Park District of Oak Park
2023 Tree Inventory Update

PARK DISTRICT
of OAK PARK

Prepared By:

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August 28, 2023

GREAT LAKES
URBAN FORESTRY
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Introduction

In August of 2023, Great Lakes Urban Forestry Management completed an annual update of the comprehensive tree inventory data which was initially collected during the winter of late 2014/early 2015. The 2023 update focused primarily on the parks in the northern half of the Village. During this update, our Certified Arborists remeasured the DBH of each re-inventoried tree, reevaluated condition and form ratings, and updated all relevant data fields. We also ensured that trees added by PDOP staff conformed to our inventory data standards, and that removed trees were accurately represented. The updated inventory data continues to be posted to the District's ArcGIS Online site, where it can be utilized to maintain the inventory at a high level of accuracy, in addition to serving as a useful layer in the District's other mapped amenities.

The Park District of Oak Park continues to take a very proactive approach to the management of its tree population, and we are pleased to see that the tree inventory has been utilized to make this management program a success. As the Park District continues to enhance its in-house use of GIS to manage all of its resources, we look forward to assisting PDOP in ensuring its future success in these endeavors. Great Lakes Urban Forestry Management is pleased to continue to partner with Park District of Oak Park and hopes to continue to serve the District as its Urban Forestry Consultant and Geospatial Data Expert.

Collection Parameters

The following is a detailed description of data that was collected for each tree.

UNIQUE IDENTIFICATION NUMBER
Each newly inventoried tree will be designated a Unique ID Number, at the discretion of the District, to be utilized as a record locator for that specific tree, it's legacy data, and it's maintenance records.

DATE
This field was utilized to record the date the tree was updated on.

TIME
This field was utilized to record the time of day the tree was updated.

X and Y
These are the X and Y coordinates of the tree location, recorded as NAD 83, Illinois State-Plane East (Northings and Eastings) coordinate system.

PARK
This field refers to the name of the park or park facility where the tree was inventoried.

SPECIES
All tree species were listed using Genus, Species, and Common Names, and are guaranteed to be identified to the species level. Specific cultivars, hybrids, or varieties will be identified when possible. This is mostly due to the fact that certain genera such as Crab Apples, Cherry trees, and other ornamentals have such great variation that it can be very time consuming to identify down to this level. The original inventory also took place during "leaf off" dormant season, which presents a barrier to cultivar-level identification. We will attempt to rectify any unidentified cultivars or varieties with the District staff by referencing planting records and Purchase Orders when necessary. Any misidentified trees will be corrected as part of our ongoing support.

STEMS
The number of stems (leaders) was recorded for stems diverging at 4.5 Feet above ground level or lower.

DBH / CALIPER
Trees which measure approximately 8 feet in height and above were measured using DBH (Diameter at Breast Height), a standard forestry measure of tree diameter, using a foresters DBH tape. This method of measurement provides the most accurate reading of tree diameter, which can be highly variable depending on the dimension in which it is linearly measured. Trees under approximately 8 feet in height were measured by Caliper, defined as the diameter of the tree taken at 6 inches above ground level.

CROWN HEIGHT / CROWN SPREAD
Crown Height and Crown Spread are broadly estimated to approximately the nearest 10 foot interval by a combination of pacing from the drip line to the trunk, and utilizing a combination of clinometers, laser rangefinders, landmarks, and professional judgment. This data can be utilized for both 3-Dimensional Mapping, as well as for better calculating rainfall interception rates, carbon sequestration, canopy volume, and other such factors.

LAND USE TYPE

The land use type was recorded for each tree, to denote what the land the tree was on was primarily used for. These were broad categories generally conforming to typical zoning guidelines. For the purpose of this Park District of Oak Park inventory, all Land Use Type designations were "Recreational" or "Institutional".

RESIDENTIAL	Standard residential neighborhood with single/multifamily homes
COMMERCIAL	Primarily business and downtown areas
INDUSTRIAL	Factory or other production land
RECREATIONAL	Parks or golf courses
INSTITUTIONAL	Government buildings, churches, hospitals
VACANT	Vacant lots
AGRICULTURAL	Farmland
TRANSPORTATION	Major transportation corridors or medians
OTHER	Land use did not conform to the above categorizations

PLANTING TYPE

This field was utilized to record what type of specific planting site the tree was planted in. With a few exceptions, most planting type designations were "open space" or "other" for the purposes of this park district inventory.

PARKWAY	Tree was planted on a standard parkway between the curb and sidewalk
TREE GRATE	Tree was in a concrete cutout with a grill of some kind over the soil
TREE PIT	Tree was in a concrete cutout or peninsula with no grill
RAISED PLANTER	Tree was in a raised bed, with the soil surface at least 6" above surrounding grade
CULDESAC	Tree was planted in a traditional Culdesac island, or an "End-Of-Street" bed
MEDIAN	Tree was planted in a median strip between opposing lanes of traffic
NO SIDEWALK	Tree was planted in a non-traditional parkway with no sidewalks
OPEN SPACE	Tree was is an open area of a District park
OTHER	Tree did not conform to any of the above categorizations

1-5 CONDITION RATING

Condition ratings, per our typical tree inventory setup, are performed based on a standard distribution using a 1-5 rating system. This standard distribution system allows us to make statistical comparisons using sound mathematics. We expect the greatest number of trees in the average category (3), fewer trees in the good and poor categories (2 and 4, respectively), and the fewest number of trees in the excellent and very poor categories (1 and 5, respectively). Condition is a summary number that takes into account the tree's overall health and vigor, mostly independent of structure (architecture).

Condition 1	Excellent – Tree has no observable defects, wounds, diseases. In addition, since young trees have a tendency to be trouble free, a condition 1 tree must, by our standards, be greater than 16" DBH.
Condition 2	Good – Tree may have a small amount of deadwood, or a very limited number of nonthreatening defects. These trees should also generally be larger than 8" DBH for the reason listed above, but exceptions are infrequently made.
Condition 3	Average – Tree has moderate amounts if deadwood, wounds, or other deficiencies, but is generally healthy. This is the group which is meant to define the middle ground around which better or worse trees can be defined and identified.
Condition 4	Poor – Tree has defects, deadwood, wounds, disease, etc that are in danger of causing a need for removal or other remedial measures.
Condition 5	Very Poor – Tree must be removed. Physical or Health defects are too far gone for the tree to be reasonably saved. Like condition 1 trees, these are relatively rare, as generally trees that are getting to this level are removed before they can get there.

1-5 STRUCTURE RATING

The structure rating generally conforms to the 1-5 Condition ratings listed above, but is solely focused on the architecture of the tree. We feel this is necessary, particularly with higher risk trees such as those affected by EAB, to determine which trees have stable architecture, and which should be removed at a higher priority level.

Structure 1	**Excellent** – Tree has specimen form for the species in question, and should also, by our standards, be in specimen condition, though exceptions are infrequently made.
Structure 2	**Good** –The overall form of the tree must be good, and consistent for the species in question. No major defects in the structure can be present. These trees should also generally be larger than 8" DBH for the reason listed above, though exceptions are infrequently made.
Structure 3	**Average** –A wide variety of forms is acceptable for this group, which defines the middle ground around which trees with better or worse architecture can be defined and identified. No major structural defects such as trunk splits or severe leans may be present.
Structure 4	**Poor** –Very poor form or architecture that has the potential to lead to tree or tree part failure.
Structure 5	**Very Poor** – Tree must be removed, and has architecture which poses a great amount of risk. Like condition 5 trees, these are relatively rare, as generally trees that are getting to this level are removed before they can get there.

