tree Planting

Tree planting is done by a variety of groups, including the Shade Tree Committee and New Jersey Tree Foundation. Property owners, public or private, also participate. For example, in 2019, Gloucester City School District provided funds to plant 30 trees in the City at $200 per tree.

The 2015 Community Forestry Management Plan notes that tree plantings have not been sufficient to keep up with tree mortality, and there are tree pits that can be filled. Because Gloucester City is mostly developed, there is limited space left for street tree plantings. Underground water and sewer lines prevent tree planting along some entire street lengths, and in some instances, right-of-way easements along streets are too small. Alternative locations in parks or on the properties of amenable private property owners should be explored.

Tree Regulations and Compliance

The following City plans and ordinances were reviewed for tree-related content:

- Gloucester City Municipal Code and Development Ordinance
- Revisions to Master Plan, May 2018
- Gloucester City Reexamination Report, July 15, 2009
- Municipal Stormwater Management Plan, April 2013
- Stormwater Pollution Prevention Plan, October 2018

Through the Master Plan and Stormwater Management Plan, both on their second or third iterations, the City encourages natural and green space and mentions a desire to improve upon the natural resources already established. The City Code contains minimal information about trees, but requires property owners to maintain their trees and developers to create detailed landscape plans that establish vegetated buffers and that ensure 75 percent of the non-constructed portion of the development be covered by trees.

Currently, Gloucester City does not have a dedicated tree ordinance to protect and enhance the City's community forest.

Professional and/or Partner Training

The New Jersey Community Forestry Council requires ongoing in-house training for municipal workers and volunteers on trees, community forests, and related issues as an aspect of participating in the community forestry management plan program. This training ensures that City staff and residents are familiar with best practices for planting and maintaining trees.

As of 2020, New Jersey Forest Service's records of accreditation status listed five municipal employees and six volunteers as Core-trained community representatives.[11] The New Jersey Community Forestry Council

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[11] NJ Forest Service, 2019 Accreditation Status, NJ Urban and Community Forestry Program, May 5, 2020, p. 269.

Training and Accreditation Program is an eight-hour core training program that gives participants an overview of the New Jersey Shade Tree and Community Forestry Assistance Act, background on community forestry and shade tree committees, legal aspects of managing trees, and recognition of hazardous situations. It must be attended by a minimum of two persons representing Gloucester City: one municipal official and one Shade Tree Committee member, board member, or volunteer from the community.

Accreditation status records also indicated that seven community members attended state-approved tree care educational programs to update their knowledge and obtain Continuing Education Units in order to stay accredited by the New Jersey Community Forest Council. Any two individuals involved with the City's community forest (City employees and/or volunteers) may attend programs to obtain Continuing Education Units.

Private Property Tree Care

Private property owners in the City maintain trees on their own property and along the street. According to Gloucester City Code Chapter 25-1C,[12] private property owners are responsible for maintaining street trees between their property and the street in front of their businesses or homes.

Private property owners play an important role in supporting the City's community forest. The Shade Tree Committee works to promote the importance of the community forest using a variety of programs. It holds tree seedling giveaways and Arbor Day celebrations within City schools and runs informational booths at the Gloucester City community events, where members hand out brochures on tree care and answer neighbors' tree questions.

The Gloucester City News Newspaper also works with the Shade Tree Committee and provides space for the discussion of tree care and to publicize tree-related events and activities. Recent examples of promotion by the Gloucester City News include tree giveaways as part of Arbor Day, the City's Tree City USA designation, and tree pruning tips with before and after photos.

Helping residents care for trees is an ongoing initiative, with a variety of resident concerns to address. Residents that attended community outreach meetings expressed a mixture of positive and negative feelings about their local trees. They reported that their neighbors like the benefits that trees offer, but they cannot or do not want to "*bear the maintenance costs that the City requires them to address, notably sidewalks buckling from tree roots*". Some stakeholders consider the current tree maintenance requirements for homeowners, especially aging homeowners, to be a burden in time and money.

Typical Budget and Resources

The City has traditionally allocated funding for trees within several departments. The Department of Public Works, and salaried staff are tasked with some tree work, such as leaf collection and tree removal. The Water Department receives funding through salaried staff for tree-related activities such as watering, moving trees, and assisting in digging for tree plantings. Volunteer hours are also contributed by the Shade Tree Committee and other partners.

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[12] Gloucester City, Gloucester City Code Chapter 25-1.C, Accessed October 21, 2019, ecode360.com/35211662

Table 4 illustrates a typical budget of itemized tree-related funding in 2019. Budget areas that are not shown include the work for the Department of Public Works which is not itemized specifically to trees and the Water Department's tree-related budget because that information was not made available.

Table 4: Typical Budget for Community Forestry Program

Source	Cash	Service In-Kind
Dedicated City Funds: Trees/Community Expenses	$1,000	
Dedicated City Funds: Shade Tree Federation Membership	$95	
Dept. of Public Works: Public Leaf Collection	$39,104	
Dept. of Public Works: Leaf Dumping at GTMUA	$1,560	
Shade Tree Committee: Citywide Cleanup Days	$400	
Volunteer Service Hours (375.5 Hours)		$9,548.97
TOTAL	**$42,159**	**$9,548.97**

Sources: Gloucester City, Gloucester City Shade Tree Committee

Tree Program SWOT Analysis

During the research and outreach for this plan, many important lessons and points of information were collected. Several of these have already been listed in previous chapters, but are covered here in a traditional SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis to show a more comprehensive picture of the community forestry system in Gloucester City. The points below should not be considered as exhaustive, but as a compilation of the information that was highlighted during research and outreach.

Strengths

- Involvement and oversight of the Shade Tree Committee.

- The Shade Tree Committee, City staff, and elected officials have close ties and mutually understand the value of trees, resulting in a high level of support between the Shade Tree Committee and City government for Gloucester City's community forestry program.

- The Department of Public Works and the Water Department have dedicated funding to deal with leaf collection, tree removal, maintenance, pruning, and watering as well as some targeted planting activities.

- There is abundant energy and creativity to improve the community forestry program.

- There are historically significant, unique, and large trees; healthy older and middle-aged trees; and well-maintained young trees.

Weaknesses

- Lack of personnel or funding to proactively maintain the community forest.

- Advisory nature of the Shade Tree Committee.

- Requirement for property owners to share in the management of publicly owned street trees.

Opportunities

- Residents and stakeholders are enthusiastic about the positive impact trees can provide for challenges such as stormwater management, food access, air quality, and urban heat islands.

- Expansion of public outreach and engagement programs can foster increased appreciation for trees and increase the number of people helping to steward them.

- Strong connections with New Jersey Tree Foundation and other community groups can help fill labor and budget shortfalls.

- Availability of funding, educational materials, and guidance from New Jersey Forest Service.

