

DAVEY Resource Group

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Tree Inventory Analysis & Maintenance Report

Washington Lake Park, NJ

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Acknowledgments

This report aligns with Washington Lake Park's vision to promote and engage in tree conservation through the proactive and efficient management of the park's tree population. The summary provides a detailed analysis of the tree population's composition and structure, along with a recommended maintenance strategy to ensure the long-term health and sustainability of the urban canopy.

Notice of Disclaimer

Inventory data provided by Davey Resource Group, Inc. "DRG" are based on visual recording at the time of inspection. Visual records do not include individual testing or analysis and do not include aerial or subterranean inspection. DRG is not responsible for the discovery or identification of hidden or otherwise non-observable hazards. Records may not remain accurate after inspection due to the variable deterioration of inventoried material. DRG provides no warranty with respect to the fitness of the urban forest for any use or purpose whatsoever. Clients may choose to accept or disregard DRG's recommendations, or to seek additional advice. Important: know and understand that visual inspection is confined to the designated subject tree(s) and that the inspections for this project are performed in the interest of facts of the tree(s) without prejudice to or for any other service or any interested party.

Executive Summary

Washington Lake Park, spanning 330 acres, stands as the largest municipal park in New Jersey and serves as a vital recreational and green space for the local community. Dedicated in 1992, the park's development was made possible through municipal funds and the support of the NJ Green Acres Program. The park features a range of amenities, including ADA-compliant playgrounds, athletic fields for youth sports, and facilities for public use such as basketball courts, tennis courts, sand volleyball courts, and paved and natural walking trails. Washington Lake Park offers a variety of outdoor experiences for visitors of all ages and abilities.

This report provides a detailed analysis of an important segment of the tree population within Washington Lake Park, focusing on the structure and composition of its urban forest. The project was a partial inventory of the trees in the Park, focused on areas most frequented by the public, such as trees near playgrounds and recreational fields; in picnic areas and adjacent to paved walkways, access roads and parking lots. The tree inventory offers valuable insights into species distribution, age diversity, and tree health, which are critical for understanding the ecological function and sustainability of the park's landscape. By examining these factors, the report will help park managers assess the current condition of the trees and their role in enhancing both the park's aesthetic and environmental qualities.

Because this is a partial inventory and does not address the many trees in the forested areas of the Park, the data on species composition, size, age and health of trees are not representative of the entire tree population of the Park. Based on the findings of the partial inventory, this report recommends key maintenance actions to promote the health and safety of the Park's trees. By addressing issues such as tree pruning, removal of hazardous trees, and ongoing tree maintenance, the park can continue to offer a safe and vibrant environment for recreation while preserving its natural landscape for future generations.

Key Findings

- **Total Inventory:** 1,503 trees were recorded.
- **Overall Condition**: The tree population is predominantly in fair condition.
- **Most Common Species:** The most prevalent species are *Pinus strobus* (white pine) at 13%, *Pyrus calleryana* (callery pear) at 12%, *Acer rubrum* (red maple) at 10%, *Liquidambar styraciflua* (sweetgum) at 8%, *Prunus spp.* (cherry spp.) at 8%, and *Liriodendron tulipifera* (tuliptree) at 6%.
- **Maintenance Recommendations:** 78 trees are recommended for removal, 76 for priority pruning, and 1,320 for low-priority pruning.

- **Pest Susceptibility:** A significant portion of the tree population is susceptible to *Lycorma delicatula* (spotted lanternfly) at 25% and *Popillia japonica* (Japanese beetle) at 18%.
- **Environmental Benefits**: The environmental benefits provided by the park's tree population are valued at an estimated $10,304 annually.

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A. Methodology

Section 1: Tree Inventory Assessment

Project Area

In the summer of 2024, DRG arborists conducted a comprehensive assessment and inventory of trees in selected areas within Washington Lake Park. This partial inventory included all trees within the maintained areas of the park, as well as trees with a diameter of 6 inches or greater located within 10 feet of forested paths and picnic areas. Additionally, any moderate- or high-risk trees situated near but beyond the 10-foot corridor were assessed to see if there was a potential for tree or limb failure that could impact the paths. Further details on the inventory, along with a map of the inventoried trees, can be found in Appendix A.

Species Diversity

Data were collected on 1,503 trees, comprising 64 species. **Figure 1** provides a breakdown of the top six most abundant species in the park: *Pinus strobus* (white pine) at 13%, *Pyrus calleryana* (callery pear) at 12%, *Acer rubrum* (red maple) at 10%, *Liquidambar styraciflua (sweetgum)* at 8%, *Prunus spp.* (cherry spp.) at 8%, and *Liriodendron tulipifera (tuliptree)* at 6%. The diversity of these species at Washington Lake Park enriches its ecological health and visual richness of the park.

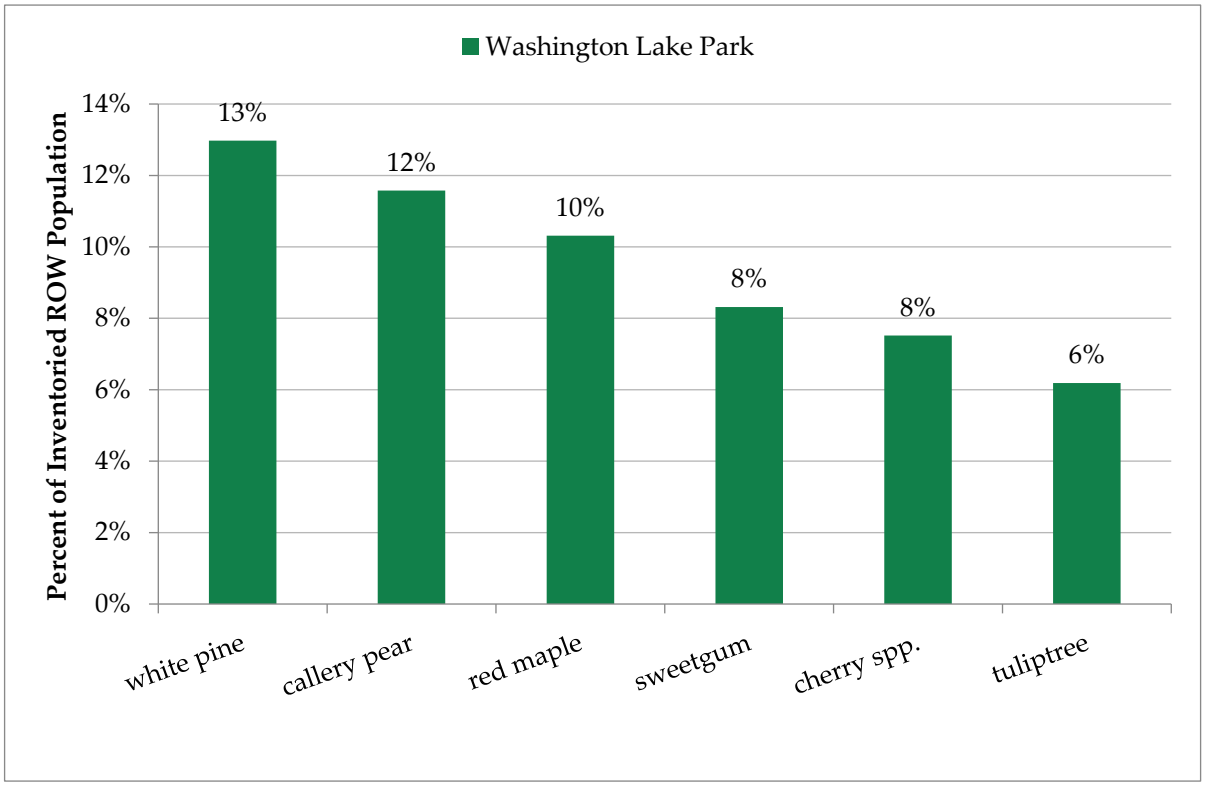


Figure 1. Tree species composition in Washington Lake Park.

Figure 2 represents the top five most common genera identified during the inventory.

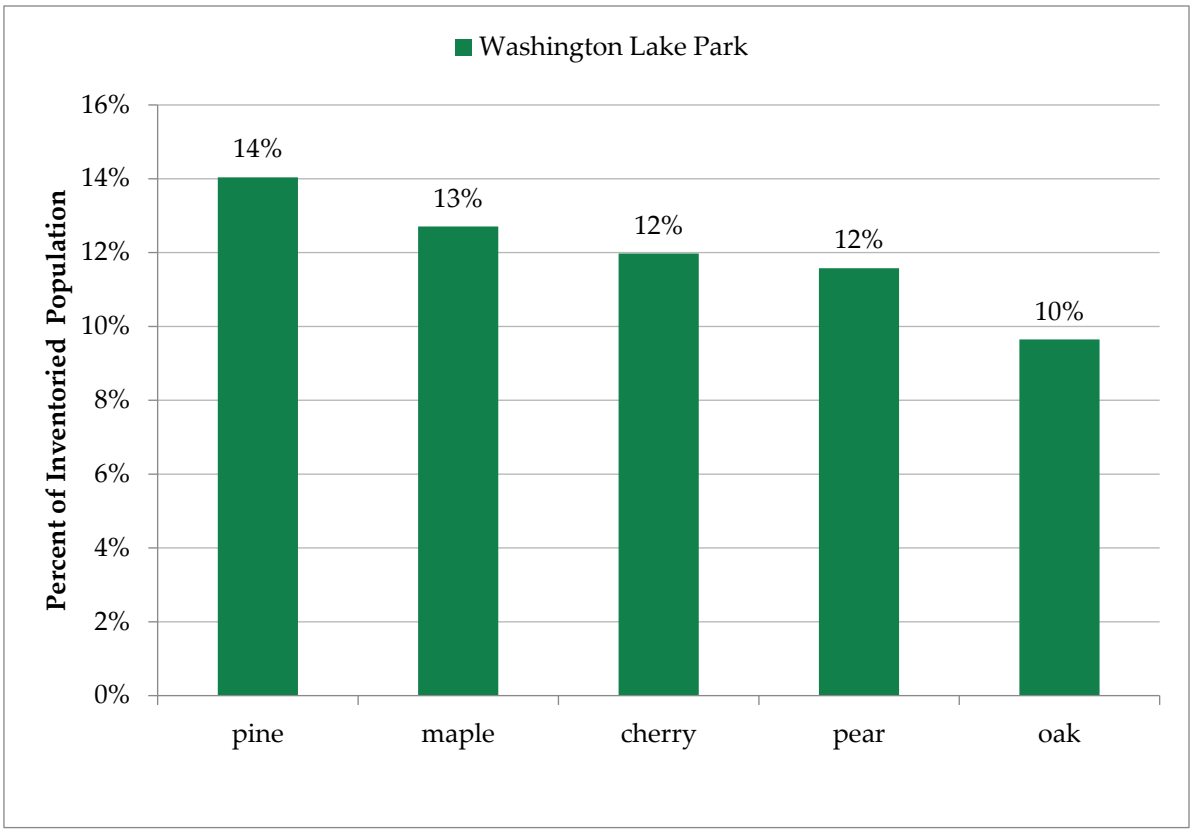


Figure 2. Top five genera in Washington Lake Park.