TRAQ FIELDS

The following 4 fields have been added in order to get a basic risk rating, based on the TRAQ (Tree Risk Assessment Qualification) system. As a matter of policy, we will not make the final determination as to overall Risk level, but instead allow the District to calculate this on their own using the data we have provided. This ensures that the District will not have to undertake any burdensome actions based on our assessment of a tree's individual risk factors without a final review. Instead this data is provided in order to determine which trees the District will need to inspect more closely, and perhaps perform a more detailed assessment. These fields can also be used for the District to track it's internal risk assessments.

We cannot stress enough that these were Rapid Assessments, and not full TRAQ Assessments, and as such, are meant to indicate a need for further study, and do not represent a legal description of Risk. These assessments are not legally binding, and are not intended to be utlized as evidence in a court of law. They serve primarily for internal record keeping, and a means of locating trees which require more detailed study before making a final decision as to management strategy.

FAILURE PART

This is the tree part which might be expected to fail within a 1 year period from the date of survey

SOIL	While not technically a tree part, this was utilized in the rare instance when unstable soil conditions could lead to a tree failing, devoid of root condition
ROOTS	Structural roots further from trunk
ROOT PLATE	Root plate / Root flare close to trunk
TRUNK	Trunk defects
SCAFFOLD BRANCHES	Primary large diameter scaffold branches coming off trunk and/or central leader
SECONDARY BRANCHES	Secondary branches coming off scaffold branches. Used as a default for all trees over approximately 6"
WHOLE TREE	Multiple potential points of failure identified, equally likely to fail
TRUNK UNION	Juncture between codominant stems or scaffold branches (for trees without a well-defined primary stem)
OTHER	Part that may be prone to failure did not conform to the above categories
NONE	Used for trees under 4" which are highly unlikely to any experience significant failure

FAILURE LIKELIHOOD

This is the likelihood that the tree or tree part will fail within a period of 1 year from the date of survey.

Improbable	Failure of tree/tree part is highly unlikely within a 1 year time frame
Possible	Failure of tree/tree part is possible, but not probable within a 1 year time frame
Probable	Failure of tree/tree part is likely within a 1 year time frame
Imminent	Tree/Tree Part has already begun to fail and failure is imminent

IMPACT LIKELIHOOD

This is the likelihood that the tree or tree part will impact a target when it fails.

Very Low	Failure of tree/tree part is highly unlikely to impact a target
Low	Failure of tree/tree part is unlikely to impact a target
Medium	Failure of tree/tree part may impact a tartget but is not expected to do so
High	Failure of tree/tree part will almost certainly impact a target

IMPACT CONSEQUENCE

This is the consequence that will be suffered if the tree fails and impacts a target

Negligible	Failure of tree/tree part will have no significant consequence
Minor	Failure of tree/tree part will cause minor damage to property
Significant	Failure of tree/tree part will cause significant damage to property or minor injury to life
Severe	Failure of tree/tree part will cause severe damage to property or life

ROOTS

Roots are evaluated as part of the Standard Defects Package "at a glance"

Normal	Roots appear normal
Exposed	Roots are exposed and can be damaged by mowers, etc.
Girdling	Observed girdling roots or severe trunk flattening
Compacted	Roots showing observable signs of underground root compaction
Wounded	Roots showing wounds, mechanical or otherwise
Multiple Issues	Roots showing a combination of above issues

WOUNDS

Wounds are part of our standard defects package, and include, but certainly aren't limited to: Splits, cavities, callus tissue, holes, or any other mechanical damage. Categorically, "None" was still used if the damage was minor enough that it would not affect the tree.

None	Tree has no wounds
Moderate	Tree has moderately bad wounds
Severe	Tree has severe wounds

DEADWOOD

Deadwood was evaluated as part of the Standard Defects Package. Generally, trees with a small amount of deadwood fell into the "None" category. This is a scalable evaluation. In other words, 3 dead branches would be "Severe" on a 4" DBH tree, "Moderate" on a 10" DBH tree, and "None" on a 25" DBH tree.

None	Tree contained 0-10% deadwood, by ocular estimate
Moderate	Tree contained 11-30% deadwood, by ocular estimate
Severe	Tree contained more than 31% deadwood by ocular estimate

ROT

Rot was evaluated as part of the Standard Defects Package, and includes, but certainly isn't limited to: mushrooms, dry rot, brown rot, bleeding, basal rot, burls, or generally anything that appears to have been caused by an organism, and not mechanical damage. In this case, even small amounts of rot were noted as being "moderate", due to the strong possibility that there is much more damage that cannot be seen with the naked eye.

None	No rot visible whatsoever
Moderate	Modest amounts of observable damage was present
Severe	Severe rot was observed

DEFECTS

Four defects fields were utlized, in addition to the Standard Defects package, in order to get the most complete assessment of the tree possible. These fields can be queried in the GIS system in order to find specific defects.

INSECT DAMAGE	Obvious insect damage such as leaf feeding or insect galleries
FRUITING BODIES	Conks, mushrooms, or other fruiting bodies were present
LIGHTNING STRIKE	Tree had clearly been struck by lightning
FOLIAR FUNGUS	Rust, mold, anthracnose, etc was clearly visible
VOLCANO MULCH	Mulch was piled over 4" high against base of trunk
CRUSHED ROCK	Crushed limestone or volcanic rock at base of tree affecting soil characteristics
OTHER	Other defect was observed
NONE	No additional defect was observed
BLEEDING	Clear evidence of bleeding from wounds
FLAGGING	Selective crown death was clearly evident
CONSTRUCTION DAMAGE	Tree had been damaged from recent construction activities such as root compaction, heavy machinery, etc
VEHICLE STRIKE	Tree had clearly been impacted by a vehicle
UTILITY INTERFERENCE	Tree was interfering with utilities such as overhead wires, street lamps, traffic signals, billy boxes, etc
DAMAGE FROM	Utility had caused physical damage to tree from rubbing etc

UTILITY	
DAMAGE TO HARDSCAPE	Tree had damaged hardscape, such as damage to sidewalks or planter grates
DAMAGE FROM HARDSCAPE	Concrete or other such hardscape had caused physical damage to tree
FROST CRACK	Tree has a frost crack or other similar trunk or branch crack
DROUGHT STRESS	Tree was clearly suffering from drought stress
WINTER KILL	New planting did not survive last winter
CHLOROSIS	Leaves yellowing due to various causes
DIEBACK	Branch tips dying back
LIMITED GROWSPACE	Tree does not have ample above ground growing space due to utilities, street lamps, proximity to buildings/structures, etc
INCLUDED BARK	Tree branch unions have an acute angle and have developed included bark
TOPPED	Tree has lost terminal leader for whatever reason
HANGING BRANCHES	Branches are hanging up in tree crown, either partially attached or free hanging
CANKERS	Tree was exhibiting evidence of cankers. This was also used in many cases for burls as well, or other similar structural wood disfigurements
STORM DAMAGE	Tree had been damaged recently by storm damage, or had been severely pruned back in response to recent storm damage
WOODPECKER HOLES	Tree had high numbers of woodpecker holes
SUCKER SPROUTS	Tree was exhibiting water sprouts or other sucker growth
MECHANICAL DAMAGE	When physical damage had clearly been done to the tree, but the cause was not immediately apparent
WEAK TRUNK UNION	When the first crotch of the tree, or major leader joints had included bark or very narrow or poor attachment

OBJECTS

Two Objects fields were utlized, in addition to the Standard Defects package, in order to assess objects which were interfering with the tree and impacting, or potentially impacting it in any way. These fields can be queried in the GIS system in order to find specific objects.

