City of Genoa
Urban Forestry Management Plan

February, 2018

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CITY OF GENOA
URBAN FORESTRY MANAGEMENT PLAN

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INTRODUCTION

Natural Path Urban Forestry Consultants (NPUFC) was contracted by the Illinois Department of Natural Resource's Urban and Community Forestry program in the spring of 2006 to conduct an inventory of public right of way trees and provide an urban forestry management plan for seven communities in Northeast Illinois. The communities invited to participate in the project were required to have Tree City USA status and a population under 5,000.

Thirteen communities were included in the initial project proposal. Budget constraints for 2006 reduced the allowable number to seven. The communities selected for the initial project were: Beecher, Momence, Elburn, Gridley, Hampshire, Indian Head Park and Steward. In 2007, the balance was completed. These communities were: Genoa, Henry, Tower Lakes, Lake Barrington, Palos Park, and Wayne. **(See Attachment 1 – Project Area Map).**

The project was initiated by the state of Illinois in part to meet requirements of the United States Forest Service directives for community forestry outreach at the State level. Many small communities throughout the United States have limited staff, equipment and fiscal resources to manage their tree resource. These communities, however, must contend with the same issues as larger communities with established forestry programs. Many small, mostly rural, communities must rely on volunteers to initiate programs and policies regarding urban forestry. Illinois' project was initiated in the hopes of finding solutions to some of the more complex issues these communities must contend with while also providing much needed technical support. With the conclusion of the inventory and management plan phase, the implementation phase will begin.

Implementation support for each of the project communities will be provided by Natural Path Urban Forestry Consultants over the next three years. Most of the failures of tree inventories in small communities across the country arise from a lack of technical support after the inventory is completed. Hopefully, this project will lay the foundation for identifying the long-term partnership required by local, State and private sector entities to realize small communities' successful progression into managed urban forestry systems.

The remainder of this introduction defines the key issues identified, the need for an enhanced urban forestry program, and concludes with recommendations that direct the City toward a positive change in direction for their urban forestry program.

THE ISSUES

The City of Genoa has a street tree population of over 2225 trees. Some of the features of the community, such as the range of species and basic maintenance needs, can be found in most rural communities in northern Illinois. However, Genoa's tree population also has a number of unique qualities. These qualities include a population that is not dominated by any one species; a streetscape that very much fits a rural aesthetic; and a number of remnant pre-settlement oaks.

The City of Genoa spends resources, through volunteers and municipal staff, on urban forestry related activities. By these expenditures and effort, the City demonstrates that it understands the important role that a healthy urban forest plays in neighborhood quality and environmental moderation. Some general and specific issues identified:

- Over time there has been a slow loss of high-quality native species, with few younger trees of these species being planted to perpetuate this unique, and valuable, population

- Early tree care is critical to prolong the health and longevity of the City's investment in the planting.

- Ownership of boundary trees. All trees in the public right of way are owned by and the responsibility of the City. Trees that are co-owned are a higher liability to the City than the resident. This issue requires a clear policy.

A sustainable urban forest is founded on City support, community cooperation, quality care, continued funding and personal involvement. It is created and maintained through a shared vision and cooperation between individuals and the public and private sectors. The ever-present focus is on maximizing benefits and minimizing costs. When these elements are considered together, they demonstrate the need for shared vision and responsibility, for direct intervention with the resource and programs of care that are ongoing and responsive.

CONCLUSION

The City of Genoa faces many of the same issues that small communities across the United States face in regard to urban forestry. Limited budgets and staff do not allow most communities to manage their tree resource as well as they would like. The City of Genoa has a number of attributes unique to the area. The trees of the City play a role in this quality. The City also has the resources to implement a proactive, yet measured, program. This program can

be realized through a manageable number of goals. Goals for addressing issues and needs identified above are:

1) Maintain a four year pruning cycle that focuses on large deadwood rather than crown cleaning observed by most communities. Develop a strategy using volunteers and staff for small diameter trees and contracted assistance for large diameter trees.

2) Initiate a tree risk management program that identifies and mitigates in a timely fashion any high-risk trees and high-risk line of sight obstructions.

3) Implement a tree planting program that features a more diverse range of species with the focus on high-quality natives. Also focus on trees that will continue the vertical landscape the City has by intermixing small and large trees.

4) Increase community outreach on topics such as small tree care, and emerald ash borer.

This report is separated into two sections: Findings, and Recommendations. Within the recommendations section five topics are discussed: Maintenance, Tree Risk Management, Plantings, Emerald Ash Borer and Policy. Each topic is divided into two parts. The first part discusses the topic at the conceptual level. The second part takes the conceptual discussion and applies it to the City through provided recommendations.

The recommendations are presented with appreciation for the existing resources and the intention of stabilizing and enhancing the City's urban forestry program. I feel these recommendations are achievable given the City's current and potential resources.