- Support for open space and trees in municipal codes and plans.

Threats

- Leadership transition will leave gaps in the experience and knowledge.

- Enabling ordinance for the Shade Tree Committee has been lost, which makes this Committee vulnerable to change when the current supportive leadership changes.

- Gloucester City's current tree maintenance program may result in the City losing more trees than they are gaining.

- Restoring pre COVID-19 levels of action, priorities, and personnel to Gloucester City's community forestry management program.

- External threats such as the effects of climate change (heat, flooding) and new pests will require attention.

2022-2032 Goals and Actions

This goals and actions in this section were prioritized by the main contacts established in Gloucester City over the course of the plan development process.

The content below brings together the observations and brainstormed ideas of residents and professional stakeholders at the public outreach sessions that were convened for this plan. See Appendix A for minutes from these meetings. The edited results of the goal prioritization survey can be found in Appendix B.

Summary

Table 5 outlines a phased schedule for the goals and actions. They have been divided into three phases over the next ten years to help with the implementation of the plan.

Table 5: Phased Schedule for Goals and Actions

Major Goals	Phase 1 (0–3 Years)	Phase 2 (3–6 Years)	Phase 3 (6–10 Years)
1. Tree Planting	Develop a tree-planting plan for the City.	Implement planting plan.	Implement planting plan.
2. Engage Partners	Increase interest in trees. Coordinate partner efforts.	Increase interest in trees. Coordinate partner efforts.	
3. Help Residents and Private Property Owners Maintain Trees	Support residents with maintenance and education.	Support residents with maintenance and education.	Provide residents a manual on tree maintenance.
4. Care of Public Trees	Coordinate routine tree maintenance. Proactively maintain community forest.	Coordinate routine tree maintenance. Use, distribute, and dispose of tree products. Conduct tree inventories.	Create a tree care disaster plan.
5. Tree Regulations and Compliance	Remain in compliance. Create tree protection ordinance.	Align City plans and ordinances with City tree goals. Create enabling ordinance for Shade Tree Committee.	Advocate for statewide regulations.
6. Internal Training	Train "front-line" staff on technical topics.	Complete required credential maintenance.	Work with City leaders on developing a community forest vision for the City.

Full List of Prioritized Goals and Actions

Major Goal 1: Tree Planting

Phase 1 (0–3 Years)
Develop a tree-planting plan for the City.

1. Use existing data to determine priority areas.

2. Using New Jersey Shade Tree Federation's "Trees for NJ Streets" (latest edition), the Gloucester City Approved Tree List, and other available publications, develop specifications for tree planting.

3. Create a tree-planting schedule.

4. Utilize right tree in the right place (Appendix C) and tree planting with a purpose guidance.

5. Use areas that stakeholders suggested in the outreach for this version of the plan. (Appendix A)

- All empty tree pits.
- East side of jogging track in Johnson Park.
- Corner of Crescent Boulevard and Market Street.
- Along Johnson Boulevard from Johnson Park to Gloucester City Swim Club.
- Entire section of town west of Broadway.
- The empty lot on Jersey Avenue between 5th Street and 6th Street.

Phase 2 (3–6 Years)
Implement planting plan.

1. Construct enhanced tree pits to capture stormwater runoff in areas that flood.

2. Plant trees using a contractor, volunteers, Public Works employees, or the New Jersey Tree Foundation. Target the following areas for plantings:

- Areas that flood (see Floodplain and Stormwater maps).
- Shade trees in all playground areas.
- Empty tree pits filled.
- West side of Broadway.
- The 2015 Community Forestry Management Plan recommended planting near City entranceways, the central business district, parks, and active recreation areas.

3. Conduct general tree education.

- Add signage describing the tree species and benefits that the tree provides.
  - Possible precedent: Trees in Glen Ridge and Riverton use tags with QR codes.

Phase 3 (6–10 Years)
Implement planting plan.

1. Continue to plant trees using a contractor, volunteers, Public Works employees, or the New Jersey Tree Foundation.

2. Conduct general tree education.

Major Goal 2: Engage Partners

Phase 1 (0–3 Years)
<u>Increase interest in trees.</u>

1. Advertise Shade Tree Committee meetings and activities to increase public participation.

2. Continue celebrating Arbor Day (in New Jersey, the fourth Friday in April each year) in City schools. Tree celebration opportunities on Arbor Day, Earth Day, or other days include:

- Plant a tree, or prune and clean an undeveloped patch, on school grounds, City-owned grounds, or another publicly owned property.
- Give away free tree seedlings (from NJDEP State Tree Nursery).
- Run a poster or poetry contest on the importance of trees, particularly if this is still a statewide competition.
- Hold a tree-related environmental project for high school students.
- Host tree pit decoration contests.

3. Include media, City officials, volunteers, and the public in meaningful, visible tree-related activities.

4. Continue outreach to local schools to incorporate tree education into science curricula. (See Appendix F for lesson plan ideas)

5. Provide property owners with the opportunity and choice to plant a tree on their property.

Financial Assistance for Tree Maintenance

Several precedents exist for offering assistance to help residents maintain their trees. **Habitat for Humanity** provides no-interest loans and volunteer labor to families for home preservation needs. These loans are disbursed based on income, need, and willingness to help with the project, and can be used for tree trimming and hazardous tree removal. Each program is operated by the local chapter of Habitat for Humanity and so can vary, but some examples are Fauquier County (VA) Habitat for Humanity and North Central Iowa Habitat for Humanity.

The **City of Cleveland Department of Aging** partners with the City's **Department of Public Works** to provide hazardous tree and branch removal services to low-income seniors and adults with disabilities. This program is funded through the US Department of Housing and Urban Development and requires interested and eligible participants to submit a written application with income and home ownership verification. Charlotte NC, and New York City, NY also have municipal programs to help with tree repair, but funding is generally limited, and repairs are prioritized based on severity of damage.

Further reading:
- fauquierhabitat.org/what-we-do/programs/home-repair-service.html
- nycgovparks.org/services/forestry/trees-sidewalks-program
- city.cleveland.oh.us/sites/default/files/forms_publications/CTAPSTreeProgramApplication.pdf
- wbtv.com/2019/01/04/charlotte-testing-out-pilot-program-that-helps-homeowners-with-trouble-trees

6. Continue renewing the City's participation in the National Arbor Day Foundation's Tree City USA award program and take advantage of the free and low-cost promotional and educational materials as well, including road signs, flags, and a plaque.

7. Amplify the benefits, importance, and awareness of the community forest through local media, both print and electronic.