GIRDLING OBJECT	A nondescript object was girdling the tree or a tree part
BIRDHOUSE	Birdhouse in tree
XMAS LIGHTS	Tree had chrstmas lights strung in crown / on trunk
SWING	Resident had created a play swing in tree
WIRES	Overhead utility lines impacting tree, or nearby enough to impact tree soon
NAILS	Tree had nails/object in trunk or scaffold branches which could affect chippers
ORNAMENTS	Tree had nondescript ornament on or in trunk or branches
BEE HIVE	Tree had bee hive of significant size
BIRDS NEST	Tree contained a large bird nest. Typically not used for smaller nests.
CABLES	Tree contained cables intended for structural support
BOLTS	Tree had been bolted for structural support
OTHER	Tree had an object impacting it which did not conform to the above categories
NONE	Tree had no objects impacting it
STREET LAMP	Tree is impacting a street lamp, or is close enoguh to a street lamp that it could impact it within several years, or during a heavy windstorm
SIGNAGE	Tree is obstructing a traffic control sign or other type of sign, or is close enough to it that it could impact it within several years
TRAFFIC SIGNAL	Tree is obstructing an electronic traffic signal
STRUCTURE	Tree is impacting a structure such as a home or other nondescript structure, or it could impact the structure within several years or during a heavy windstorm

EAB DAMAGE

This is a qualitative assessment of how much damage has been sustained by Ash trees from the Emerald Ash Borer.

None	No VISIBLE damage. EAB Damage may be present, but was not observed
Moderate	Some EAB damage was observed, but not to a point where the tree requires removal
Severe	Tree has severe EAB damage and will require removal

TREATED
This was an assessment of whether or not Elm or Ash trees showed signs of being treated. Field staff were looking for obvious plastic plugs for Ash tree treatment with either Imidacloprid or Emamectin, or obvious drill marks for Dutch Elm Disease treatment. Due to the DED treatment method, which does not leave very obvious marks when done correctly, this field did not wind up being applicable to DED.

NO	No evidence of treatment was observed
EAB	Evidence of Ash tree treatment against EAB was observed
DED	Evidence of Elm tree treatment against DED was observed
OTHER	Evidence of another chemical treatment was observed

MAINTENANCE RECOMMENDATION
Maintenance recommendations are provided to assist in managing the tree population. They are very general guidelines for pruning and care, and they can be helpful for determining care in the immediate future.

Cyclical Prune	Tree is in good health, and will require standard pruning or maintenance on a 3-5 year cycle
Monitor	Tree has an indiscernible defect, or shows signs of developing issues or general decline. Also for healthy Ash trees which do not require immediate removal, and Ashes currently being treated.
Priority Prune	Typically tree is overgrown, and in need of pruning within a 1-3 year period, in a low-risk situation. Lower priority than immediate prune.
Immediate Prune	Tree requires pruning within a 1 year time frame in order to correct a potentially high risk situation from developing
Priority Maint	Tree requires maintenance not related to pruning or removal. Typically this is for situations such as parkway repair, leaning new plants, stake or girdling object removal, etc
Consider Removal	This was utilized when a tree did not necessarily require removal, but it's removal would represent an improvement. Tree was not high risk, but had poor form or another condition which would be best served by removal and replanting as budgets allow
Remove	Tree must be removed, but does not pose an immediate high risk situation. Tree should likely be removed within 2 years
High Risk Removal	Tree must be removed immediately due to a high risk conditions. We will notify District staff by phone immediately upon finding a tree in this condition.
Risk Assessment	Tree requires a formal Risk Assessment per ANSI and ISA guidelines. This generally will coincide with the TRAQ fields.

PRUNING TYPE
This indicates which type of pruning the tree should receive. This includes the following:

ESTABLISHMENT PRUNE	For young trees which require simple pruning to establish branch structure
HAZARDOUS LIMB	For trees which require pruning to remove a hazardous limb
PRUNE FROM BUILDING	When a tree requires a limb to be pruned from any structure
RAISE CROWN	Tree branches are too low, need some removed for good structure
SIDEWALK CLEARANCE	Limb hanging too low over sidewalk or path, causing obstruction
SIGN CLEARANCE	Limb is obstructing signage
STANDARD PRUNE	Implies that a standard pruning is required
STREET CLEARANCE	Limb hanging too low over street may obstruct vehicular traffic
UTILITY PRUNE	Limb is obstructing a streetlamp, wires, traffic signal, hydrant, etc

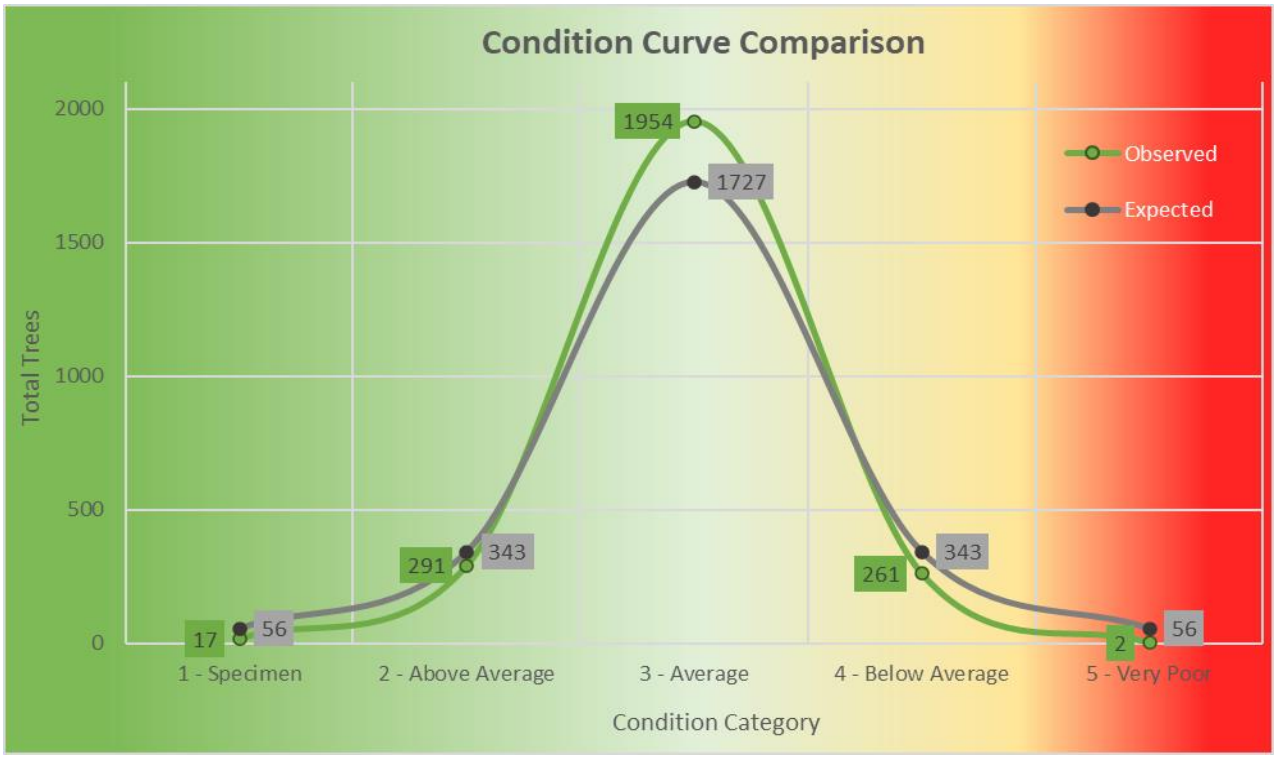
COMMENTS
Comments have been included as a courtesy to denote any conditions worthy of note. These comments will be standardized as much as possible, though certain situations certainly exist where nonstandard comments were utilized.

MEMORIAL
Any additions or changes to the Memorial status of updated trees were noted as part of this inventory update.