A total of 37 genera were identified during the Washington Lake Park partial tree inventory. Pine trees (*Pinus)* comprise the largest proportion of the tree population at 14%. The park hosts a relatively high proportion of callery pear trees (12%), which is considered an invasive species in the state of New Jersey due to their ability to spread rapidly and outcompete native species. This is particularly concerning in forested areas as they grow aggressively, create dense thickets, and displace native plants, reducing biodiversity.

Maintaining a high level of species and genus diversity is crucial for the resilience of the tree population. High diversity reduces the likelihood of widespread damage from pests, diseases, weather, and climate disruptions, which can occur when large populations of susceptible trees are present. Additionally, a diverse urban forest is more resilient and capable of recovering from such disturbances, as it minimizes the risk of losing significant portions of the tree population. Cultivating and maintaining diversity at the species, genus, and family levels helps mitigate the effects of disturbances and ensures a thriving tree population.

Diameter Size Class Distribution

Analyzing the diameter size class distribution (measured as diameter at breast height [DBH]) provides an estimate of the relative age of a tree population and insight into maintenance practices and needs.

The inventoried trees were categorized into the following diameter size classes: young trees (0–8 inches DBH), established (9–17 inches DBH), maturing (18–24 inches DBH), and mature trees (>24 inches DBH). These categories were chosen so that the population could be analyzed following Richards' ideal distribution (1983). Richards proposed an ideal diameter size class distribution for tree cohorts based on observations of well-adapted trees in Syracuse, New York. Richards' ideal distribution suggests that the largest fraction of trees (approximately 40% of the population) should be young (<8 inches DBH) with a smaller fraction (approximately 10%) in the large-diameter size class (>24 inches DBH). A tree population with the ideal distribution would have an abundance of newly planted and young trees, with established, maturing, and mature trees present in lower numbers.

Figure 3 compares the inventoried tree diameter size class distribution at Washington Lake Park to the ideal distribution proposed by Richards (1983). The park's tree population is trending toward this ideal, with a large proportion of established trees poised to replace older trees as they approach senescence.

It is important to note that DRG was contracted to inventory trees with diameters of 6 inches and greater, so the young tree population is likely much larger than represented in Figure 3. Maintaining an uneven age distribution will allow Washington Lake Park to distribute annual maintenance costs more evenly over time and ensure continuity in overall tree canopy coverage.

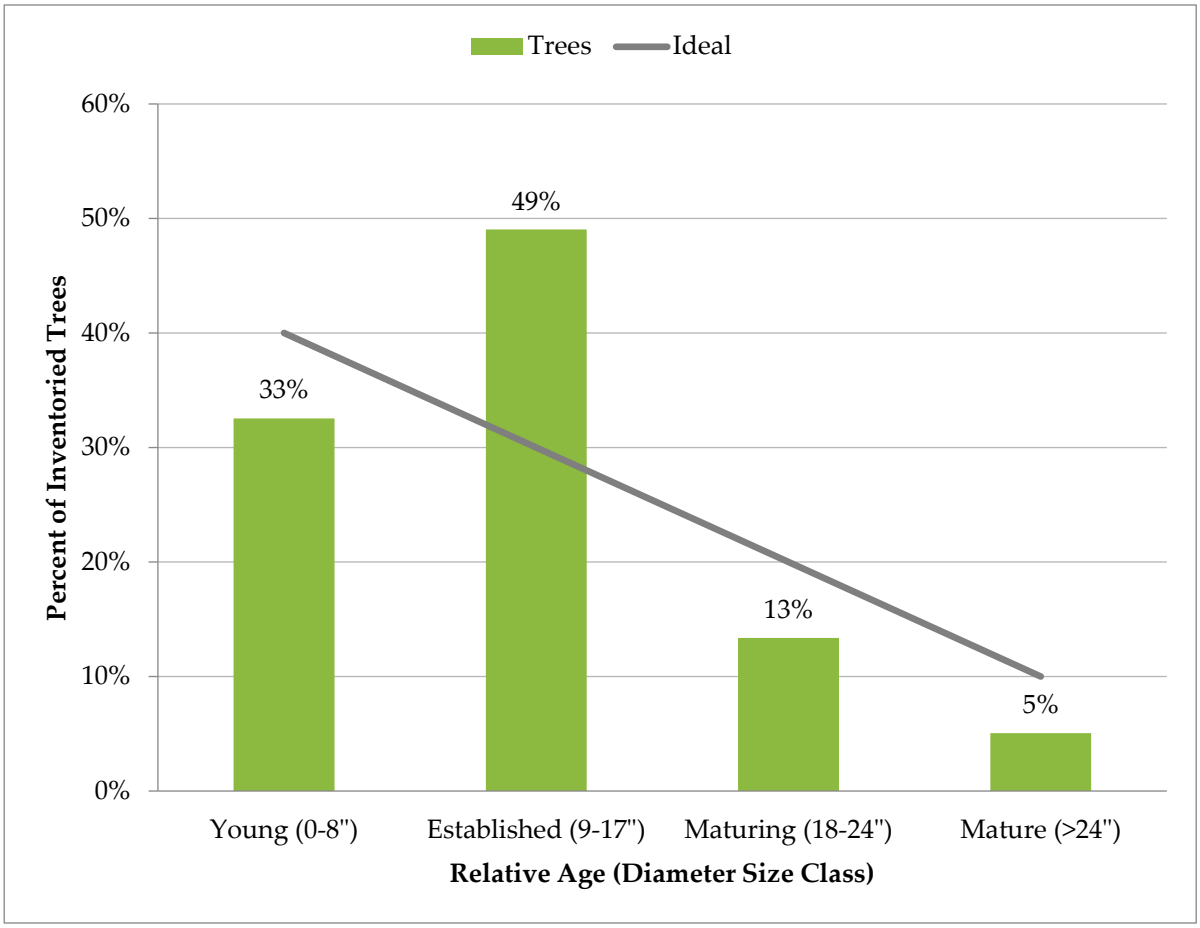


Figure 3. Relative age distribution of inventoried trees.

Condition

Several factors were considered for the condition of each tree, including root characteristics; branch structure; trunk, canopy, and foliage condition; as well as the presence of pests. The condition of each inventoried tree was rated Good, Fair, Poor, Very Poor, or Dead.

The majority of the inventoried trees were recorded in Fair or Good condition, at 61% and 28% respectively (**Figure 4**). Based on this data, the overall health of the tree population is rated as Fair. A relatively small proportion of the trees were found to be in Poor or Very Poor condition, at 8%. Trees in Poor condition have significant, irrecoverable issues. While these trees can still provide value through canopy cover and wildlife habitat, they are expected to decline over time. A total of 116 trees were identified as being in Poor or Very Poor condition. To compensate for the eventual loss of canopy from these declining trees, it is advisable to strategically plant new trees to replace the eventual canopy loss.

Figure 5 illustrates the condition of the urban forest across various age classes. The majority of young, established, maturing, and mature trees are rated in Fair condition or better, with a relatively low percentage of trees in poor condition or worse. This indicates that the park provides a favorable growing environment, and trees planted here have a strong likelihood of reaching maturity.

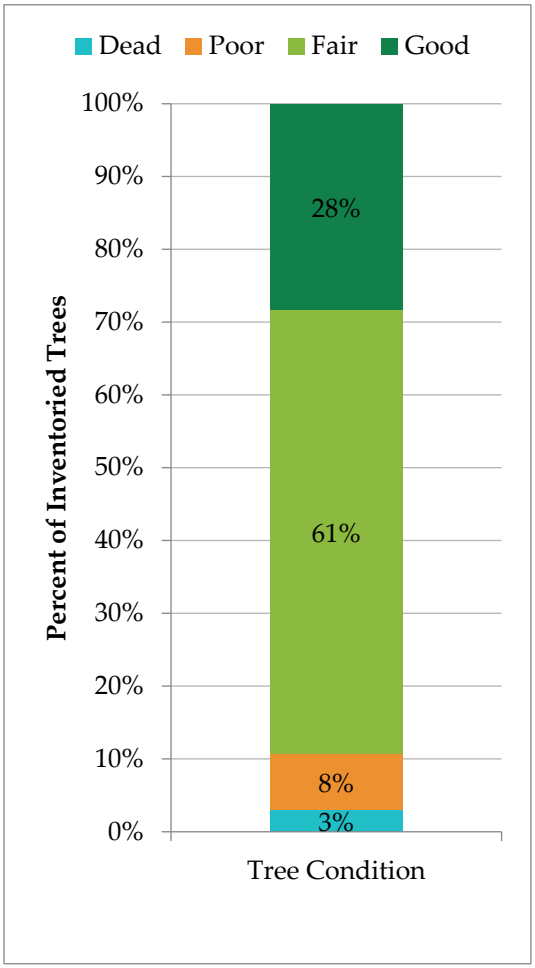


Figure 4. Condition of Inventoried Trees.

The number of mature trees in Fair or Good condition is particularly encouraging, as large trees provide the majority of ecological benefits, such as improved air quality, stormwater management, and habitat for wildlife. Their continued health is essential for sustaining the park's environmental contributions.

The condition of young trees remains an area for improvement. The number of young trees in poor condition or dead suggests a need for a more robust maintenance program. Young trees require ample water to establish strong root systems, and mulching can offer critical nutrients while protecting their vulnerable stems from mechanical damage caused by lawn mowers and weed trimmers. Choosing the correct planting location is equally vital, as it ensures the trees have adequate space, light, and soil conditions to thrive. Enhancing these practices will help ensure the long-term vitality and ecological contributions of the park's urban forest.