- Mark Duntemann
February, 2010

2.1 URBAN FORESTRY CONCEPTS

The foundation of the assessment and recommendations are based on a series of Urban Forestry Sustainability Models developed by the United States Forest Service (USFS) and Dr. James Clark and Ms. Nelda Methaney (Clark, et al, 1997). A simple definition of a sustainable system is one that persists. In the context of urban forests, such a system has continuity over time in a way that provides maximum benefits from that forest. In addition, it is understood that human intervention is required to maintain a sustainable urban forest. Clark and Matheny developed a working model that defines three types of resources: vegetation resource, management resource, and community resource. Within these three broad resource types, the authors identified nineteen criteria to evaluate the level of sustainability within any community.

Essential to understanding the importance of a sustainable urban forest is an appreciation for the attachment that people have to their community. This is developed, in no small part, by the physical surroundings that community members experience every day. Urban vegetation plays an important role in determining how an individual feels about their community. This, in turn, plays a subtle, but important role in economic development, housing stability, and growth.

The small communities included in this project vary greatly in program development, staffing and resources. The project identified a series of issues that can be applied to some, most, or all of the communities. This document addresses all of the issues identified.

THE NEED

The effects from the simple act of planting a tree are felt for generations. It is in this context that I want the project communities to understand urban and community forestry. The need for an urban forestry program cannot be fully grasped without first understanding that the enormous benefits to the community are gained after decades of involvement. It is not the individual tree that this need is based on, but the collective whole of an ongoing planting, preservation and maintenance program. As with traditional forestry, we have to think about managing a resource for generations, not just this week.

The need for an urban forestry program is closely tied to the economic, social, and environmental health of a town. As mentioned earlier, most communities invest considerable time, money and staffing in what would be considered elements of an urban forestry program. In essence, the communities are already spending the money required for a long-term urban forestry program.

Poor coordination and unclear direction in some cases results in their efforts manifesting few tangible long-term benefits.

As community forestry budgets decline across the nation, ever-increasing proportions of municipal tree budgets are spent on removing trees. One unintended consequence of this is that fewer funds are spent on planting and maintenance. Unfortunately, these are the very activities that perpetuate a healthy urban forest. An urban forestry program is crucial in improving the community landscape in Genoa. Only a better understanding of the benefits and the required care of trees in the community can help achieve this goal.

Common knowledge reinforced by an ever-increasing body of research indicates that there are a multitude of benefits an urban forest can bestow on individual residents, the community, and the larger ecosystem. Many of the benefits that are specific to Genoa are:

- Large areas of concrete can channel wind and water, which causes damage, including soil erosion, sewer backups and flooding. Trees provide barriers when their canopies slow down and buffer the movement of water and wind. This reduces soil erosion and surface runoff, and leads to a steadier and cleaner supply of water.

- Trees serve as a filter by intercepting particulate with their leaves. This reduces air pollution from vehicles, industry, and natural dust. Additionally, trees produce oxygen and absorb carbon dioxide creating a healthier environment.

- Trees help increase and stabilize property values. This benefit is evident in many ways; one example is the resale of residential property. A study by the State University of New York – Syracuse compared similar residential properties, and concluded that housing prices increased 7% when trees were uniformly present in the neighborhood.

- Trees enrich the aesthetic experience of a community. They add pleasing shapes and colors, fragrance, texture, scale, and seasonal change, which often soften and screen unwanted views. This can establish visual harmony and continuity along Municipal streets, and add a distinctive character to neighborhoods as well as the community as a whole.

- Trees enhance people's sense of connection to nature. They may associate sense of place with the physical composition of an area, such as the architectural style, land use, and organization of infrastructure. This connection fosters civic pride and involvement.

- Vegetation plays a large role in the economic stability of communities by attracting and keeping businesses. Within residential neighborhoods, stability in the housing market is directly linked with the vegetation that helps identify the neighborhood.

The USFS's research, since 1990, supports the conclusions that benefits derived from a City's trees outweigh program costs. Moreover, continued analysis of the change over time to the urban forest indicates that better tree programs are associated with fewer costs and more public and environmental benefits.

It is important to note that all of the benefits listed are derived not from resolving day-to-day issues but by implementing a long-range policy that spans decades. One does not realize the benefits of neighborhood stability, attracting businesses, or sequestering pollution by planting one tree today or by preserving a group of trees at one location. The benefits are derived from consistently following thoughtful, established policies over generations. The people that most benefit from this type of design, especially with a young program, are the residents of the future. Urban forestry, by design, is not a short-term commitment by the City. It is very much a long-term investment, with long-term benefits.

2.2 INVENTORY FINDINGS For 2018

A. GENUS AND SPECIES COMPOSITION

There are eighty four species on Genoa's public spaces and parkways. **[See Attachment 5 – Genus with Species Distribution, and Species Distribution by Count and percent.]** At first glance, this number may seem to indicate a varied species population. However, when the data is categorized into more detail and the Genus with species representation percentages are calculated, it becomes clear that the town's urban forest is not as diversified as it can or should be.

Of the thiry six Genus identified, five Genus Maple, Oak, Ornamental Crab, Honeylocust and Linden – comprise 56 percent of the total tree population. As shown in **Graph 1** below, Maple has the greatest representation in the City, at 36 percent. Oak has the second greatest representation, comprising 9%, followed by Ornamental Crab at 7%, Honeylocust at 7% and Linden with 6%. The remaining 31 Genus represent 44 percent of the total tree population.