2023 Inventory Update Statistics

Tree Charts and Analysis

	2014	2022	2023
Total Number of Trees	2,572	2,561	2,525
Total Number of Stumps	NA	16	8
Total Number of Species	95	112	113
Total Diameter Inches	26,376"	27,356"	27,756"
Average Tree Diameter	10.25"	10.68"	10.99"
Averagve Tree Height	24.67'	24.82'	25.28'
Average Tree Crown Spread	20.79'	17.01'	17.77'
Average Tree Condition (Unweighted - All Trees)	3.09 (Slightly Below Average)	3.00 (Average)	2.98 (Slightly Above Average)
Average Tree Condition (Weighted - 8" and Over)	3.10 (Below Average)	2.94 (Above Average)	2.91 (Above Average)



The above curve represents the distribution of trees in each of the categories enumerated above. As stated in the collection parameters section, deviations from the expected normal standard distribution can serve as a useful tool in analyzing the overall health of a tree population, and for this reason, we have included a theoretical curve representing a normal distribution so that comparisons can readily be made. The green line with green labels represents what we observed in the field in 2023, and the grey line with grey labels is the predicted normal distribution. The condition curve for PDOP's tree inventory indicates a tree population that is slightly above average with an overall rating of 2.98 which has been generally improving from the 2014 average rating of 3.09. The average condition for trees over 8" DBH continues to be above average with an overall rating of 2.91, an impressive improvement over the 2014 rating of 3.10.

The Condition 1, or specimen trees, were lower than would be predicted by the standard distribution alone, but we always expect that the specimen trees will come in lower than their statistical norm because of their rarity. A Condition 1 tree, by definition, must be a minimum of 16" DBH (and generally much larger), have textbook perfect architecture for the species, and have no observable defects. As younger trees are planted in sites with adequate growing space, and if they are properly pruned and maintained, they should develop with good structure and may mature to become Condition 2 and

eventually Condition 1 trees. The number of Condition 1 trees has either increased or held relatively steady from every update since 2014.

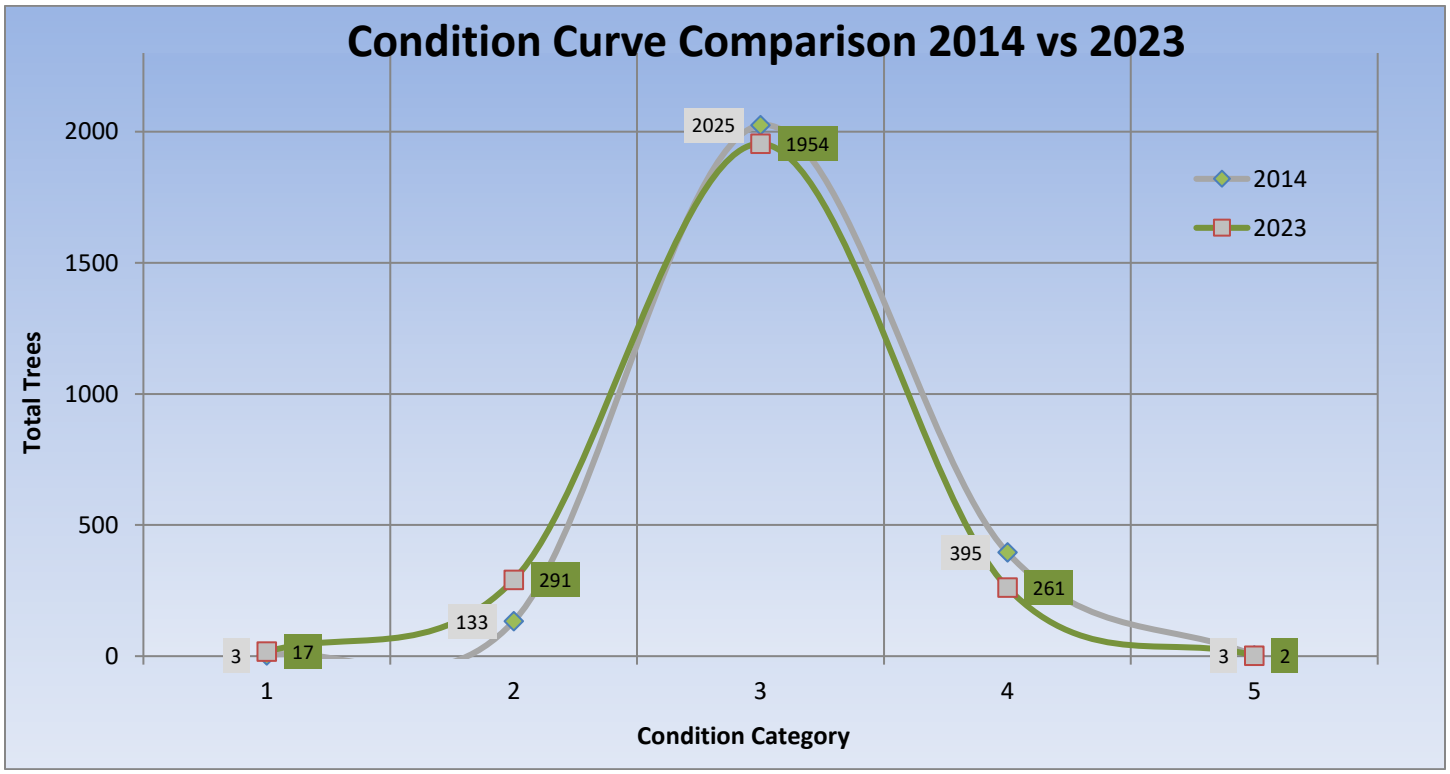
The Condition 5, or very poor trees, came in significantly lower than the expected norm which is an excellent indicator of a high level of proactive maintenance. It is recommended that Condition 5 trees be prioritized and removed in a timely manner.

The Condition 2, or above average trees, are lower than what statistical analysis would predict. However, the number of trees in this category has increased significantly since 2014. Similar to the Condition 1 category, Condition 2 trees need to have good structure that is consistent with the species in question and also be a minimum of 8" DBH. Nearly 41% of PDOP's tree population is not eligible to earn a Condition 2 designation due to their DBH being below 8". In general, if trees are properly mulched and maintained, newly installed trees are done so correctly and cared for well, and site selection for the trees is well matched to the species, trees will often mature with good form and without significant defects. These trees can eventually become Condition 2 trees.

The Condition 4 trees came in lower than what would be statistically expected which again is an indicator of a high level of maintenance. These are generally declining or over-mature trees that have developed structural defects, decay, and/or deadwood. PDOP can continue to use the data from the inventory to locate Condition 4 trees and prioritize them for maintenance, monitoring, or removal.