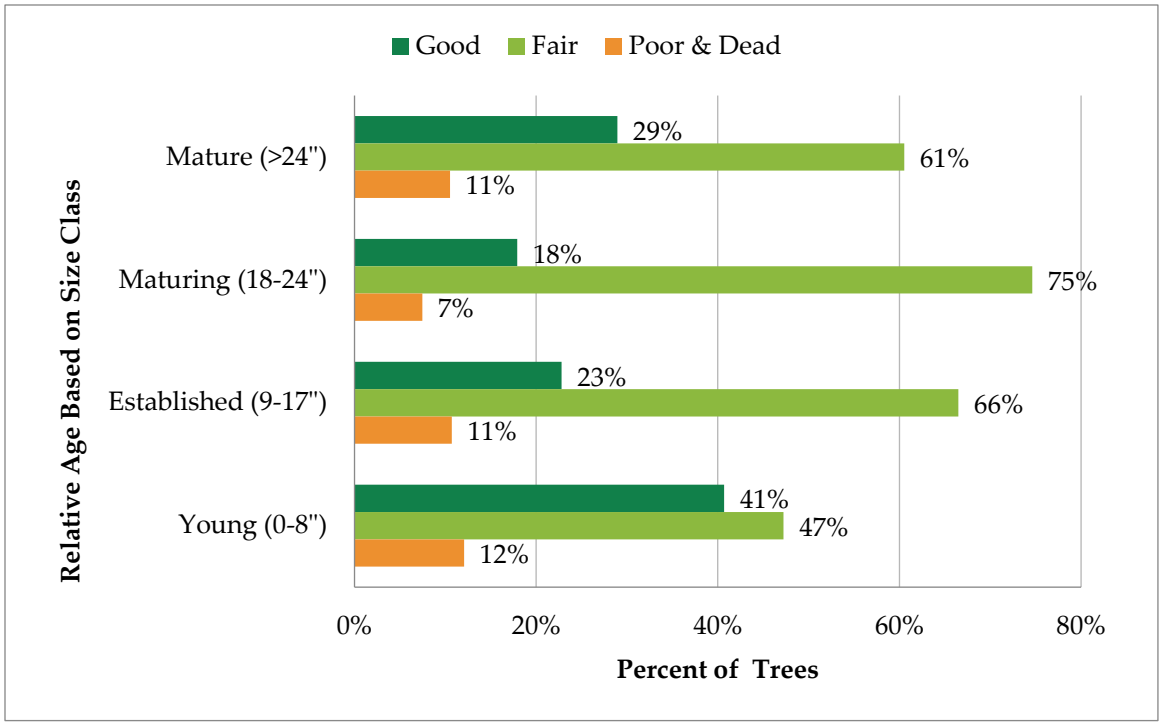


Figure 5. Condition of inventoried trees by relative age class.

Pest Susceptibility

Early diagnosis of disease and infestation is essential to ensure the health and continuity of the park's tree population.

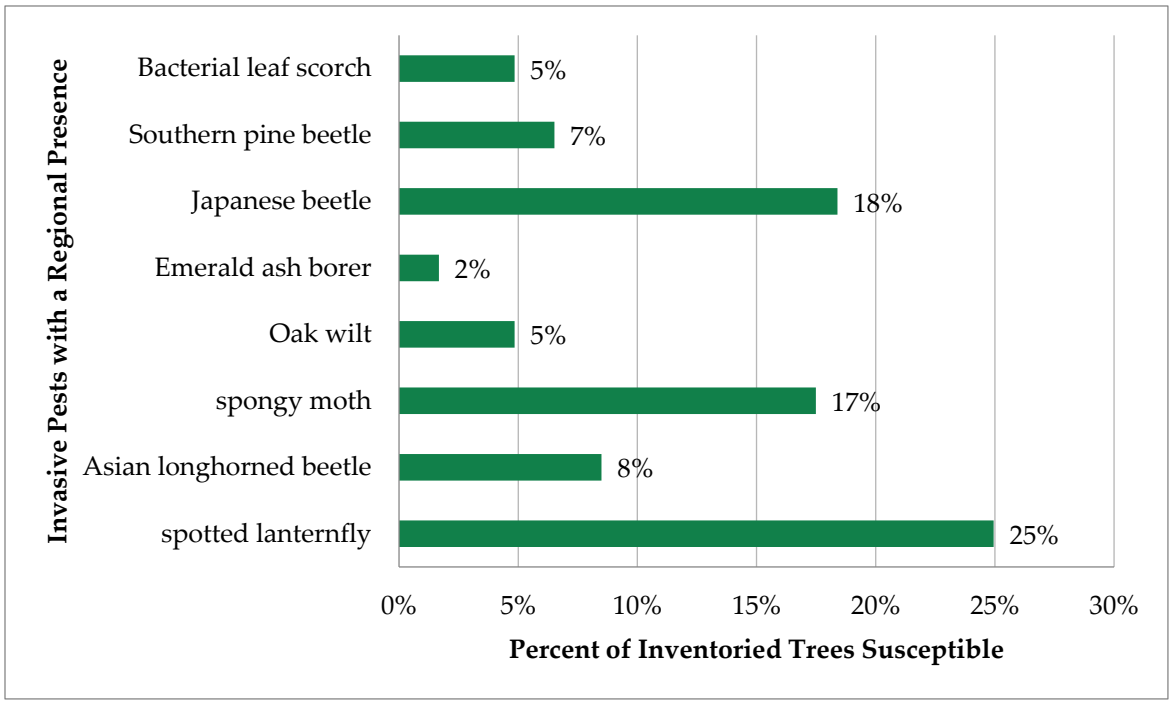


Figure 6. Tree resource sustainability to invasive pests that have a regional presence

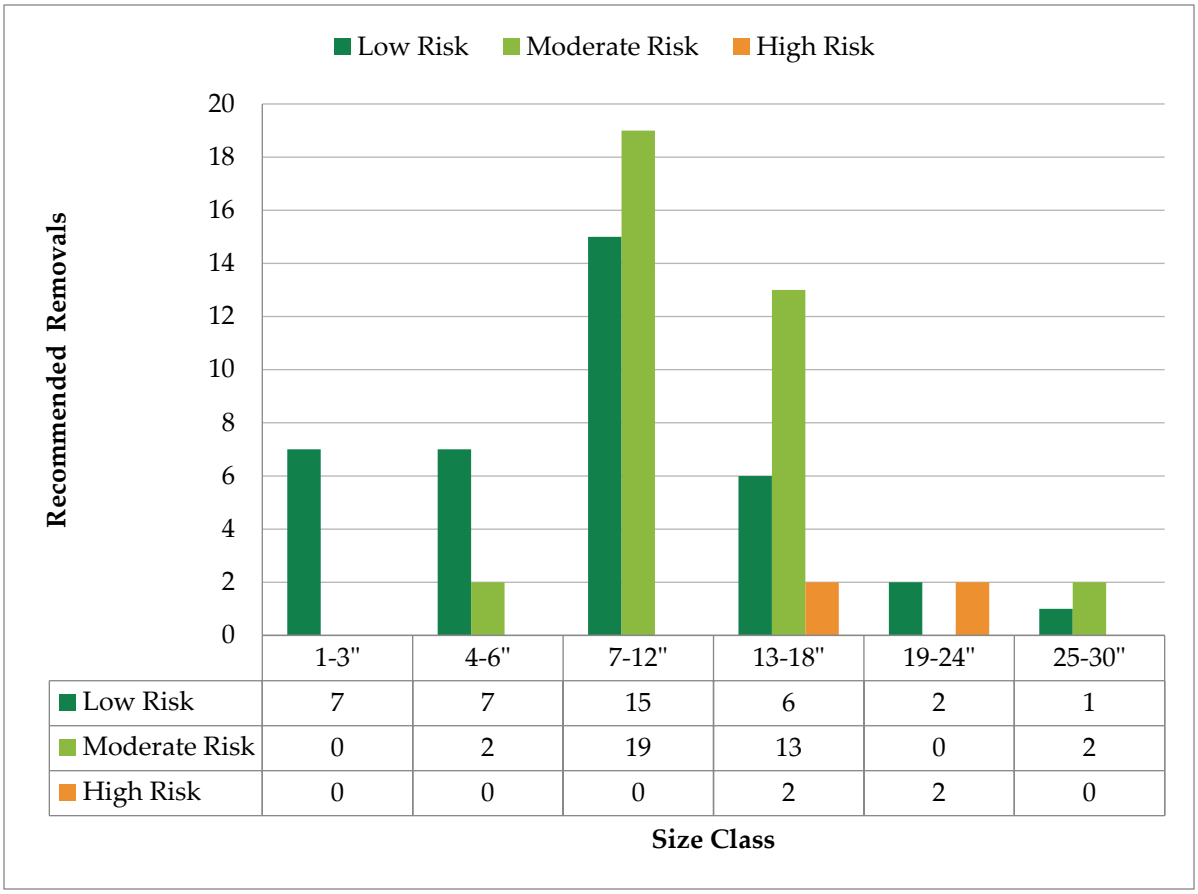
Figure 6 shows the percentage of inventoried trees susceptible to some of the known pests in and around the state of New Jersey. While certain invasive species may not currently be present in Sewell, NJ there is potential for infestation due to the pests' regional presence and rapid dispersal ability. Spotted lantern fly (SLF, *Lycorma delicatula*), Japanese beetle (*Popillia japonica)* and Spongy moth (*Lymantria dispar*) are known threats to a large percentage of the inventoried tree resource.

Overabundance of individual tree species, genera, and families can reduce an urban forest's resistance and resilience to disruptions caused by insect pests, diseases, extreme weather events, and climate change (Safford et al. 2013). Due to the large population of trees susceptible to invasive species, such as those listed above, the park should continuously monitor for signs and symptoms of pests or diseases. Diverse urban forests with a mix of tree species and age classes are less susceptible to pest and disease outbreaks. Introducing a variety of native and non-native, non-invasive tree species that are well adapted to the local environment can create a more resilient urban forest.

Primary Maintenance and Risk

Every tree, regardless of condition, has an inherent risk of whole or partial tree failure. During the inventory, DRG performed a Level 2 qualitative risk assessment for each tree and assigned a risk rating based on ANSI A300 (*Part 9*) and the companion publication *Best Management Practices: Tree Risk Assessment* (ISA 2011). Trees can have multiple potential modes of failure, each with its own risk rating. The potential mode of failure with the highest risk rating was recorded for each tree during the 2024 tree inventory. The specified time frame for the risk assessment was one year.