- Update the City's website and Shade Tree Committee webpage to provide more information to readers.
    - Post the community forestry management plan on the Shade Tree Committee webpage and with other municipal plans.
        - Distribute and publicize this plan and have meetings or conversations with residents about their suggestions for implementing it.
        - In the long-term, gather residents' thoughts regularly for plan updates.
    - Post tree forms and applications.
    - Advertise local tree-related meetings and activities.
    - Link to other tree care organizations, such as the International Society of Arboriculture, National Arbor Day Foundation, and the New Jersey State Forest Service Community Forestry bulletin board.
    - Provide tree care tips from the Arbor Day Foundation and International Society of Arboriculture, advertise City-approved tree species for planting.
    - Give interviews to local print news outlets (especially Gloucester City News) and access cable television stations regarding community forestry; get video and print coverage of events such as Arbor Day, tree plantings, and inventories.
    - Use social media to post information on tree-related events, news, "before and after" shots of trees that have been maintained, and other information that is useful and accessible to residents.
    - Use videos, especially those created by community members, to promote trees.

8. Distribute educational information, such as tags on trees, signage, or leaflets, whenever trees are planted.

Coordinate partner efforts.

1. Organize regular meetings of the Shade Tree Committee, municipal staff, planning and zoning boards, nonprofit tree-planting or City greening partners, and local property owners and residents, as well as public officials when relevant. Discuss implementation of the plan and coordination between citywide and neighborhood efforts.

2. Coordinate the delivery of green stormwater infrastructure.

3. Meet and work with other interested community organizations to share information and resources and coordinate efforts for mutually beneficial projects (i.e., Town Watch, Master Gardeners, Boy Scouts/Girl Scouts of America, Garden Club, sports organizations, and other local civic groups).

4. Conduct regular outreach and engagement with utility companies. (See Appendix E for more guidance and resources from other communities.)

- Coordinate lines of communication related to utility maintenance updates between:
    - City and utility

- City staff (for example, Department of Public Works) and resident groups like the Shade Tree Committee
- Choose a well-connected liaison (or liaising group) at the City who has a background in tree management and will share utility updates with residents and other City staff as well as collect resident or elected official concerns and share them with the utility.
- Ask utilities to conduct a tree audit of problem utility corridor areas with City staff and residents walking along utility corridors and identifying areas of tree and line conflicts as well as priority areas where aesthetic appearances should be prioritized.
- Encourage City staff in the Department of Public Works to complete line clearance certification so they can do small-scale tree trimming work near power lines in the City.
- Identify which contractors complete quality work and advocate to utilities for their continued use.
- Provide feedback to utilities when contractors have not completed quality work.

5. Communicate with private developers to ensure they are planting appropriate trees.

6. Provide planning and zoning board members with information to identify when the wrong trees are used in a site proposal.

Phase 2 (3–6 Years)
Increase interest in trees.

1. Establish and support local participants interested in being involved with tree planting and maintenance on an ongoing basis.

- Create neighborhood beautification captain positions and find residents to fill those positions.

Coordinate partner efforts.

1. Conduct regular outreach and engagement with utility companies. (See Appendix E for more guidance and resources from other communities.)

2. Continue to communicate with City staff or resident groups and private developers.

Major Goals 3: Help Residents and Private Property Owners Maintain Trees

Phase 1 (0–3 Years)
Support residents with maintenance and education.

1. Hold maintenance days.

2. Hold workshops and demonstrations for pruning, tree-planting techniques, hazard and pest identification, and other topics.

3. Assist low-income residents with tree maintenance.

- Identify priority areas for assistance (could overlap with tree-planting areas or other criteria).

- Develop application process and criteria for choosing residents.

4. Share "Right Tree in the Right Place" information with residents to guide their planting decisions. (See Appendix C for information.)

Phase 2 (3–6 Years)
<u>Support residents with maintenance and education.</u>

1. Provide information to residents on how to identify a hazardous tree; correct maintenance, including when to prune, what to look for, what suckers are; how to care for newly planted trees; how to identify and manage pests and invasive species.

2. Provide information to new homeowners on tree maintenance.

Phase 3 (6–10 Years)
<u>Provide residents a manual on tree maintenance.</u>

Major Goal 4: Care of Public Trees

Phase 1 (0–3 Years)
<u>Coordinate routine tree maintenance.</u>

1. Reach out to community groups to learn about their maintenance concerns and priorities.

2. Support residents in maintaining their trees.

3. Host regular meetings with City staff, county staff, and neighborhood representatives to discuss ongoing tree issues.

4. Solicit support from private property owners.

5. Revisit policies on street tree maintenance responsibilities to determine if they are appropriate based on City funding and personnel, as well as resident capacity.

<u>Maintain community forest.</u>

1. Conduct proactive maintenance of street trees (as per ordinance), trees in active recreation parks, and around schools and other public buildings.

2. Create a maintenance plan for young and mature trees.

- Divide the City into sections for routine monitoring and determine the order for monitoring and action on each zone.
    - Focus first efforts on public parks, and then use tree inventory data to determine priorities and objectives.

- Decide on a method of recording monitoring and inventory data, where data will be stored, who will receive it, and how it will be updated.
- Prioritize actions out of the following based on available funds and staff time: removal of tree stakes, re-mulching, fertilization, sidewalk/tree conflict monitoring, disease/pest monitoring, and pruning.

Phase 2 (3–6 Years)

Coordinate routine tree maintenance.

1. Solicit support from private property owners.

2. Revisit policies on street tree maintenance responsibilities to determine if they are appropriate based on City funding and personnel, as well as resident capacity.

Use, distribute, and dispose of tree products.

1. Look for opportunities to recycle branches, leaves, etc. from cut or downed trees, or distribute to residents.

Conduct tree inventories.

1. Obtain funding to conduct an inventory.

2. Develop a hazard tree inventory.

- Focus first on City owned street trees, trees on City owned property, and trees in active recreation parks.

3. Develop a heritage tree list of historically significant, unique, and large-sized trees.

- These trees can be the focus of an update to the existing tree ordinance to ensure their protection, and part of Arbor Day activities, historical research, or maintenance activities for the Shade Tree Committee and other interested groups.

4. Conduct a full census of the City's trees.

- Possible variables to track include species, location, size, health, hazard trees, specific maintenance needs, and/or insect and disease problems.
- Share list with Public Works for inspection and action, using Public Works crews or contractors.
- Prioritize public trees first over private.
- Use data to determine future maintenance priorities.

5. Regularly evaluate data and use it to update maintenance trends, needs, and opportunities.

Phase 3 (6–10 Years)

Create a tree care disaster plan.

1. Determine protocols to use to monitor risk trees ahead of storms and respond to tree damage during or after a disaster.

2. Convene local, county, and state emergency management departments as well as additional local personnel involved in emergency response to develop standard operating procedures for tree care and management during and after an incident.

Major Goal 5: Tree Regulations and Compliance

Phase 1 (0–3 Years)
Remain in compliance.

1. Update the community forestry management plan regularly.

Create tree protection ordinance.