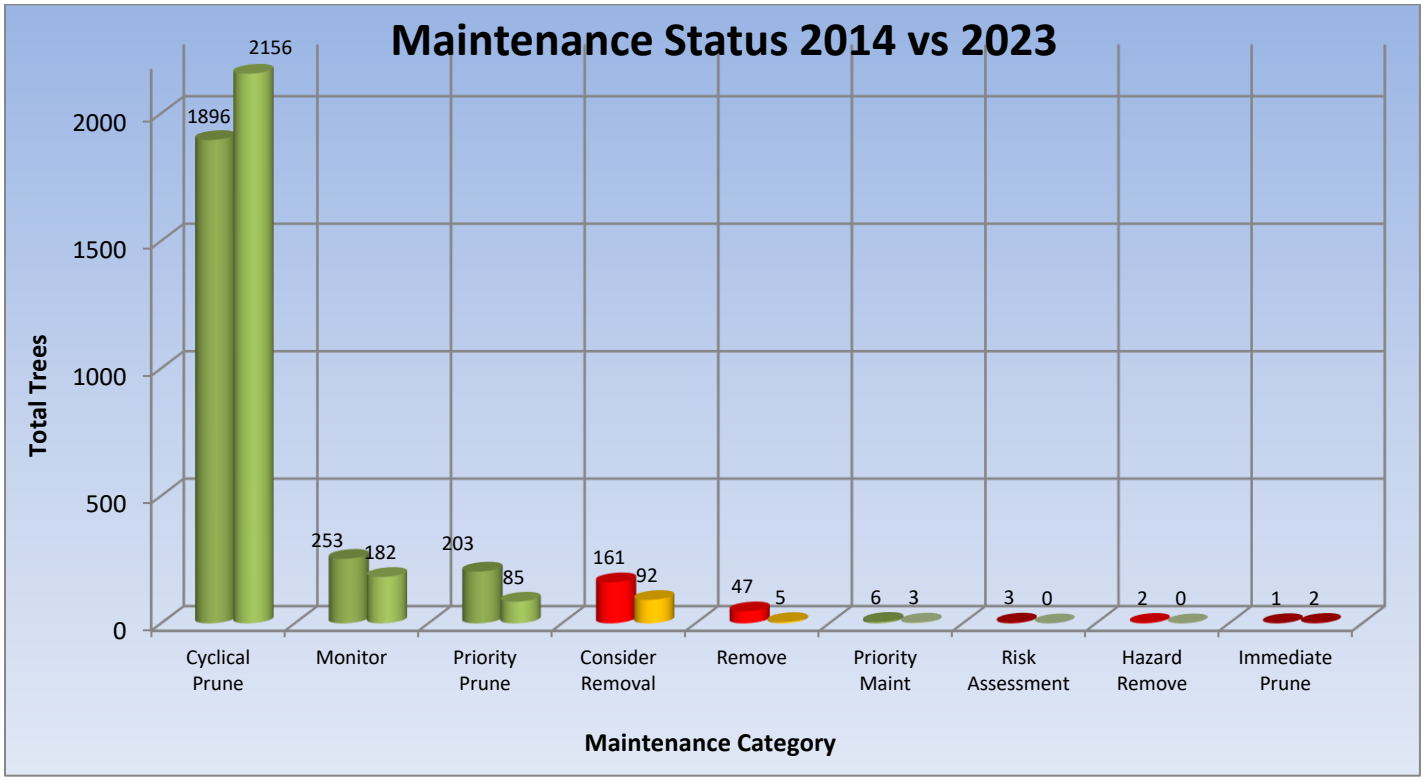
The trees in the Condition 3, or average, category are significantly higher than the expected norm and that is simply because this is the "average" category and generally has the most trees in it. Another reason this number is inflated is due to PDOP's tree population being relatively young and all trees under 8" DBH are automatically assigned this category unless they happen to be in worse condition. As the Condition 4 and 5 trees are removed and replaced, and Condition 3 trees mature and become eligible for a Condition 2 rating, this Condition curve will certainly continue to shift more toward above average.

Ideally, tree populations should have an average tree condition somewhere in the 2.5 range, with a sizable population of specimen trees, and a steep drop off in trees after Condition 3. The PDOP Condition curve has been slowly approaching this model over the years of proper maintenance, observed in the chart below. With some younger trees which are about to enter a phase where they may become eligible for Condition 2 status, and actions taken to further lower the number of trees in the Condition 4 and 5 categories, we anticipate that PDOP will continue to make positive changes over the next few years that will result in an even more vigorous and resilient tree population.



As stated above, the PDOP's tree population Condition curve is slowly approaching the ideal average tree condition standard, observed in this chart. The green line with green labels represents what we observed in the field in 2023, and the grey line with grey labels is what we observed in the original 2014 inventory. The important part about this condition curve, and past charts, is that the tree condition ratings have continued to trend in a positive direction. As can be readily seen, there have been significant decreases in the Condition 4 trees while the Condition 2 "above average" category continues to increase in number. This is entirely due to staff using the inventory to locate and either prune or remove poor condition trees, as well as planting new young trees to take the place of those trees removed.

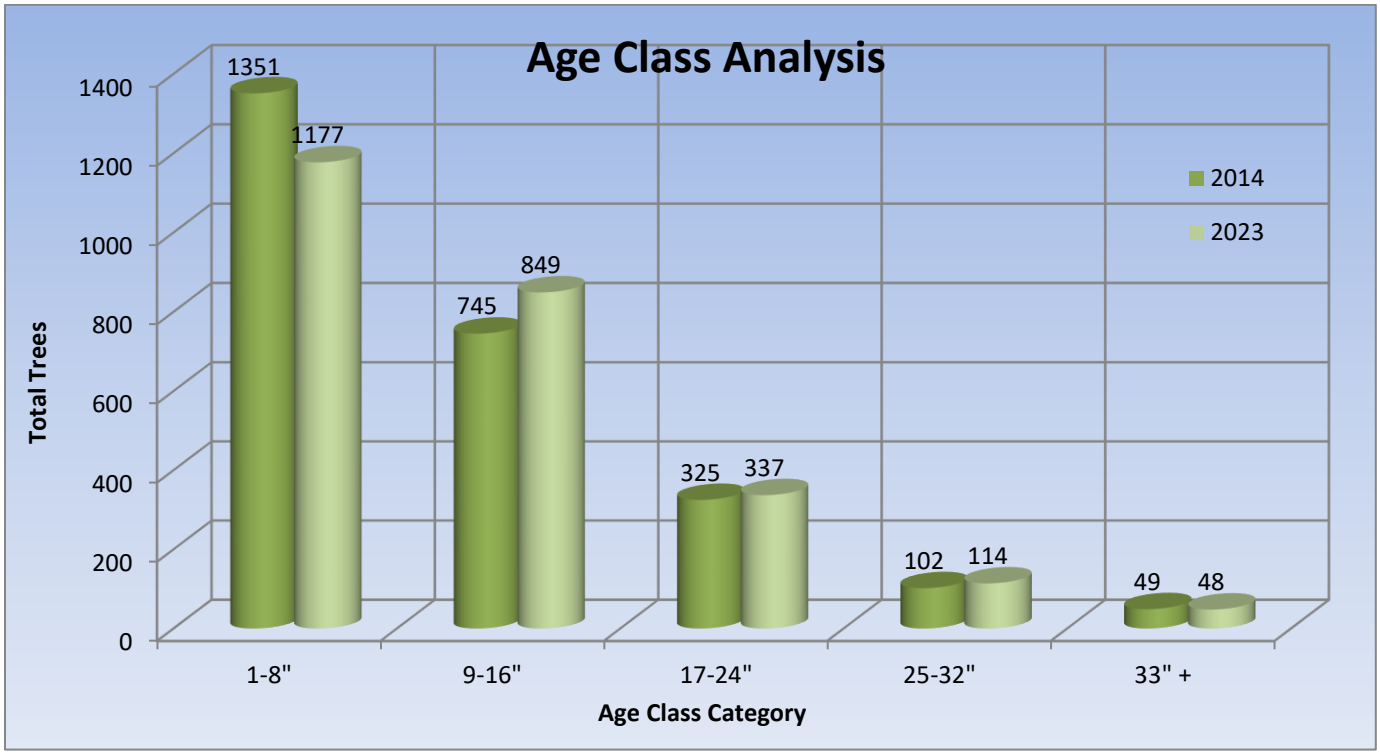
As mentioned above, trees need to be at least 8" DBH to qualify for Condition 2 status and at least 16" DBH to qualify for Condition 1 status. As PDOP's tree population continues to mature, trees in the Condition 2 and 3 categories will grow to reach the DBH threshold necessary to qualify for a higher condition rating which will continue to shift the condition curve more toward above average. Additionally, as PDOP continues to provide a high level of care for existing trees, remove poor condition trees, and plant new trees, future success will be ensured as these condition ratings will continue to trend in a positive manner.