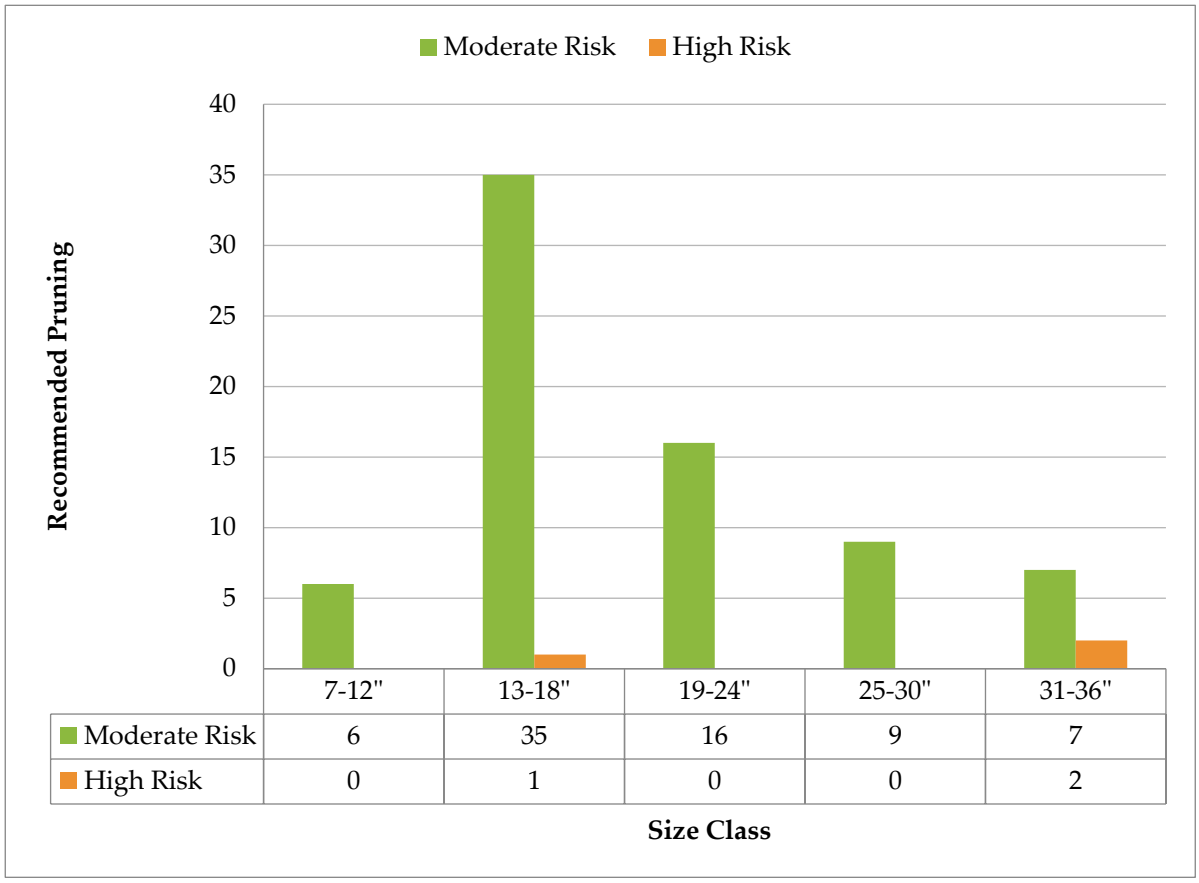
DRG recommends that tree maintenance activities are prioritized and completed based on the risk rating that was assigned to each tree during the inventory. Trees with high-risk ratings should be attended to first, followed by trees with a moderate risk rating, and trees with a low-risk rating should be maintained once higher-risk trees have been pruned or removed. The following graphs describe the recommended maintenance activities for each risk rating category by size class.



	1-3"	4-6"	7-12"	13-18"	19-24"	25-30"
Low Risk	7	7	15	6	2	1
Moderate Risk	0	2	19	13	0	2
High Risk	0	0	0	2	2	0

Figure 7. Priority Removal by size class.

Figures 7 and **Figure 8** present the recommended tree removals and pruning based on risk rating and diameter size class for the trees included in the 2024 inventory. A total of 78 trees are recommended for removal, including 4 high-risk trees, 36 moderate-risk trees, and 38 low-risk trees. Additionally, 76 trees are recommended for priority pruning, consisting of 3 high-risk and 73 moderate-risk trees. The most common defect identified among the priority pruning candidates is dead and dying wood, indicating a significant amount of deadwood that requires attention. Once this deadwood is pruned, these trees should be placed on a routine pruning cycle to ensure their continued health.



	7-12"	13-18"	19-24"	25-30"	31-36"
Moderate Risk	6	35	16	9	7
High Risk	0	1	0	0	2

Figure 8. Priority Pruning by size class.

Routine Pruning Cycle

The Routine Pruning cycle includes all Low-Risk trees that received a "Prune "or "Routine Prune" maintenance recommendation. These trees pose some risk but have a smaller defect size and/or a lower probability of impacting a target. Over time, routine pruning can minimize reactive maintenance, limit instances of elevated risk, and provide the basis for a robust risk management program. Washington Lake Park's inventory identified 1,320 trees that should be routinely pruned.

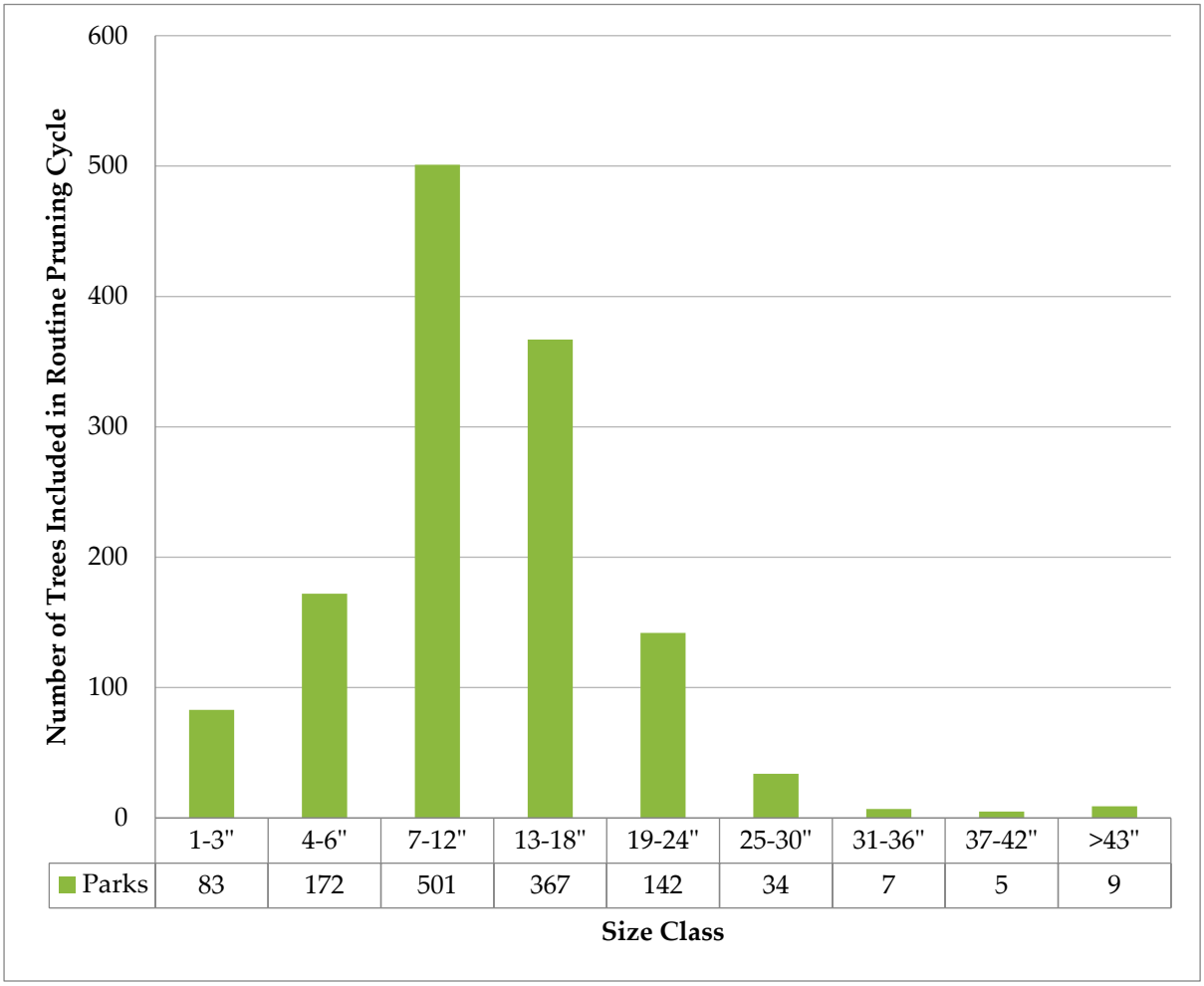


Figure 9. Low-Risk Trees by Pruning Type

Section 2: Functions and Benefits

i-Tree Eco Analysis

i-Tree Eco utilizes tree inventory data along with local air pollution and meteorological data to quantify the functional benefits of a community's tree resource. By framing trees and their benefits in a way that everyone can understand, dollars saved per year, i-Tree Eco helps a community to understand trees as both a natural resource and an economic investment. Knowledge of the composition, functions, and monetary value of trees helps to inform planning and management decisions, assists in understanding the impact of those decisions on human health and environmental quality, and aids communities in advocating for the necessary funding to manage their vested interest in the public tree resource appropriately.

Annual Return on Investment

The i-Tree Eco analysis conducted on the inventoried trees in Washington Lake Park has provided quantifiable insights into the essential ecosystem services these trees offer annually. These services encompass air pollution removal, carbon sequestration, and the prevention of surface water runoff. Collectively, the estimated annual value of these three benefits alone amounts to a substantial $10,305.

It's crucial to emphasize that the value of urban trees extends beyond these quantified benefits. While this analysis focuses on specific ecosystem services, urban trees also contribute to a range of additional advantages, including energy conservation and various aesthetic enhancements. Although these broader benefits were not encompassed in this iteration of the i-Tree Eco analysis, it's evident that the true value of the inventoried trees in the park exceeds the figures presented here.

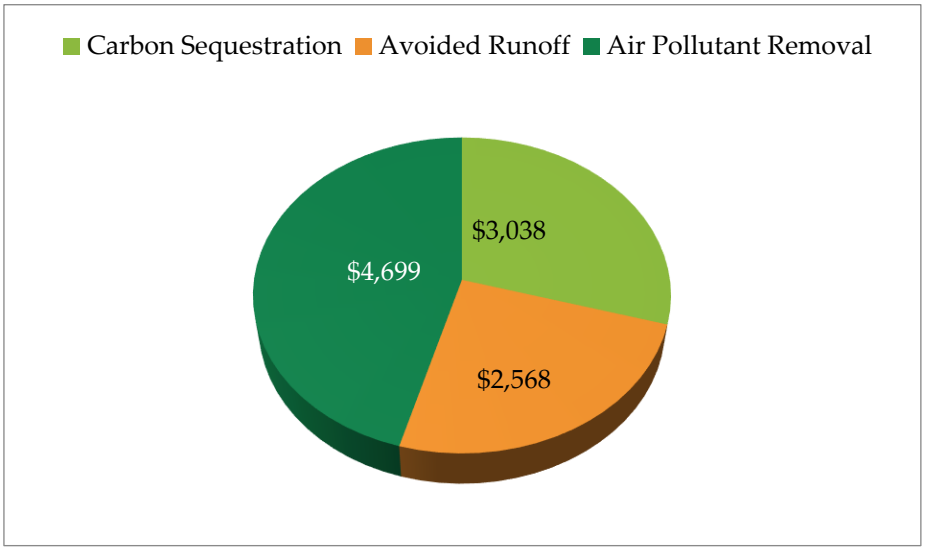


Figure 10. Estimated value of the benefits provided by inventories trees.