1. Conduct initial research to create tree protection ordinance.

- Review best practices from other cities.

2. Consider ordinance sections such as no-net-loss policy for tree removal, requirement for tree removal companies permitting, and stump removal requirement.

3. Through outreach, educate residents and municipal staff and officials about the positive effects of a new ordinance and determine the citywide level of support.

Phase 2 (3–6 Years)
Align City plans and ordinances with City tree goals.

1. Shade Tree Committee should meet regularly with those updating City plans and ordinances, including the Master Plan, to make sure that the community forest is considered and included in those revisions.

Create enabling ordinance for Shade Tree Committee.

1. Grow City support for making the Shade Tree Committee a commission, which would give it more oversight of tree-related activities in the City.

Phase 3 (6–10 Years)
Advocate for statewide regulations.

Major Goal 6: Internal Training

Phase 1 (0–3 Years)
Train "front-line" tree staff on technical topics.

1. Work with Superintendent/Supervisor of Public Works, Streets Department staff, and tree workers to complete ongoing education in tree hazard evaluation and assessment, proper tree pruning concepts and application, and insect and disease identification and control (integrated pest management).

2. Work with Planning and Zoning Board members on tree practices and policies appropriate for urban environments.

3. Continue mandated training related to trees for key staff or officials whose work affects trees.

Phase 2 (3-6 Years)
Complete required credential maintenance.

1. Allow for municipal official to obtain Core-certified training as required by New Jersey Shade Tree and Community Forestry Assistance Act.

2. Allocate training resources to City staff and volunteers. (Appendix D)

Phase 3 (6-10 Years)
Work with City leaders on developing a community forest vision for the City.

Next Steps

Future Budget and Resources

The majority of the work listed in the goals and actions above requires additional funding sources. Because of the pandemic, the City expects a conservative municipal budget for this year and upcoming years, and will not be adding a dedicated line item for tree maintenance. The City will instead rely on in-kind volunteer hours and grants to maintain its trees for the foreseeable future. (See Appendix G for resources available as of the publication of this plan.)

Stakeholders should review available funding and personnel resources on an ongoing basis to see which goals and actions from the community forestry management plan are achievable with what is available and should continue to do so as circumstances change.

Timeline

The plan implementation timeline presented in Table 5 estimates implementation over the next ten years, noting that the capacity of the City may change.

Ongoing Review and Adaptation of Program

The Gloucester City Shade Tree Committee and partners will continue to meet regularly to discuss the progress that is being made to implement this plan. Stakeholder partners include members of the Shade Tree Committee, municipal staff, planning and zoning boards, nonprofit tree-planting and City greening partners, and representative local property owners and residents. Elected officials and state or county officials are asked to attend periodically when their input is needed.

The committee uses these meetings to get support for new projects, talk about ongoing or upcoming projects, reflect on the success of recently completed projects, and come to consensus on revisions to the plan or changes to future projects that may be needed. This committee is also well-positioned to create the regular plan implementation updates that are required by the New Jersey Shade Tree and Community Forestry Assistance Act, and conduct future updates to the community forestry management plan.

CHAPTER 7:

References

Casey Trees, "Right Tree, Right Place: Obvious and Not So Obvious Factors to Consider When Planting," caseytrees.org/2018/07/right-tree-right-place-obvious-and-not-so-obvious-factors-to-consider-when-planting/

Forest Service U.S. Department of Agriculture, "Tree Owner's Manual for the Northeastern and Midwestern States," fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev7_013722.pdf

New Jersey Forest Service, "Tree pests," nj.gov/dep/parksandforests/forest/foresthealth/index.html

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Appendix A

Notes from Outreach

Appendix A: Notes from Outreach

June 25, 2019 Gloucester City Public Workshop Meeting Minutes

Gloucester City, Camden County, NJ
Public Workshop for the Community Forestry Management Plan

Tuesday, June 25, 2019
Gloucester City Municipal Court
6:00 PM

Attendees: 15 recorded, at least 1 unrecorded (Mayor Spencer)
1 NJDEP employee (Levon Bigelow)
2 DVRPC staff (Melissa Andrews, Miles Owen)
2 NJ Forest Foundation employees (Crystal Wessel, Meredith Brown)
2 City of Gloucester staff/elected officials (Eric Fooder, Pat Keating – council member, Daniel Spencer, mayor)
10 residents
8 of the attendees were Tree Committee/Beautification Projects volunteers, 3 were Tree Committee volunteers

Notes from Gloucester City Shade Tree Committee update
- PSE&G is planting 40 trees in September
- Gloucester City Schools are providing funds to plant 30 trees at $200 per tree
  - Goal to plant these with students

Introductions and presentation of community forestry management plan
Q: Who hasn't heard of the CFMP?: 0 respondents

Group ice-breaker questions
Q: How would you describe the impact of trees in your neighborhood?
- Sun protection/shade – kids can go out and play
- Aesthetics
- In touch with nature
- Absorption of stormwater (one other person in agreement)
- Saving money to cool down a house – shade, breaking wind

Q: What are the reasons you want to see more trees in your neighborhood?
- Raking leaves in the fall – results in a close knit neighborhood when everyone is raking leaves together
- Hide unsightly areas (like utilities)
- Address flooding

Q: What is a top reason you or your neighbors might choose not to plant a new tree, or might choose to remove a dead/declining tree on your property?
- Root invasions through pipes, sidewalks
- Certain species are destructive – have to replace with species of less destructive nature so you get benefit without added cost from destruction
- Fear of old trees falling in a bad storm
- Neighbors mention utilities savaging trees – unsightly and causes disease

Comments from mayor
- Trees are important
- Wants to get trees back on N. Brown St.
  - Trees removed because of pipe work but the street isn't a beautiful as it used to be
  - "Trees bring a neighborhood and a community together"

Small group discussions

<u>Mission of plan</u>

Q: What are your thoughts on the current mission statement?
- Good as-is; simple
- Does this mean plant? (MA note: Attendee was asking if the concept of planting is included in the mission statement)
- Beautify
- Remove bad trees
- Maintain
- Keep short and sweet
- Planting and maintenance, short + sweet + beautify for community

Q: Develop a few statements about your ideal scenarios for the community forest in Gloucester City.
- More trees and shrubs in parks
- Focus planting trees in flood-prone areas to help mitigate flooding and stormwater runoff
- Fill empty tree pits and replace dead trees
- Work with utilities to prune for tree health and not just wires
- Budget question
  - Currently have $400/yr budget with $7K of in-kind contribution (MA note: Need to verify this)
- East side of jogging tract (MA note: Attendee wants this area – off of Klemm - to be forested to soak up water)
- Coordination of delivery of green stormwater infrastructure among the different groups prioritizing it
- Know what land is available for planting trees
- <mark>Statewide</mark> protocols requiring stormwater management
- No more tree drought areas
- Have enhanced tree pits to capture runoff
- Have strong maintenance plan for new trees
- Choose the right tree for the right place – ensuring that quality, proper trees are planted, avoiding problems in the future
- Address urban heat island effect
- By 2022 – shade trees in all playground areas
- By 2023 – all empty tree pits filled
- By 2025 – Increase tree canopy on west side of town (MA note: West of Broadway)
- Need to soak up stormwater with GSI
- Trees in every neighborhood
- Side notes:

- o Rain garden on Jersey Ave behind 5th and 6th streets
- o Can this plan include woody plants, like rhododendrons, and flowers?
- o Cities are required by state to take up 85% of wet water flow; other 15% has to be managed onsite

<u>Tree planting and maintenance inventory</u>

- ☐ Rental properties
- ☐ Urban infrastructure plans
- ☐ Identified a few parcels that may be public and could accommodate trees – need to verify ownership
- ☐ Identified neighborhoods that should be prioritized for more plantings
- ☐ Identified neighborhoods that were recently flooded and flood frequently
- ☐ Identified area that gets runoff from I-76
- ☐ Map Comments (Map 1)
  - o Potential tree planting locations
    - Corner of Crescent and Market
    - Along and next to the walking path at Johnson's Park
    - Along Johnson's Blvd from Johnson Park to Gloucester City Swim Club
    - Entire side of town west of Broadway
    - Empty lot on Jersey Ave between 5th and 6th and next to Gloucester City Middle School
- ☐ Map Comments (Map 2)
  - o Flooding sites
    - Along and next to the walking path at Johnson's Park
    - "Heavy rain – water rushes down" at Park Ave between Orlando Ave and Greenwood Ave
    - "Rain flooding last week" – pond bracketed by Park Ave, Greenwood Ave, Highland Blvd, and Bynes Ave
    - "Highway drainage problem" – I-76 around Nicholson Rd
  - o Potential planting sites
    - "Candidate for tree planting," "Superfund site?," and "Dept. of Utilities" - Empty lot between Newtown Creek, Nicholson Rd, and Temple Ave
  - o Other comments
    - "New fields" – Johnson Blvd Recreation Dev on Johnson Blvd between Paul St and Mercer St
    - "City owned?/DOT, possible open space" – empty lots at corner of Rutgers Ave and Jefferson Ave adjacent to I-76
    - "Not buildable, went underwater" and "contaminated, used to have trees??" - Empty lot on Jersey Ave between 5th and 6th and next to Gloucester City Middle School
    - "Pipe, no longer has water movement" – dotted line between Martin Lake and Newtown Creek

<u>Education</u>

Q: What would you like to learn about trees, or have others (neighbors, children) learn about trees?

- ☐ Correct pruning and care
- ☐ When to prune, what to look for
- ☐ Proper maintenance
- ☐ Maintenance and upkeep
- ☐ Proper maintenance of newly planted trees
- ☐ Basic pruning – what to do about suckers and what they are
- ☐ Proper, not volcano, mulching
- ☐ Planting the right tree in the right place avoids many problems associated with trees
- ☐ Benefits of trees
- ☐ Goal for 2025: neighborhood beautification captains
  - o Large renter population makes this challenging
- ☐ Hazardous trees and care
- ☐ Pests/invasive species
- ☐ Why it is important to take care of tree in front of your house
- ☐ Side note:
  - o Camden County has program where offenders can assist with tree planting. Meredith Brown has more information.

Q: What would be the best way to convey each piece of information (workshops, newspaper articles, radio, social media, etc)?
- ☐ Workshops for pruning and maintenance
- ☐ Social media for everything
- ☐ Get to people through kids – make it interactive and educational (like the GCSTC's recent commercial-inspired video of what to do/what not to do)
- ☐ Videos
- ☐ Need continuity of participants
- ☐ Show, teach, and demonstrate
- ☐ Before and after shots of trees that have been maintained
- ☐ Include HS students in volunteer planting
- ☐ In-person workshops
- ☐ Demo projects
- ☐ Webinars (for tree hazards)
- ☐ Local newspaper – Gloucester City News
- ☐ Distribute leaflets whenever trees are planted
- ☐ Provide information when a home is bought on how to maintain trees
- ☐ Ongoing city-mandated training related to trees

<u>Actions and responsibilities</u>

Q: What are some of the best ways to encourage others to plant and protect trees on their property?
- ☐ Empower residents to choose their trees and teach proper maintenance
- ☐ Educate on choosing the right tree for the right place
- ☐ Have maintenance days!
- ☐ Tree trees giveaways
- ☐ Have a table at fairs to educate

- ☐ Give out pamphlets on maintenance at events
- ☐ Require permits to take down trees
- ☐ Education on tree planting techniques (NJ Forest Foundation does 15-20/yr)
- ☐ Education
- ☐ Giving residents choice to plant tree on property
- ☐ Providing manual on how to maintain trees

Q: What are some of the most important things you and your neighbors can do to better maintain the trees in your yard and neighborhood?
- ☐ Take ownership
- ☐ Decorate tree pits
- ☐ Prune and mulch trees properly

Q: What are some of the most important things that Gloucester City Government can do to better maintain the trees in your neighborhood?
- ☐ Public-private partnerships
- ☐ Reexamine tree ordinance – what happens when the language of the ordinance is actually implemented
- ☐ Add stump removal requirement to tree ordinance
- ☐ Continue to support tree plantings and maintenance – we are grateful for their help and watering trees!

Group report-back (few words describing most important concept)
- ☐ Public buy-in
- ☐ Coordination

Appendix B
Results of the Goals and Actions Survey

Appendix B: Results of the Goals and Actions Survey

Results of Gloucester City CFMP Goal Prioritization Survey

The Gloucester City Goal Prioritization Survey was conducted by DVRPC from May to June of 2020. It was prepared using SurveyMonkey and the results were analyzed and presented by DVRPC to Gloucester City Green Team Members on August 12, 2020 and are shown in Table B-1. Each Goal and Action was scored from one to five, with five being the highest priority level.