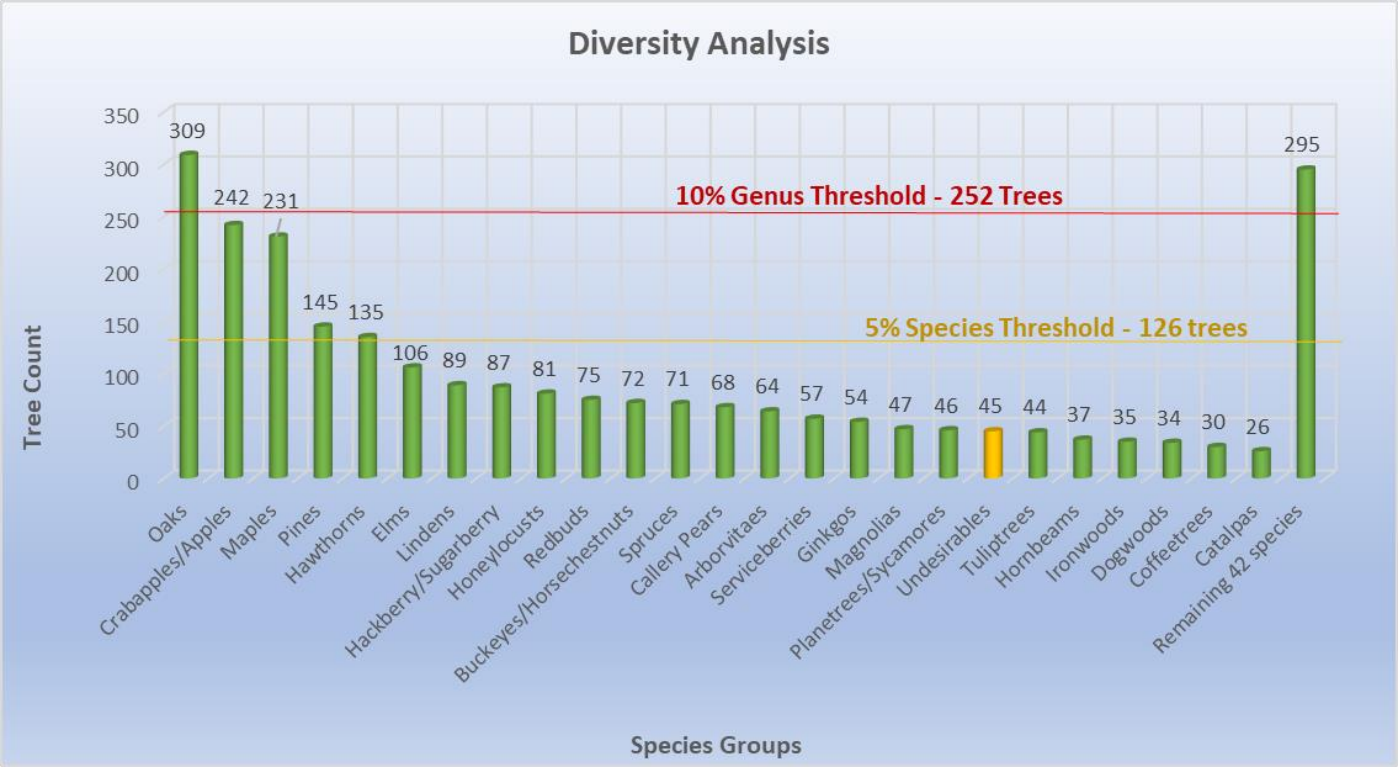
As can be seen from the chart above, the "Cyclical Prune" category is by far the largest and has been growing with the influx of newly planted trees. Establishment pruning, or the pruning of young trees to establish proper branching habit and structure, is one of the least expensive yet most effective maintenance items that can be performed on a young tree. With the rather significant number of recently planted trees in the PDOP population, an establishment pruning schedule is highly recommended and would ensure that all young trees are pruned within 5 years of planting.

The "Consider Removal" and "Removal" trees have significantly decreased, again due to many of these trees having been actually removed, which shows that PDOP has been vigilant about using the tree inventory data to address these trees. Several of the trees listed in the "Monitor" category are Ash trees which are still standing and may have survived through

the EAB infestation. The rest of the trees in the "Monitor" category are showing signs of a developing issue or decline and should be reassessed periodically. The "Priority Prune" trees are those which are simply overgrown, and this category has fallen dramatically due to the efforts of the grounds staff. There are currently no trees noted as "Hazard Remove", however the 2 trees noted as "Immediate Prune" should be addressed by PDOP as soon as possible. Two trees are recommended for a Risk Assessment and the creation of a Risk Management Policy would aid in reducing the District's exposure to liability from tree related property damage or personal injury litigation.



As can be seen from the above chart, PDOP's trees are continuing to hold relatively steady in their age class distribution. A fairly equal number of trees in each age classification is, within reason, desirable and indicative of a consistent focus on tree planting and tree maintenance in the parks over the years. As the younger population matures and moves into the next higher category and new trees are planted replacing older, removed trees, PDOP has an opportunity, over time, to bring the tree age classes to a more balanced level. A Long-Term Planting Plan would be a valuable tool in attaining this goal by providing a comprehensive analysis of the current population, a thorough review of all available planting spaces, and a detailed plan for which tree species may be planted in specific locations, based on site factors such as ecological makeup, shade, soil moisture, nutrient loading, growing space, etc. The removal and replacement of trees over the next few years will give PDOP an opportunity to invest wisely in its future.



PDOP's diversity has not changed dramatically since updates of recent years, so much of the discussion below will be reiterated from years past, however, the main point to take away from this diversity analysis is that PDOP continues to set a high precedent in showing its commitment to a high level of diversity in its parks. We continue to commend PDOP for this achievement and we encourage this continued commitment going forward.

The "20-10-5" rule has been adopted as a Best Management Practice in Urban Forestry. This rule simply states that a tree population should ideally have no more than 20% of any single Family, no more than 10% of any single Genus, and no more than 5% or any single species. As we have learned from the EAB infestation and Dutch Elm Disease, when a pest or pathogen that attacks specific tree genera is introduced into a region where those specific genera are overrepresented, tree populations can take a devastating hit. That being said, we will now discuss the details of diversity in PDOP's 2023 tree population.

As illustrated in the above bar graph and discussed in years past, the Oak genus has exceeded the recommended 10% threshold, however with Oaks being high quality native species, this is not considered to be a major concern at this time. It should be mentioned, though, that if a pest or pathogen that only attacked the Oak genus were to establish in our region, PDOP could potentially lose 12% of its tree population. However, an important thing to mention is that no single Oak species exceeds the 5% species threshold (Appendix A). In fact, no single species besides Crab Apple trees, make up more than 5% of the overall population, which is a commendable and rare achievement not often found in area Park District settings.

Crabapple trees are over-represented in the population, and it is recommended that in the future, PDOP choose to plant other ornamental species in place of Crabapples. It has been observed during this inventory update that some Crabapple trees are succumbing to fire blight or foliar fungal pathogens and will likely require removal and replacement in the future. Other suitable ornamental species could include Eastern Redbud, Smoketree, Red Buckeye, Witch Hazel, Persian Ironwood, Amur Maackia, Magnolia, Siberian Peashrub, or Dogwood.

The Maple genus has reached the acceptable ratio at just under 10%, and we applaud PDOP for its continued proactivity in this matter. We often see Maple species over- represented in tree populations because they are often an often hardy and commonly available shade tree. In years past, we have suggested that PDOP focus on removing some of their older and underperforming Maples and it is apparent the PDOP has heeded that recommendation. We commend PDOP for its commitment to keeping the Maple genus at an acceptable level and we encourage this careful species selection to continue.

The 48 trees in the "undesirables" category are species such as Mulberry, Boxelder, Cottonwood, Willow spp, Black Cherry, Siberian Elm, Poplar spp, and Black Locust, and have decreased very slightly since the last update. These trees are notorious for being fast growing, but weak-wooded trees that often develop a variety of structural defects as they mature. For safety, aesthetic, and ecological reasons, it is recommended that PDOP continue to work toward the goal of gradually reducing the number of undesirable trees in its parks and replanting them with a diverse set of tree species, further increasing the overall diversity and tree population stability.