Sequestering and Storing Carbon

While carbon is released into the atmosphere from sources like vehicles and industrial emissions, trees perform a vital role by absorbing carbon during the process of photosynthesis, subsequently storing it in their tissues as they grow. The i-Tree Eco model provides estimates for both annual carbon sequestration and total carbon storage. In the case of Washington Lake Park, the inventoried trees have cumulatively stored a substantial 625 tons of carbon. This figure represents the total carbon each tree has accumulated over their lifetimes, and its estimated value stands at an impressive $107,000.

Among the tree species, tuliptree (*Liriodendron tulipifera)* plays the most significant role in carbon storage and sequestration within the tree population, storing a total of 122 tons of carbon and sequestering 2.3 tons annually, while making up 6.4% of the tree population.

Table 1. Summary of benefits provided by inventoried trees ranked by species importance value.

Most Common Trees Inventoried		Count	Percent of Total	Benefits Provided by Street Trees				
				CO_2 Stored	CO_2 Sequestered	Avoided Runoff	Air Pollution Removed	Replacement Value
non Name	Botanical Name		%	tons	tons/year	gal/year	lbs/year	Dollars
Eastern white pine	*Pinus strobus*	195	13.4%	65.7	2.2	393,849	200	$534,478
Callery pear	*Pyrus calleryana*	174	11.9%	30.9	1.4	92,533	40	$171,324
Red maple	*Acer rubrum*	155	10.6%	74.8	3.0	221,068	100	$361,350
Sweetgum	*Liquidambar styraciflua*	125	8.6%	30.2	1.2	196,353	100	$296,513
Plum spp	*Prunus spp.*	113	7.8%	25.0	0.8	56,038	20	$101,542
Tulip tree	*Liriodendron tulipifera*	93	6.4%	121.9	2.3	452,991	220	$323,010
Black cherry	*Prunus serotina*	63	4.3%	34.1	1.2	71,120	40	$113,082
Pin oak	*Quercus palustris*	44	3.0%	37.5	0.9	123,521	60	$139,548
White ash	*Fraxinus americana*	36	2.5%	17.1	0.5	57,772	20	$63,484
Black oak	*Quercus velutina*	35	2.4%	59.9	1.1	74,413	40	$149,991
Sugar maple	*Acer saccharum*	32	2.2%	11.8	0.3	49,749	20	$63,611
Douglas fir	*Pseudotsuga menziesii*	32	2.2%	3.0	0.1	20,754	20	$41,650
Southern red oak	*Quercus falcata*	27	1.9%	24.7	0.4	67,222	40	$118,562
Flowering dogwood	*Cornus florida*	24	1.6%	0.6	0.1	2,521	0	$8,921
American holly	*Ilex opaca*	24	1.6%	2.5	0.1	18,589	0	$23,378
All Other Trees Inventoried		286	19.6%	85	2.3	251,429	100	$384,011
Total		**1,458**	**100%**	**625**	**17.8**	**2,149,923**	**1,060**	**$2,894,456**

Improving Air Quality

The inventoried tree population annually removes 1060 lbs. of air pollutants, including sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and particulate matter ($PM_{2.5}$). The i-Tree Eco model estimated the value of this benefit at $4,699. As shown in Figure 11, a small reduction of $PM_{2.5}$ is more valuable than any of the other pollutants removed. The tree populations that provided the highest annual air quality benefits were tuliptree (*Liriodendron tulipifera)* and Eastern

white pine (*Pinus strobus),* which removed approximately 220 lbs. per year and 200 lbs. per year, respectively.

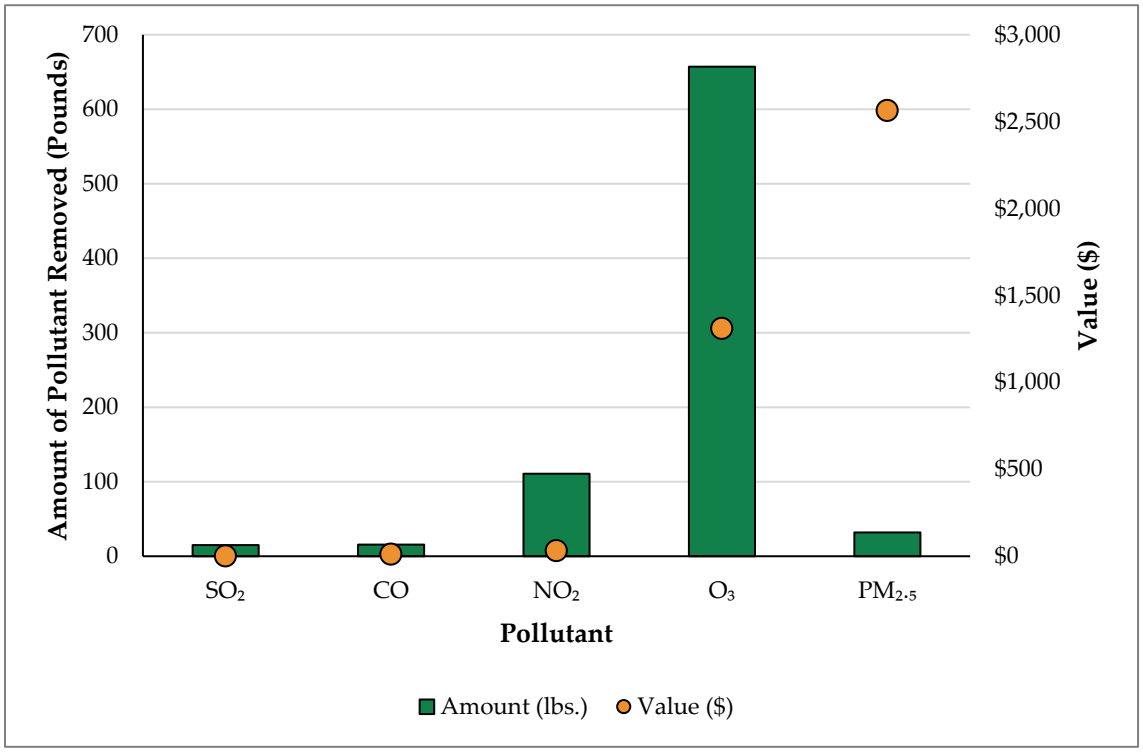


Figure 11. Estimated value of removing airborne pollution by weight and type.

Replacement Value

The concept of replacement value serves as a useful tool for estimating the local cost associated with replacing an existing tree with a similar one. This metric not only sheds light on the overall worth of a tree population, but also provides insights into the value of individual trees. In the context of Washington Lake Park, the total replacement value for the inventoried tree population is a substantial $2,894,456.

Among the various species, the population of white pine emerges as the most valuable due to the large quantity, with a total replacement value of $534,478, equating to an estimated value of $2,740 per tree. On a per tree basis, the Southern red oak emerges as the most valuable due to the population's size, health and functional utility, valued at $4,391 per tree. Black oak is close behind, valued at $4,284 per tree. In contrast, smaller stature trees, such as cherry trees, are valued at $1,795 per tree.

Conclusion and Recommendations

The partial tree inventory conducted at Washington Lake Park provides valuable insights into the current condition and composition of the tree population. Taking a proactive approach to tree maintenance, including the implementation of a regular pruning cycle, will significantly enhance the health and longevity of the trees. By addressing structural issues, promoting growth, and reducing the risk of disease or failure, an established pruning schedule will help maintain the beauty and safety of the park grounds. This forward-thinking strategy will also support the park's long-term commitment to preserving its natural landscape while ensuring the well-being of visitors and the overall sustainability of the tree population.

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Appendix A: Data Collection Methods

DRG collects tree inventory data using their proprietary GIS software, called Rover, loaded onto pen-based field computers. At each site, the following data fields were collected:

Address/Location	Defects
Species	Risk Rating
Tree Size	Risk Rating Complete
Multi-stem Tree	Further Inspection
Condition	Date of Inventory
Primary Maintenance Recommendation	

The knowledge, experience, and professional judgment of DRG's arborists ensure the high quality of inventory data.

Risk Assessment

Every tree has an inherent risk of tree failure or defective tree part failure. During the inventory, DRG performed a modified Level 2 qualitative risk assessment for each tree and assigned a risk rating based on the ANSI A300 (Part 9), and the companion publication *Best Management Practices: Tree Risk Assessment* (ISA 2011). Trees can have multiple failure modes with various risk ratings. One risk rating per tree will be assigned during the inventory. The failure mode having the greatest risk will serve as the overall tree risk rating. The specified time period for the risk assessment is one year.



Likelihood of Failure—Identifies the most likely failure and rates the likelihood that the structural defect(s) will result in failure based on observed, current conditions.

- **Improbable**—The tree or branch is not likely to fail during normal weather conditions and may not fail in many severe weather conditions within the specified time period.
- **Possible**—Failure could occur but is unlikely during normal weather conditions within the specified time period.
- **Probable**—Failure may be expected under normal weather conditions within the specified time period.

Likelihood of Impacting a Target— The likelihood of impacting a target is determined by the rate of occupancy within the target zone and any factors that could influence the failed tree as it falls towards the target.

Likelihood Categories:

- **Very Low**
  The chance of the failed tree or branch impacting the target is remote. Examples include:
  - Rarely used trails or trailheads
  - Instances where target areas provide protection
- **Low**
  It is unlikely that the failed tree or branch will impact the target. Examples include:
  - A frequently used area with a partially exposed tree
  - Constantly used areas that are well protected
- **Medium**
  The failed tree or branch may or may not impact the target. Examples include:
  - Frequently used areas that are partially exposed to the tree on one side
  - Constantly occupied areas that are partially protected from the tree
- **High**
  The failed tree or branch will most likely impact the target. Example includes:
  - A fixed target that is fully exposed to the tree or tree part

Categorizing Likelihood of Tree Failure Impacting a Target—The likelihood for failure and the likelihood of impacting a target are combined in the matrix below to determine the likelihood of tree failure impacting a target.