Table B-1: Results of Gloucester City CFMP Goal Prioritization Survey

Goal	Score	Action	Score
Engage Partners in Planting and Maintenance	4.33	• Get more residents and private property owners interested in trees.	4.25
		• Help residents and private property owners better maintain their trees.	3.5
		• Coordinate the efforts of tree-management partners.	3.5
Plant New Trees	4.33	• Develop a tree planting plan for Trenton.	4.2
		• Implement planting plan.	3.8
Care for Public Trees	4.17	• Coordinate routine tree maintenance.	4
		• Proactively maintain community forest.	3.8
		• Use, distribute, and dispose of tree products.	3.6
		• Conduct a tree inventory.	3.4
		• Create a tree-care disaster plan.	3.2
Comply with and Enforce Regulations and Requirements	3.5	• Remain in compliance.	3.8
		• Create tree protection ordinance.	3.6
		• Align City plans and ordinances with tree goals.	3.4
		• Create enabling ordinance for Shade Tree Committee.	3.4
		• Advocate for statewide regulations.	3.4
Conduct Internal Training	3.5	• Train front-line tree staff on technical topics.	4
		• Complete required or credentialed maintenance.	3.6
		• Train City leaders on big-picture topics.	2.8

Appendix C
"Right Tree in the Right Place" Guidance

Appendix C: "Right Tree in the Right Place" Guidance

Several state and regional organizations provide guidance to property owners for determining the tree species and varieties most likely to thrive on their properties or along a street right-of-way next to them. This appendix provides general guidelines, factors to consider, and recommended species for different situations.

Climate Factors

The USDA Agricultural Research Service and Oregon State University's PRISM Climate Group jointly develop a plant hardiness zone map, which reflects the plants most likely to thrive in extreme cold temperatures in specific locations across the country.[13] The map was most recently updated in 2012 to reflect the current climate, based on temperature data from 1976–2005. According to this updated map, Gloucester City is in Zones 7a and 7b.[14] Tree species selections should use those Zone guidelines. Tree nurseries and providers can provide information on which trees are appropriate for Zone 7.

Climate change will likely cause the USDA to continue to shift its plant hardiness zones, and future decades may favor trees that currently live farther south. The Climate Change Response Framework, a multi-organizational research effort led by the Northern Institute of Applied Climate Science, used two climate change scenarios in combination with two forest impact models to predict how tree species may fare in the future.[15] They focused on the mid-Atlantic region, including the Coastal Plain subregion where Gloucester City resides.[16] Based on their climate models, these researchers estimate that such tree species as Eastern redbud and Pin oak may have an increase of more than 20 percent in density in the region by 2100. The researchers do note, however, that the models don't show other factors that may reduce the future viability of those species, such as droughts or invasive species.

Pest-Vulnerable Species

Check which tree-favoring pests are common or growing in population in order to avoid the trees they favor. Currently, pest species like emerald ash borer and hemlock wooly adelgid are prevalent in the area, while spotted lanternfly populations are growing, so it is inadvisable to plant their host species. Vulnerable species include ash for emerald ash borer and hemlock for the hemlock wooly adelgid. Unfortunately, spotted lanternflies favor a wide variety of trees, including tree of heaven, its preferred host, but also apple, plum, cherry, peach, apricot, grape, and pine species.

Site-Specific Factors

Different trees are also more or less appropriate to highly local, site-specific factors.

[13] planthardiness.ars.usda.gov/PHZMWeb/AboutWhatsNew.aspx
[14] planthardiness.ars.usda.gov/PHZMWeb/Maps.aspx
[15] Butler-Leopold et al. (in review). Mid-Atlantic forest ecosystem vulnerability assessment and synthesis: a report from the Mid-Atlantic Climate Change Response Framework, Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. forestadaptation.org/mid-atlantic/vulnerability-assessment
[16] forestadaptation.org/learn/resource-finder/climate-change-projections-individual-tree-species-mid-atlantic-region, forestadaptation.org/sites/default/files/MidAtlantic_tree_species_Coastal%20Plains.pdf

Soil Chemistry

Soil testing kits to determine the soil's nutrients and pH can be purchased from the local county office of Rutgers New Jersey Agricultural Experiment Station (NJAES) Cooperative Extension.[17] Alternatively, pH meters can be purchased from various online retailers. Soil pH typically ranges from 5.5 (acidic) to 8.5 (alkaline).

Soil Drainage

To determine soil drainage rates, dig a hole 18 inches deep, fill with water, let drain completely, then refill with water and time how long it takes for the water to drain. If the soil drains in less than two hours, it is considered fast-draining, and if it drains in 18 hours or more, it is considered slow-draining.

Sun Exposure

Determining sun exposure is simple but time-intensive, and involves monitoring over the course of a day where your site gets full sun, partial sun/shade, and full shade.

Tree Characteristics Affecting Maintenance

Property owners should be aware of the types of materials that their preferred tree species will produce in a given year. The volume of leaves, flowers, and fruits that a tree drops can vary greatly. Furthermore, some trees produce pollen that can affect air quality for people with allergies or other sensitivities.

Another consideration affecting long-term maintenance is a tree's growth rate. Slow-growing species typically live longer than fast-growing species and require fewer instances of replacement over time. If a property owner plans to own and maintain a property for decades or generations (such as a school or religious institution), this consolidation becomes more important.

Spacing Guidelines

Choose a planting spot at least three feet from pavement or fencing on all sides and 25 feet from overhead utilities if the tree will grow taller than 30 feet.

See Table C-1: Basic Spacing Guide for guidance on spacing trees away from buildings or "plant massings" (other trees).[18] Note that this guidance does not discuss buildings above one story.

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[17] njaes.rutgers.edu/soil-testing-lab/kits.php
[18] arborday.org/trees/righttreeandplace/size.cfm

Table C-1: Basic Spacing Guide

TREE SIZE	SPACING PLANT MASSINGS	MIN. SPACING FROM WALL OF 1-STORY BUILDING	MIN. SPACING FROM CORNER OF 1-STORY BUILDING
Small trees (30' or less)	6-15'	8-10'	6-8'
Medium trees (30-70')	30-40'	15'	12'
Large trees (70' or more)	40-50'	20'	15'

The basic spacing guide from various distances and various tree heights

Source: Arbor Day Foundation

The shape of a tree—whether it has a narrow or wide canopy spread—also further determines how close it should be planted to other structures or utilities. Trees that are column-shaped or oval, like the Lombardy poplar or sugar maple, may fit into tighter spaces than trees that are round or v-shaped, like the white oak or hackberry.[19]

Check with your local underground utility services to make sure that there are no buried wires or pipes carrying water, sewage, gas, or electricity where you want to plant. New Jersey law requires anyone conducting major digging work to call "811" or 800-272-1000 between three to ten business days before starting work. This communication system helps prevent loss of life or property from damaged utilities.

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[19] arborday.org/trees/rightTreeAndPlace/shape.cfm

Appropriate Species

The New Jersey Tree Foundation keeps a list of tree species that adapt well to urban areas, shown in Table C-2, and a list of species that typically grow under utility lines, shown in Table C-3.