As previously mentioned, it is evident that PDOP has been striving to continue to improve its overall diversity by planting species that are less common and under-represented in its population. Some of these species more recently installed include American Hornbeam, American Redbud, Baldcypress, Beech spp, Birch spp, Blackgum, Buckeye spp, Catalpa, Dawn Redwood, Dogwood, Hybrid Elm, Gingko, Hickory spp, Ironwood, Kentucky Coffeetree, London Planetree, Oak spp, Persimmon, Sweetgum, Tuliptree, and Yellowwood. The chart below itemizes the remaining species making up less than 1% of the population and might be useful when conducting species selections for future planting cycles.

Species Representing Less than 1% of the Total Population

BEECH-AMERICAN	23		ASH-WHITE	9		CHERRY-SPP	2
YELLOWWOOD	23		KATSURA	8		LARCH	2
BALDCYPRESS	20		PERSIMMON	8		7TH SON FLOWER	1
WALNUT-BLACK	17		VIBURNUM-SPP	8		ASH-EUROPEAN	1
DAWN REDWOOD	14		YEW	7		BEECH-EUROPEAN	1
EASTERN REDCEDAR	14		LILAC-TREE	6		DOUGLAS FIR	1
SWEETGUM	13		ALDER-SPP	5		FRINGETREE	1
WITCH HAZEL	12		ASPEN-QUAKING	5		HAZELNUT-TREE	1
BIRCH-RIVER	11		BLACKGUM	5		HICKORY-KINGNUT	1
FIR-CONCOLOR	11		PAWPAW	5		MOUNTAIN ASH-SPP	1
HEMLOCK-EASTERN	11		AMUR CORKTREE	4		SASSAFRASS	1
PLUM-SPP	11		ASH-GREEN	3		SILVERBELL	1
HICKORY-SHAGBARK	10		BIRCH-GRAY	3		SMOKETREE	1
OSAGE ORANGE	10		HICKORY-PECAN	3		UNKNOWN	1

As PDOP looks to the future of its tree planting program we recommend planting from the "lesser represented" tree species. As previously discussed in this report, a Long-Term Planting Plan would be an excellent tool for PDOP to pursue in order to address and plan for current needs, future strategies, and the budget planning necessary to attain these goals. Such a plan would also further improve overall diversity by analyzing the current population and selecting species to plant that are underrepresented and would in turn maximize the lifespan of trees in the parks by carefully matching a tree species requirements and tolerances with each individual planting space. Trees that are well adapted to their growing conditions will establish more quickly, require less maintenance, and be healthier overall and more resistant to disease and insect problems. By matching the right tree with the right planting space, PDOP can help protect its investment in each new tree.

Conclusion

Park District of Oak Park should be commended for its commitment to keeping its tree inventory data up to date because accurate data is a valuable tool used to successfully maintain and manage a vigorous and diverse tree population. It is evident that PDOP has been using the original tree inventory data collected in 2014 to manage its population and PDOP is clearly dedicated to maintaining this tree population and continuing to improve it in the future.

Moving forward, PDOP should continue its focus on the removal of poor condition trees and undesirable species. The next item to consider is a Long-Term Tree Planting Plan for PDOP's parks. Having lost a number of Ash trees over the last decade, and with additional removals likely to occur in the future, there will be a need for new trees. Our method for creating planting plans involves looking at open planting sites and assessing their available growing space (above and below ground), soil moisture, light level, any nutrient or salt loading, and what tree form is best planted, and then we

attempt to match these planting site characteristics to trees which are best suited to them. This ensures proper establishment, as well as a high probability of the longest possible lifetime in the parks. Long lived trees provide many more benefits over the long term and need to be replaced less frequently.

For park districts, planting plans are particularly important. The areas where Ash or other trees were removed may not be the best place for replacement trees in a given park. We evaluate what areas have the greatest need for trees (playground and ball field shading, screening from residences, etc) and place trees where they will have the greatest impact to the park in question. We also prepare these plans for the long term, such as a 5-10 year plan, so that tree planting can be done in an organized fashion. We also ensure that trees are being planted spatially diverse, so that we do not create local monocultures of trees, and instead try to create an arboretum-like setting in the parks.

The issue of Tree Risk Management is also vastly important and insulating the organization from litigation involving trees is very important, as well. Of course, the primary concern is that no resident or property is harmed by tree failures but making sure that it does not become a legal issue is important as well. For this reason, we advise that PDOP pursue the creation of a Tree Risk Management Policy. Such a policy states how and when tree risk assessments are performed, and what the protocol is for dealing with a tree that has been identified as High Risk. To get started, trees identified as posing an elevated risk should have a TRAQ Risk Assessment, according to ANSI / ISA standards and possibly removed before they become a liability. Since tree removal is expensive and time-consuming, even a brief level 2 assessment would provide more information to make an appropriate decision.

Once the above have been accomplished, then PDOP will be halfway towards the ultimate goal of using this tree data to develop a formal Urban Forestry Management Plan, which will create long-term strategies and budgets for tree planting and management in PDOP. Such a plan ensures that goals and objectives for the PDOP tree population can be maintained through many generations of staff without losing sight of the initial plan. Trees are a 30-100+ year commitment and should be maintained as such. An Urban Forestry Management Plan is a living, breathing document which can be adaptively managed to make PDOP's tree population the best it can be, and provide Oak Park residents with the greatest environmental and aesthetic benefits.

The parks and facilities of Park District of Oak Park are surely a treasure to all its patrons. By using the inventory data and some recommendations included in this report, PDOP has an excellent opportunity to create an even more vigorous, robust, and diverse tree population for the enjoyment of generations to come. It has been a pleasure for Great Lakes Urban Forestry Management to provide this tree inventory update, data analysis, and GIS mapping services to Park District of Oak Park. We look forward to the opportunity to partner with PDOP in the future to assist in Tree Planting Planning, perform Tree Risk Assessments, inventory updates, or to assist in other urban forestry, GIS, or natural resource related initiatives.