Likelihood of Failure	Likelihood of Impacting Target			
	Very Low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very Likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Consequence of Failure -The consequences of tree failure are categorized based on target value and the potential harm that may occur. These consequences can vary depending on factors such as the size of the defect, the distance a tree or limb may fall, and any other factors that may protect a target from harm. Target values are subjective and should be assessed from the client's perspective.

Consequences by Category:

- **Negligible**
  Consequences involve low-value damage and do not result in personal injury. Examples include:
  - Small branches striking a fence
  - Medium-sized branches striking a shrub bed
  - Disruption of power to landscape lights
- **Minor**
  Consequences involve low to moderate property damage, small disruptions to traffic or communication utilities, or very minor injuries. Examples include:
  - Small branches striking a house roof from a high height
  - Medium-sized branches striking a deck from a moderate height
  - Short-term disruption of power at the service drop to a house
- **Significant**
  Consequences involve property damage of moderate to high value, considerable disruption, or personal injury. Examples include:
  - Medium-sized parts striking a vehicle from a moderate or high height
  - Large tree parts striking a structure, resulting in significant monetary damage
  - Disruption of primary or secondary voltage power lines, including individual services and street-lighting circuits
  - Disruption of traffic on a secondary street
- **Severe**
  Consequences involve serious potential injury or death, damage to high-value property, or disruption of important activities. Examples include:
  - Injury to a person that may result in hospitalization
  - Medium-sized parts striking an occupied vehicle
  - Large tree parts striking an occupied house
  - Serious disruption of high-voltage distribution and transmission power lines, along with arterial traffic or motorways

- **Risk Rating**—The overall risk rating of the tree will be determined based on combining the likelihood of tree failure impacting a target and the consequence of failure in the matrix below.

Likelihood of Failure	Consequences			
	Negligible	Minor	Significan	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Trees have the potential to fail in more than one way and can affect multiple targets.

Tree risk assessors will identify the tree failure mode having the greatest risk, and report that as the tree risk rating. Generally, trees with the highest qualitative risk ratings should receive corrective treatment first. The following risk ratings will be assigned:

- **None**—Used for planting and stump sites only.
- **Low**—The Low-Risk category applies when consequences are "negligible", and likelihood is "unlikely"; or consequences are "minor" and likelihood is "somewhat likely." Some trees with this level of risk may benefit from mitigation or maintenance measures, but immediate action is not usually required.
- **Moderate**—The Moderate Risk category applies when consequences are "minor" and likelihood is "very likely" or "likely"; or likelihood is "somewhat likely" and consequences are "significant" or "severe." In populations of trees, Moderate Risk trees represent a lower priority than High or Extreme Risk trees.
- **High**—The High-Risk category applies when consequences are "significant" and likelihood is "very likely" or "likely," or consequences are "severe" and likelihood is "likely." In a population of trees, the priority of High-Risk trees is second only to Extreme Risk trees.
- **Extreme**—The Extreme Risk category applies in situations where tree failure is imminent and there is a high likelihood of impacting the target, and the consequences of the failure are "severe." In some cases, this may mean immediate restriction of access to the target zone area to avoid injury to people.

Trees with elevated (Extreme or High) risk levels are usually recommended for removal or pruning to eliminate the defects that warranted their risk rating. However, in some situations, risk may be reduced by adding support (cabling or bracing) or by moving the target away from the tree. DRG recommends only removal or pruning to alleviate risk. But in special situations, such as a memorial tree or a tree in a historic area, BBG may decide that cabling, bracing, or moving the target may be the best option for reducing risk.

Priority Maintenance

Identifying and ranking the maintenance needs of a tree population enables tree work to be assigned priority based on observed risk. Once prioritized, tree work can be systematically addressed to eliminate the greatest risk and liability first (Stamen 2011).

Risk is a graduated scale that measures potential tree-related hazardous conditions. A tree is considered hazardous when its potential risks exceed an acceptable level. Managing trees for risk reduction provides many benefits, including:

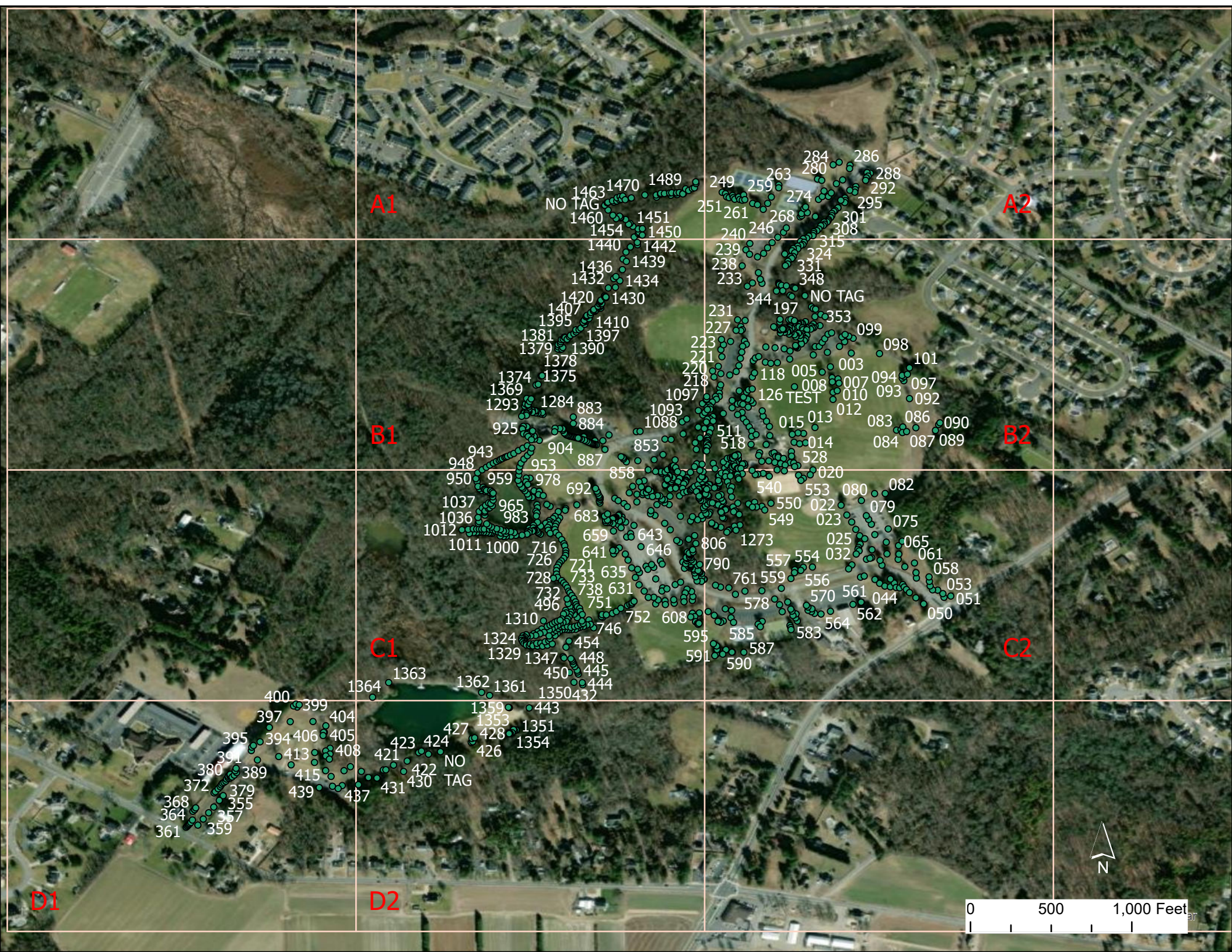
- Lower frequency and severity of accidents, damage, and injury
- Less expenditure for claims and legal expenses
- Healthier, long-lived trees
- Fewer tree removals over time
- Lower tree maintenance costs over time

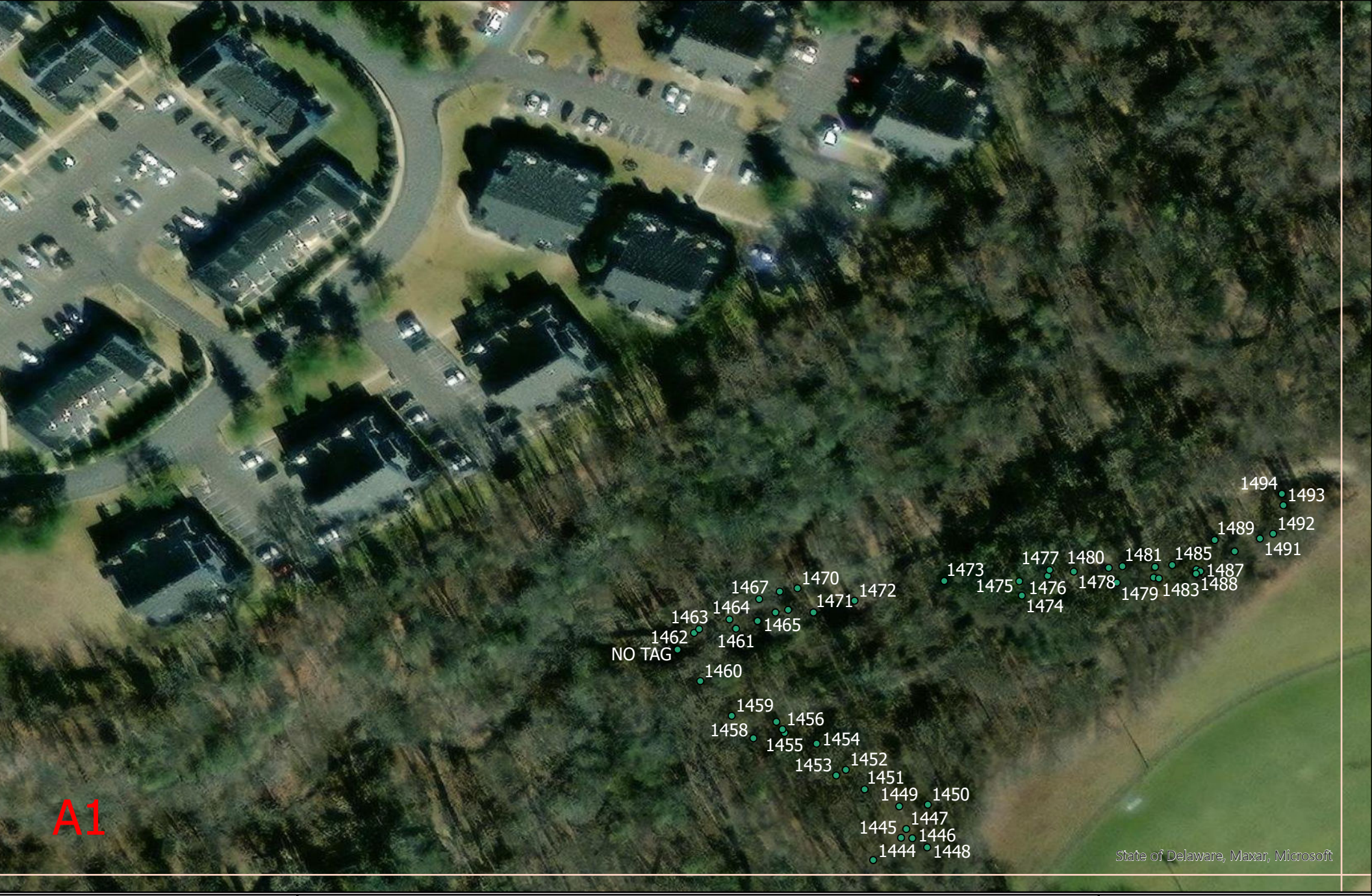
Regularly inspecting trees and establishing tree maintenance cycles generally reduce the risk of failure, as problems can be found and addressed before they escalate.