Table C-2: Urban-Tolerant Trees

Latin Name	Common Name	Notes
Large Species		
Ginkgo biloba	Gingko	
Quercus species	Oaks: Pin, Red, White, Swamp white, Chestnut, Willow	
Ulmus Americana	American elm	
Ulmus parvifolia	Lacebark elm	Can be invasive
Zelkova serrata	Zelkova	
Medium-Sized Species		
Acer pseudoplatanus	Sycamore maple	
Acer rubrum	Red maple	
Acer x freemanii	Freeman maple	
Aesculus x carnea	Red horse-chestnut	
Carpinus betulus	European hornbeam	Tree form or branched up
Celtis occidentalis	Hackberry	
Cercidiphyllum japonicum	Katsura tree	
Cladrastis kentukea	Yellowwood	
Nyssa sylvatica	Blackgum	
Ostrya virginiana	American hophornbeam	
Tilia cordata	Littleleaf linden	
Small Species *(for most, you must specify single-stem, tree form)*		
Acer buergerianum	Trident maple	
Acer campestre	Hedge maple	
Acer tartaricum	Amur maple	
Amelanchier canadensis	Serviceberry	
Carpinus caroliniana	American hornbeam	
Cercis Canadensis	Eastern redbud	
Cotinus obovatus	American smoketree	
Crataegus viridis	Winter king hawthorn	
Parrotia persica	Persian parrotia	
Styrax japonica	Japanese snowbell	
Syringa reticulata	Japanese tree lilac	

Source: New Jersey Tree Foundation

Table C-3: Utility-Friendly Trees

Latin Name	Common Name
Acer buergeranum	Trident maple
Acer campestre	Hedge maple
Acer ginnala	Amur maple
Acer Griseum	Paperbark maple
Acer Henryi	Henry maple
Acer leucoderme	Chalkbark maple
Acer nikoense	Nikko maple
Acer palmatum	Japanese maple
Acer tataricum	Tatarian maple
Acer truncatum	Purpleblow maple
Amelanchier **Autumn Brilliance**	Autumn brilliance serviceberry
Amelanchier **Prince Charles**	Prince Charles serviceberry
Amelanchier **Princess Diana**	Princess Diana serviceberry
Carpinus caroliniana	American hornbeam
Cercis can. **Forest Pansy**	Forest pansy red bud
Cercis reniformis **Oklahome**	Oklahoma redbud
Chionanthus virginicus	White fringetree
Cornus florida **selections**	American dogwoods
Cornus kousa **selections**	Kousa dogwood
Cornus **Rutgers Selections**	Rutgers dogwod
Cotinus obovatus	American smoketree
Crataegus **Winter King**	Winter king hawthorn
Halesia tetraptera	Carolina silverbell
Lagerstroemia **spp.**	Crapemyrtle
Maackia amurensis	Amur maackia
Malus **selections**	Crabapples
Parrotia persica	Persian parrotia
Prunus Autumnalis	Autumn flowering cherry
Prunus cerasifera	Cherry plum
Prunus Kwanzan	Kwanzan cherry
Prunus Okame	Okame cherry
Prunus sarg. Columnaris	Columnar sergeant cherry
Prunus Sargentii	Sargent cherry
Prunus virgiana '**Canada Red**'	Chokecherry
Prunus yedoensis	Yoshino cherry
Styrax japonica	Japanese snowbell
Syringa reticulate	Japanese tree lilac

Source: New Jersey Tree Foundation

The Philadelphia Department of Parks and Recreation's list of approved street trees[20] is a similar source that provides some additional species. A somewhat different resource worth considering is the Arbor Day Foundation's online tree finder application,[21] which is a series of questions that uses many of the regional and site-specific factors that are described above to help the user pick appropriate species.

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[20] phila.gov/media/20171115163232/PPR_Approved_Street_Tree_List.pdf
[21] arborday.org/shopping/trees/treewizard/intro.cfm

Appendix D
Municipal Training Resources

Appendix D: Resources for Training Municipal Staff

Table D-1 contains statewide and national sources that Gloucester City's tree experts and advocates can use to build their skills in managing the community forest.

Table D-1: Resources for Training Municipal Staff

Organization	Webpages	Notes
International Society of Arboriculture	njaisa.com, isa-arbor.com/Credentials/ Maintaining-Credentials, isa-arbor.com/store/shop	Provides resources on maintaining credentials for a variety of forestry-related tracks. ISA also sells educational materials.
New Jersey Shade Tree Federation	njstf.org	Annual conference provides continuing education opportunities.
NJDEP Bureau of Compliance and Enforcement	nj.gov/dep/enforcement/cetraining.html	The Bureau of Compliance & Enforcement hosts trainings in state regulations that may be of use for staff or volunteers managing the City's urban forest.
NJDEP Division of Water Quality	nj.gov/dep/stormwater/training.htm	The Division of Water Quality hosts trainings on stormwater management regulations and best management practices.
Rutgers New Jersey Agricultural Experimental Station: Office of Continuing Professional Education	cpe.rutgers.edu	The Office of Continuing Professional Education for Rutgers University's Agricultural Experiment Service provides a range of courses, certificates, and special programs for individuals to learn more about topics related to agriculture and administration.
The Committee for the Advancement of Arboriculture	caanj.org	CAANJ provides courses in arboriculture subjects as well as Licensed Tree Expert certification prep classes.
Tree Care Industry Association	tcia.org/TCIA	Provides educational resources for its own Tree Care Academy training program, many of which could be applied to personnel involved with maintaining tree care equipment.

Appendix E

Strengthening Relationships with Utility Companies

Appendix E: Strengthening Relationships with Utility Companies

Strengthening relationships between municipal officials, private citizens, and utility companies will help the quality of tree care around utility infrastructure. Table E-1 sources include information on regulatory changes over the past decade that have influenced utilities' work in municipalities.

Table E-1: Strengthening Relationships with Utility Companies

Organization	Webpages	Notes
Arbor Day Foundation: Tree Line USA	arborday.org/programs/treelineusa	A program to recognize best practices in utility arboriculture. Provides guidance for utilities and communities, and information for utilities interested in applying.
International Society of Arboriculture	treesaregood.org/Portals/0/TreesAreGood_Avoid%20Utility%20Conflict_0621.pdf	Introductory resource for residents, elected officials, or other tree "laypeople" on avoiding tree and utility conflicts
National Public Radio	npr.org/2012/07/25/157342073/utilities-customers-at-odds-over-downed-trees	Radio transcript describing federal regulations that require public utilities to cut back trees around power lines. These were put in place after a 2003 power outage, caused by a tree hitting a major power line, that affected 55 million people throughout the Northeast and Canada. Utilities can be fined up to $1 million per day for not cutting trees.
New Jersey State Legislature	legiscan.com/NJ/text/A2558/id/1821049/New_Jersey-2018-A2558-Amended.html, njspotlight.com/2018/09/18-09-20-utilities-in-nj-to-be-allowed-get-more-aggressive-trimming-trees-clearing-vegetation/	Bill A-2558, passed in September 2019, allows public utilities to be more proactive in cutting back trees. It prevents homeowners and shade tree groups from interfering in or restricting an electric utility's removal, replacement, or maintenance of vegetation.
PSE&G: Right Tree, Right Place	nj.pseg.com/safetyandreliability/reliability/treetrimming/righttreerightplace	Guidance on species that are less likely to cause conflicts with utility lines.
Utah State University Forestry Extension	forestry.usu.edu/files/knowledge-about-pruning.pdf	An academic article from USU about utility pruning; education and communication between partners is key.