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Appendix A: All Trees

SPECIES	COUNT	% OF TOTAL	AVG DBH	AVG HEIGHT	AVG SPREAD	AVG COND
APPLE-CRAB SPP	237	9.39%	8.87	15.00	15.70	3.06
MAPLE-NORWAY	102	4.04%	19.58	46.76	31.67	3.10
OAK-RED	100	3.96%	11.92	30.10	20.90	2.95
HAWTHORN-SPP	89	3.52%	7.15	15.56	14.38	3.15
HACKBERRY	82	3.25%	13.62	37.68	22.56	2.77
PINE-AUSTRIAN	82	3.25%	12.94	25.98	17.26	3.27
HONEYLOCUST	81	3.21%	19.46	39.63	33.27	2.95
OAK-BURR	81	3.21%	7.04	18.83	10.86	2.78
AMERICAN REDBUD	75	2.97%	10.37	14.27	16.67	3.07
PEAR-CALLERY	68	2.69%	12.21	29.26	17.50	3.10
ARBOR VITAE	64	2.53%	4.64	11.56	6.48	3.00
ELM-HYBRID	63	2.50%	10.03	25.16	16.43	2.83
LINDEN-AMERICAN	57	2.26%	16.70	39.74	25.18	2.91
SERVICEBERRY-SPP	57	2.26%	4.81	10.88	8.51	3.07
GINKGO	54	2.14%	13.00	30.28	17.50	2.78
MAPLE-SUGAR	51	2.02%	16.16	37.55	30.29	2.51
HAWTHORN-COCKSPUR	46	1.82%	7.76	15.65	14.46	3.09
OAK-SWAMP WHITE	45	1.78%	9.96	23.89	14.67	2.78
TULIPTREE	44	1.74%	7.95	26.25	13.18	2.91
PINE-WHITE	43	1.70%	11.33	32.79	16.98	2.95
LONDON PLANETREE	41	1.62%	8.85	30.49	18.05	2.85
SPRUCE-BLUE	40	1.58%	11.18	29.50	11.75	3.00
AMERICAN HORNBEAM	37	1.47%	4.32	10.81	8.38	3.00
IRONWOOD	35	1.39%	3.04	13.14	6.86	3.00
DOGWOOD-SPP	34	1.35%	4.03	11.32	8.68	3.21
ELM-AMERICAN	34	1.35%	25.18	50.88	43.53	3.09
LINDEN-LITTLELEAF	32	1.27%	18.50	41.56	30.63	2.78
KENTUCKY COFFEETREE	30	1.19%	10.07	26.00	17.33	2.67
BUCKEYE-OHIO	28	1.11%	6.18	14.46	10.36	2.96
MAPLE-RED	28	1.11%	10.54	26.96	21.43	3.04
OAK-ENGLISH	28	1.11%	15.25	31.61	23.93	3.04
OAK-WHITE	28	1.11%	13.32	39.64	24.82	2.89
CATALPA	26	1.03%	14.85	36.35	19.23	2.92
MAGNOLIA-SHRUB	25	0.99%	6.84	10.00	8.00	3.00
BEECH-AMERICAN	23	0.91%	4.43	11.74	6.52	2.91
YELLOWWOOD	23	0.91%	10.13	19.78	18.48	2.91
MAGNOLIA-TREE	21	0.83%	7.10	13.33	11.67	3.14
BALDCYPRESS	20	0.79%	10.05	22.00	12.00	2.90
BUCKEYE-RED	19	0.75%	3.00	10.26	6.32	3.05
WALNUT-BLACK	17	0.67%	11.41	32.06	23.53	2.76
MAPLE-SILVER	16	0.63%	24.50	50.00	35.00	3.19
SPRUCE-NORWAY	16	0.63%	13.06	38.75	18.75	2.94
DAWN REDWOOD	14	0.55%	14.64	29.29	17.50	2.21
EASTERN REDCEDAR	14	0.55%	5.64	15.36	6.43	3.07

HORSECHESTNUT	14	0.55%	16.29	32.50	21.43	2.86
MAPLE-AUTUMN BLAZE	14	0.55%	9.71	31.43	15.36	2.71
BLACK LOCUST	13	0.51%	15.77	49.23	24.23	3.23
SWEETGUM	13	0.51%	4.31	15.00	8.08	3.08
PINE-SCOTCH	12	0.48%	11.92	24.17	16.67	3.00
WITCH HAZEL	12	0.48%	4.67	5.83	5.00	3.00
BIRCH-RIVER	11	0.44%	17.18	28.18	22.73	2.82
BUCKEYE-YELLOW	11	0.44%	2.36	9.55	5.00	3.09
FIR-CONCOLOR	11	0.44%	7.45	21.82	9.09	3.09
HEMLOCK-EASTERN	11	0.44%	4.00	15.00	9.09	3.36
PLUM-SPP	11	0.44%	9.45	16.36	12.27	3.09
HICKORY-SHAGBARK	10	0.40%	5.40	21.00	12.00	2.90
OAK-CHINKQUAPIN	10	0.40%	8.90	21.00	12.00	2.80
OAK-SHINGLE	10	0.40%	11.30	29.50	22.50	3.20
OSAGE ORANGE	10	0.40%	1.90	11.00	5.00	3.00
ASH-WHITE	9	0.36%	17.00	38.89	31.11	2.89
ELM-ENGLISH	8	0.32%	24.13	53.75	38.75	3.00
KATSURA	8	0.32%	11.50	20.63	18.13	3.00
MAPLE-AMUR	8	0.32%	16.13	20.00	24.38	3.50
MULBERRY-SPP	8	0.32%	30.50	36.25	32.50	3.75
PERSIMMON	8	0.32%	1.88	10.00	5.00	3.00
VIBURNUM-SPP	8	0.32%	8.88	12.50	13.75	3.13
CHERRY-BLACK	7	0.28%	7.29	30.00	19.29	2.86
SPRUCE-SPP	7	0.28%	11.43	31.43	15.00	3.14
WILLOW-WEEPING	7	0.28%	15.57	30.71	20.00	3.57
YEW	7	0.28%	9.86	10.00	11.43	2.71
LILAC-TREE	6	0.24%	10.67	16.67	16.67	3.17
MAPLE-JAPANESE	6	0.24%	3.83	8.33	7.50	3.17
OAK-PIN	6	0.24%	18.17	43.33	25.00	2.33
SPRUCE-WHITE	6	0.24%	6.00	20.00	10.83	3.00
ALDER-SPP	5	0.20%	19.20	29.00	19.00	2.80
APPLE-EDIBLE	5	0.20%	5.00	8.00	8.00	3.00
ASPEN-QUAKING	5	0.20%	9.40	30.00	13.00	3.00
BLACKGUM	5	0.20%	3.20	11.00	7.00	3.20
PAWPAW	5	0.20%	2.00	10.00	5.00	3.00
PINE-LIMBER	5	0.20%	2.80	8.00	5.00	3.00
SUGARBERRY	5	0.20%	1.80	10.00	5.00	3.00
SYCAMORE	5	0.20%	26.00	52.00	40.00	2.80
AMUR CORKTREE	4	0.16%	16.00	27.50	27.50	2.25
COTTONWOOD	4	0.16%	20.25	45.00	26.25	2.50
ASH-GREEN	3	0.12%	12.00	25.00	20.00	3.00
BIRCH-GRAY	3	0.12%	3.00	10.00	6.67	3.00
BOXELDER	3	0.12%	27.67	36.67	36.67	3.67
HICKORY-PECAN	3	0.12%	3.67	11.67	6.67	3.00
MAPLE-PAPERBARK	3	0.12%	9.00	13.33	10.00	3.00
CHERRY-SPP	2	0.08%	11.00	20.00	15.00	3.00
ELM-SIBERIAN	2	0.08%	38.00	70.00	65.00	4.00

LARCH	2	0.08%	14.50	50.00	30.00	2.50
MAPLE-MIYABEI	2	0.08%	8.50	20.00	10.00	3.00
PINE-JACK	2	0.08%	8.00	17.50	15.00	3.00
SPRUICE-SERBIAN	2	0.08%	7.50	25.00	10.00	2.50
7TH SON FLOWER	1	0.04%	8.00	15.00	10.00	3.00
AILANTHUS	1	0.04%	26.00	60.00	30.00	3.00
ASH-EUROPEAN	1	0.04%	23.00	40.00	30.00	4.00
BEECH-EUROPEAN	1	0.04%	13.00	30.00	20.00	2.00
DOUGLAS FIR	1	0.04%	14.00	40.00	20.00	3.00
ELM-CHINESE	1	0.04%	11.00	30.00	20.00	3.00
FRINGETREE	1	0.04%	4.00	10.00	10.00	3.00
HAZELNUT-TREE	1	0.04%	16.00	30.00	30.00	3.00
HICKORY-KINGNUT	1	0.04%	1.00	5.00	5.00	3.00
MAGNOLIA-CUCUMBER	1	0.04%	2.00	10.00	5.00	3.00
MAPLE-THREE FLOWERED	1	0.04%	9.00	15.00	20.00	2.00
MOUNTAIN ASH-SPP	1	0.04%	10.00	15.00	15.00	2.00
OAK-BLACK	1	0.04%	2.00	15.00	10.00	3.00
PINE-MUGO	1	0.04%	3.00	10.00	10.00	3.00
SASSAFRASS	1	0.04%	1.00	10.00	5.00	3.00
SILVERBELL	1	0.04%	1.00	10.00	5.00	3.00
SMOKETREE	1	0.04%	2.00	10.00	5.00	3.00
UNKNOWN	1	0.04%	2.00	10.00	5.00	3.00