In this plan, all tree removals and Extreme and High Risk prunes are included in the priority maintenance program.

Proactive Maintenance

Proactive tree maintenance requires that trees are managed and maintained under the responsibility of an individual, department, or agency. Tree work is typically performed during a cycle. Individual tree health and form are routinely addressed during the cycle. When trees are planted, they are planted selectively and with purpose. Ultimately, proactive tree maintenance should reduce crisis situations in the urban forest, as every tree in the inventoried population is regularly visited, assessed, and maintained. DRG recommends proactive tree maintenance that includes pruning cycles, inspections, and planned tree planting.


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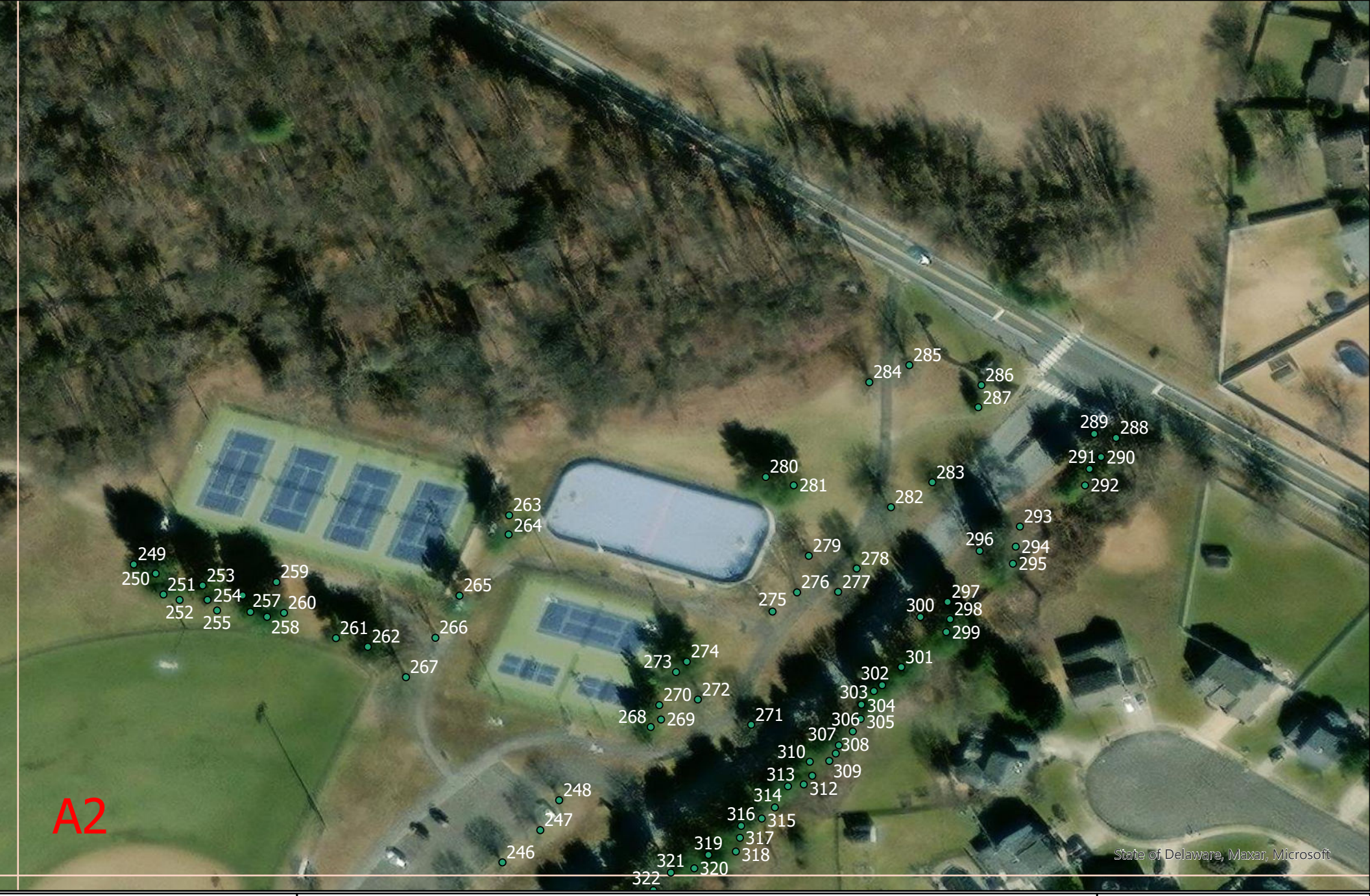


DAVEY Resource Group

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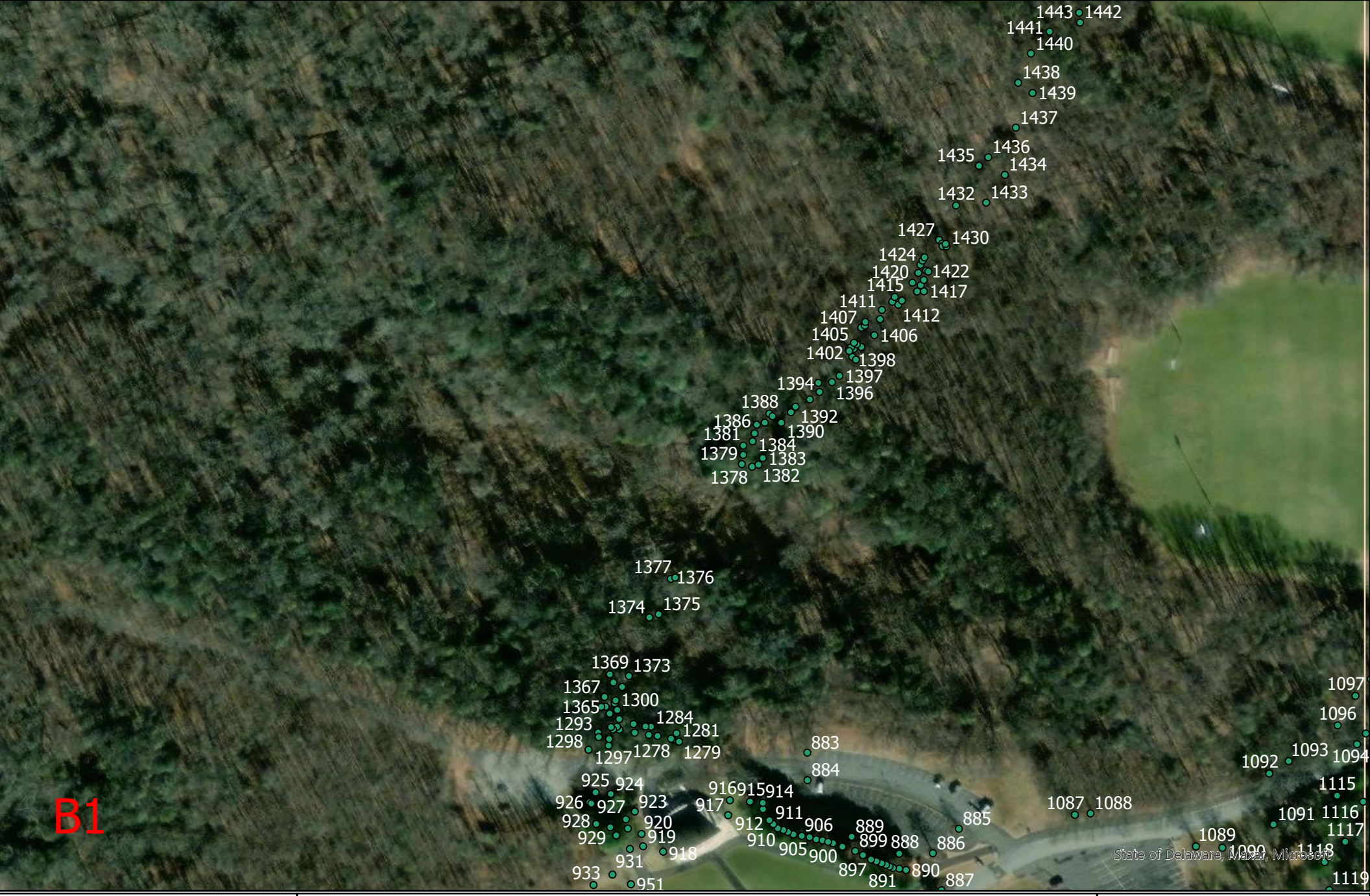