Appendix F
Resources for Educators

Appendix F: Resources for Educators

The information found in Table F-1 can be used to support Gloucester City's schoolteachers in developing tree-related curriculums.

Table F-1: Resources for Educators

Organization	Webpages	Notes
Arbor Day Foundation: Carly's Kids Corner	arborday.org/kids	Carly's Kids Corner is an interactive website where kids and teachers can engage in interactive tree games, download and print activity sheets, and learn more about the resources of the Arbor Day Foundation. The interactive games help students learn about and identify trees around the world, while the activity sheets are designed for a younger audience and feature coloring and maze exercises.
New York Times Learning Network	nytimes.com/spotlight/learning-science-math, learning.blogs.nytimes.com/2010/04/14/a-lesson-lovely-as-a-tree-defining-and-appreciating-trees/, learning.blogs.nytimes.com/1999/04/06/its-a-jungle-out-there/, learning.blogs.nytimes.com/2004/08/03/bionic-trees/, learning.blogs.nytimes.com/2010/01/20/natures-call-drawing-inspiration-from-avatar-to-study-and-create-organisms/	A long-running set of articles, created by *New York Times* staff, incorporating news and school subjects. Some of the sources may be dated or New York-specific and may require updating or customizing to local needs, but the lessons themselves remain relevant.
NJDEP: State Environmental Education Directory (SEEDS)	nj.gov/dep/seeds/syhart/outclass.htm	SEEDS, which was developed by NJDEP, is an extensive resource list for educators to create and deliver lessons using outdoor classrooms. The site focuses on wildlife, plants, water, and fertilizers, and provides examples of programs that schools around the state and country have started in their classrooms.
Project Learning Tree	plt.org, plt.org/network/new-jersey/	Project Learning Tree is a nationwide program that helps educators design and deliver educational programs about trees and the environment. In New Jersey, educators can attend workshops where they learn environmental education skills and gain resources for instructing students on these topics. Part of this program also provides resources for students to be active participants, starting school "green teams" to create environmental improvement projects.
USDA Forest Service: Discover the Forest	discovertheforest.org	This campaign, created by USDA and the Ad Council, seeks to provide resources to parents of tweens, as well as others in an educator role, to encourage appreciation for the outdoors. The Resources page includes activities that could be used in a classroom setting.

Appendix G
Funding Sources

Appendix G: Funding Sources

Table G-1 describes ongoing funding programs, as well as unconventional sources, that can be used to implement some of the plan's actions.

Table G-1: Funding Programs

Source	Webpage	Notes
New Jersey Urban and Community Forestry Stewardship Grant Program	nj.gov/dep/parksandforests/forest /urbanandcommunity/grants.html	Once communities and shade tree commissions have completed Community Forestry Management Plans and had them approved by the NJDEP, they are eligible for New Jersey Urban and Community Forestry Stewardship Grants. These competitive grants assist with implementing the plan through projects that strongly link best management practices with urban forestry goals and only projects that are carried out on public property owned or maintained by a municipal or county government are eligible. The two types of grants are Resiliency Planning Grants (up to $10,000) and Reforestation and Tree-Planting Grants (up to $30,000).
Robert Wood Johnson Foundation	rwjf.org/en/our-focus-areas/focus-areas/ healthy-communities.html	The Robert Wood Johnson Foundation is a public health-focused philanthropy that provides funds to a wide array of programs. It has three broad aims: discover and explore creative solutions, spread model interventions, and conduct research and evaluation. The focus areas of these grants are in health systems, healthy communities, healthy children and families, and leadership for better health. Since community forests have well-defined public health benefits, the foundation may provide multiple grant opportunities.
TREE (Tree Research and Education Endowment) Fund	treefund.org	The TREE Fund is a charitable grantmaking organization dedicated to supporting urban and community forests by providing funding to scientific research on urban tree care issues, education programs relating to trees, and scholarships for students aspiring to be tree care professionals. Since its founding in 2002, the TREE Fund has awarded $4.4 million in research grants, education grants, and scholarships to better equip professional arborists and citizens to properly care for trees. They are currently prioritizing programs focusing on inquiry and exploration in order to advance the wider knowledge base about urban forests.

USDA/NRCS Regional Conservation Partnership Program	nrcs.usda.gov/wps/ portal/nrcs/main/national/ programs/financial/rcpp/	This grant program promotes innovative conservation programs related to land management/restoration, land rentals, easements, and public works/watersheds. The grant applications are evaluated based on impact, partner contributions, innovation, and partner qualifications and must be carried out on agricultural or non-industrial private forest land.
USDA: Recycling Municipal Trees	fs.usda.gov/naspf/publications/re cycling-municipal-trees	This resource is a guide for marketing sawlogs from street tree removals in municipalities. One innovative way for municipalities to supplement their tree maintenance and planting budgets make street tree removals available to artisans, construction professionals, and community groups. Often, the wood contained in trees that have been removed from the street has value to different groups depending on its type, quality, quantity, and size. As the report recognizes, selling a log "as is" exceeds to potential return of selling the log as firewood or mulch by two to four times. Creating a program like this requires flexibility, patience, and creativity (as well as access to a sawmill and industry professionals willing to partake), but it can result in a reliable revenue stream and a commercial industry engaged in the efficient management of street trees.
William Penn Foundation	williampennfoundation.org/what-we-fund-watershed-protection	The William Penn Foundation was founded in 1945 and is dedicated to improving the quality of life in the Greater Philadelphia region. In 2018, they provided over $100 million in grant payments which are mostly divided into three main areas of Creative Communities, Great Learning, and Watershed Protection. Each of these areas may provide opportunities for groups seeking to plant trees and connect their neighborhoods to the community forest around them. Current grant recipients like the New Jersey Tree Foundation have used the Watershed Protection grant fund to plant trees along the Circuit Trail network.

Gloucester City: Management Plan for Forests and Trees

Abstract:

This management plan is a municipal document that outlines the community's vision and prioritized goals to protect and grow the City's tree cover or "community forest." In this context, the "community forest" is within municipal boundaries and includes publicly managed trees along streets and in parks, as well as privately managed trees on private properties. Integrating data from a variety of local, state, and national government sources as well as private research organizations with several stakeholder meetings and on the ground assessments, this plan presents an in-depth existing conditions assessment of the condition of Camden's community forest as well as a series of goals which have been prioritized by local residents and organizations. The plan is intended to be proactive, and outlines the work that these varied partners want to accomplish to improve their forest cover.

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