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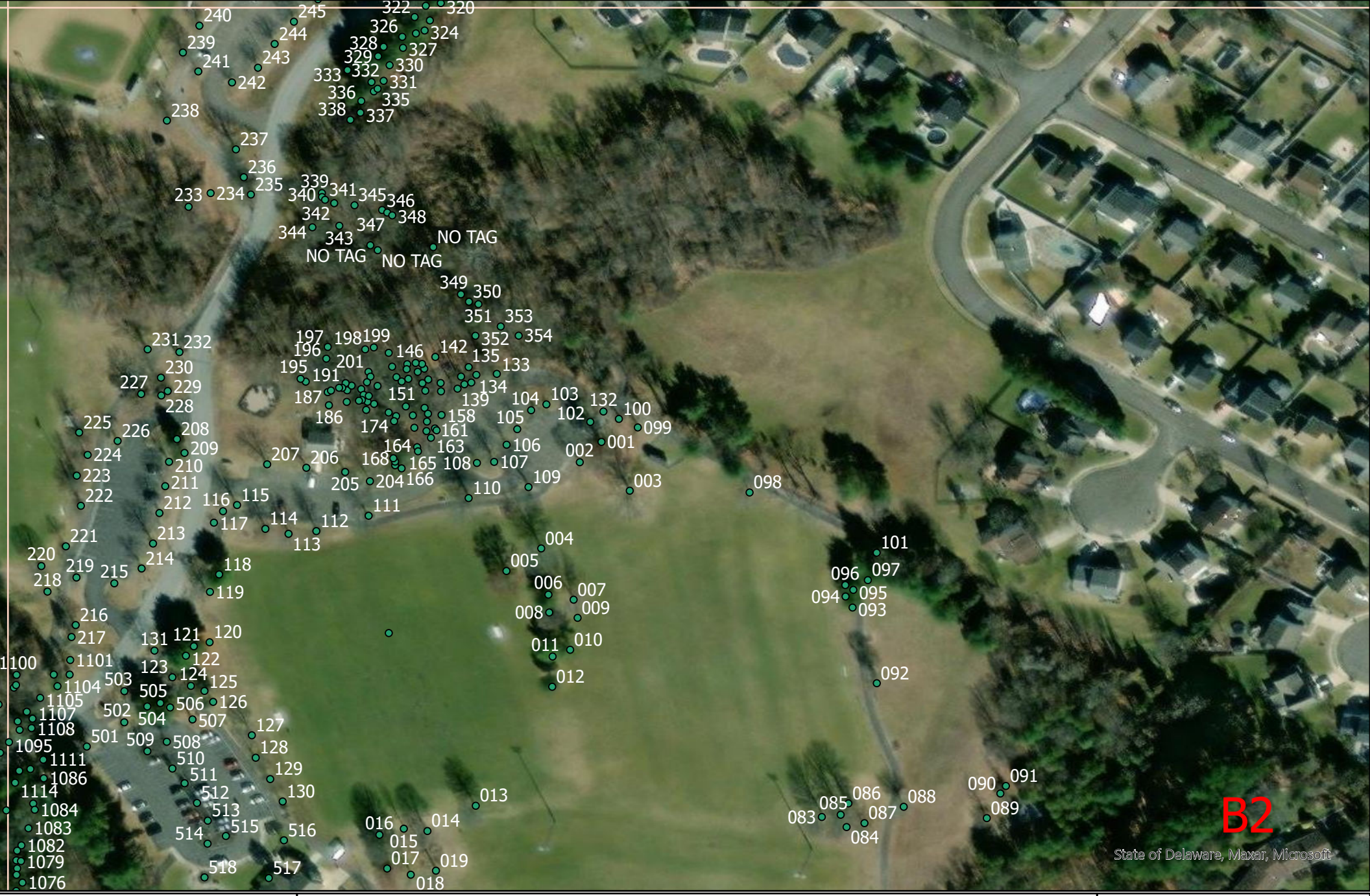


DAVEY Resource Group

Washington Lake Park
Sewell, New Jersey

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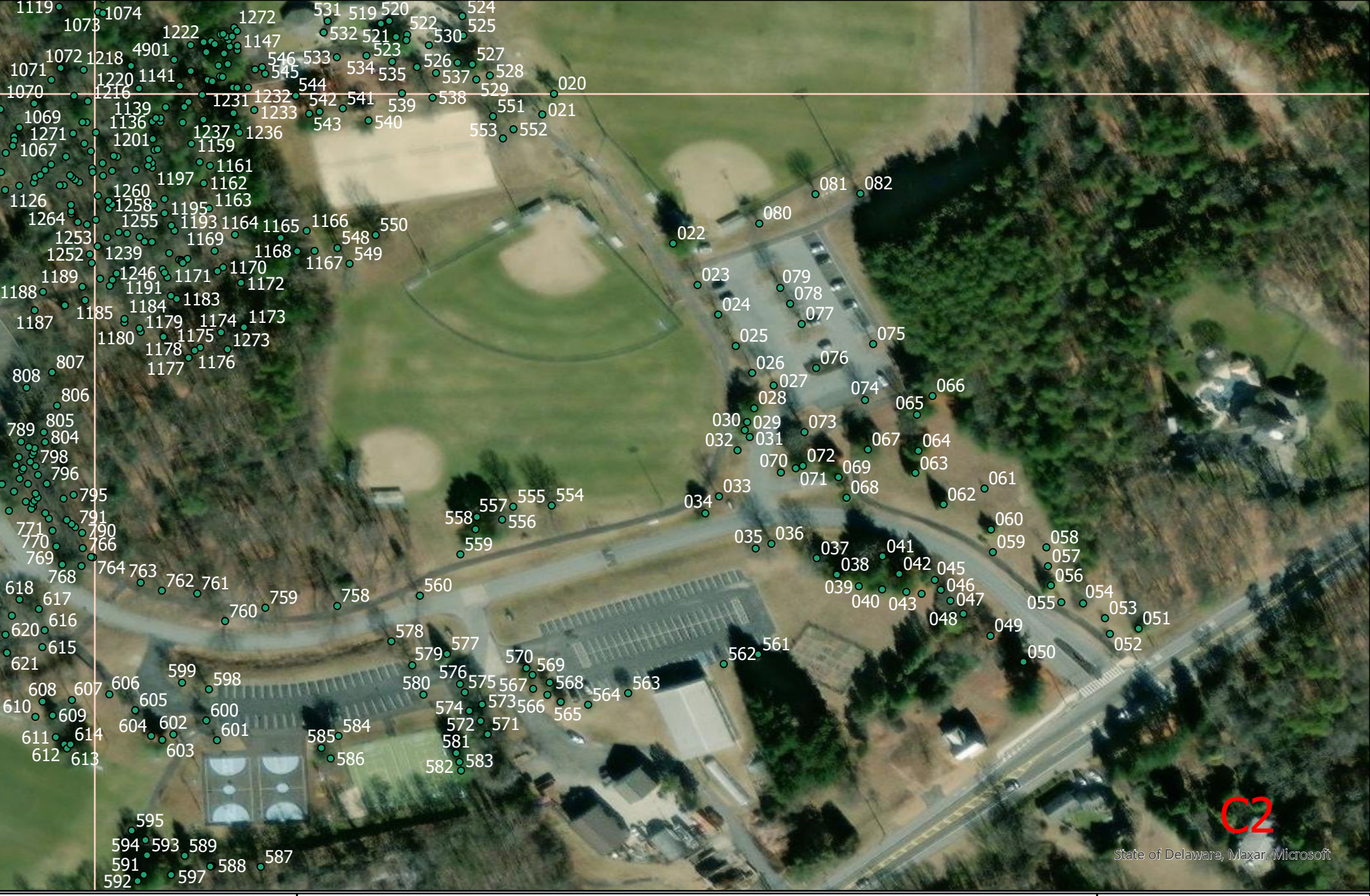
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DAVEY Resource Group

Washington Lake Park
Sewell, New Jersey

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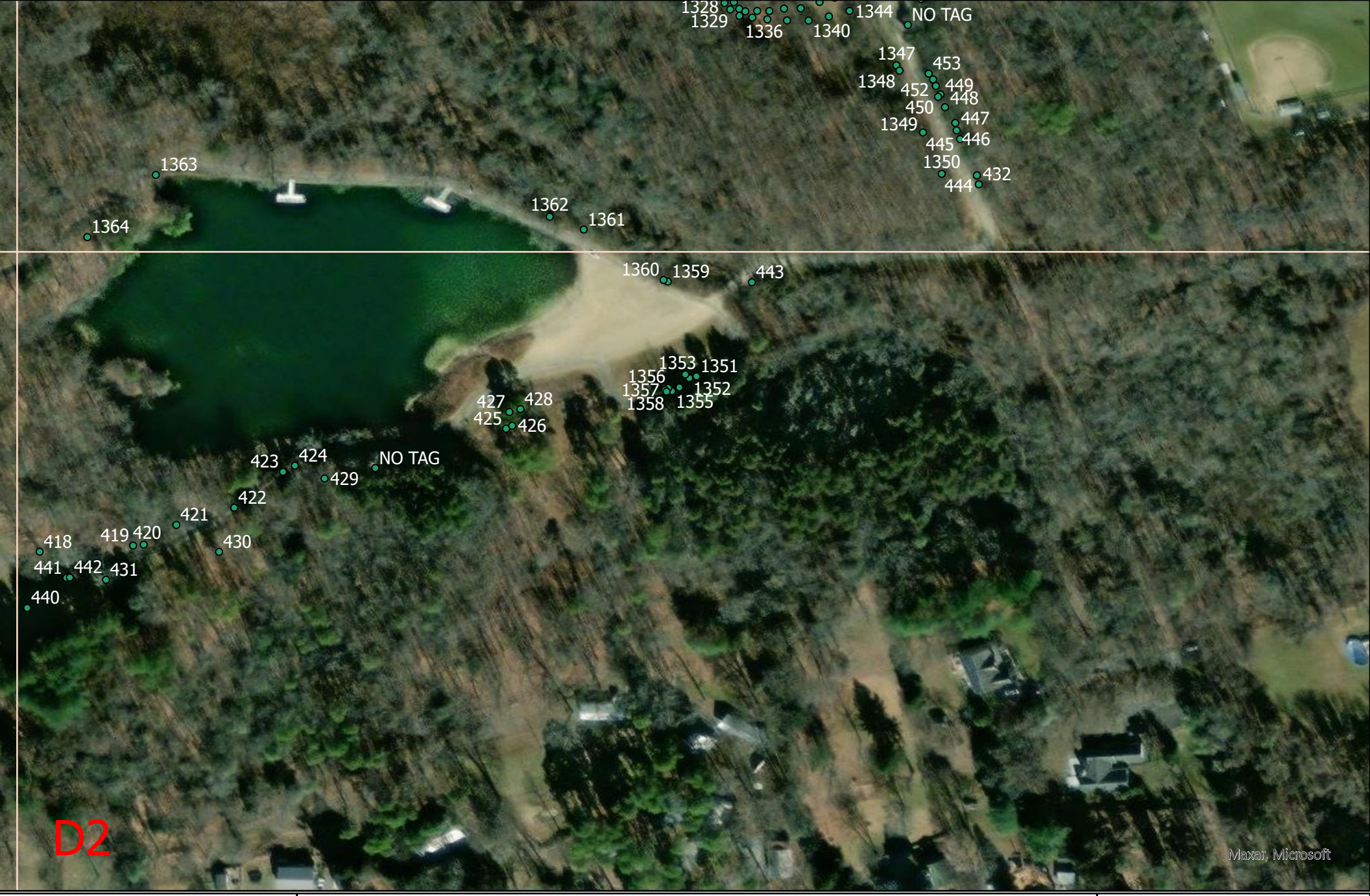


DAVEY Resource Group

Washington Lake Park
Sewell, New Jersey

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DAVEY Resource Group

Washington Lake Park
Sewell, New Jersey

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