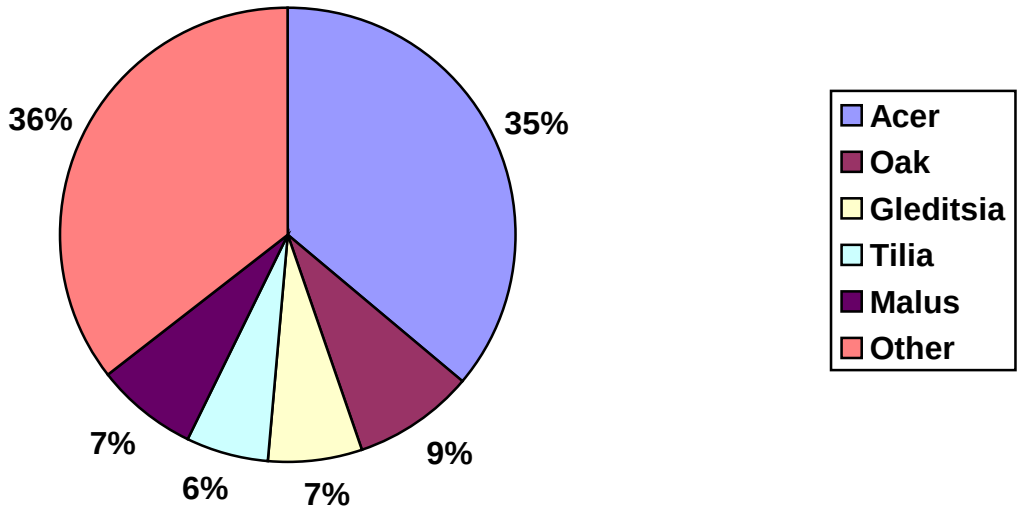
Since 2010 Genoa has moved forward working on lowering the percent of Maple, specifically Silver Maple.

With the Emerald Ash Borer, the focus turned to removing Ash from the public right of ways. The City was able to focus on replanting with 10% percent **Genus** diversification on most species, leaning heavier on planting oaks for their longevity and slower growing attributes. Some maples were planted, but at a 5% rate or lower. As a result, the percentage of Maple was reduced, while the percent of oaks grew considerably due to replanting after removing Ash trees.

As stated above the species number was at 78. It is now at 84. Genoa has continued increasing species. However the real focus is increasing Genus diversification with the species variety following.

Since 2010, Silver Maple has been decreased from 14% to 9%. The Genus was at 40%. It is now down to 36%. The previous graph did not incorporate all the other Maple trees in Genoa, only the Silver and Norway. All Maples were included for the Genus, species break down for an accurate representation. Oak is now the second largest Genus at 9%, followed by Malus at 7%, Honeylocust at 7% and Linden at 6%.

While there are a substantial number of Genus represented, only a small number of them make up a near majority of the City's street tree population. In urban areas it is not uncommon for four or five species to dominate a City's tree population. Genoa is unique in that even the dominant Genus, when broken down to include species are not overwhelming in number. It is not uncommon to find one or two Genus comprising 30 to 40 percent of the population in many rural or peri-urban communities.

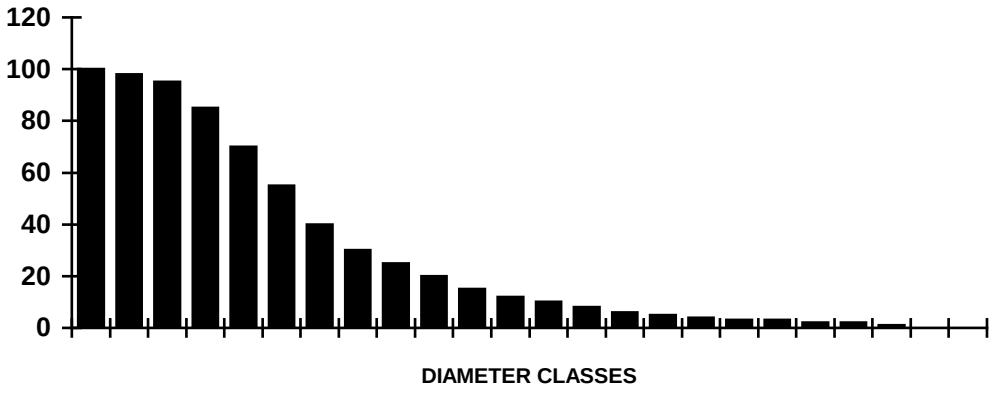


Graph 1 – Genus Distribution

B. DIAMETER DISTRIBUTION

The following three graphs depict diameter distribution models of three distinct tree population trends. The graphs demonstrate general trends from the long-term effects of past planting programs. The graphs maintain the same basic shapes regardless of the number of trees represented. The graphs are also relatively smooth because planting programs rarely go through dramatic changes in species choice over time.

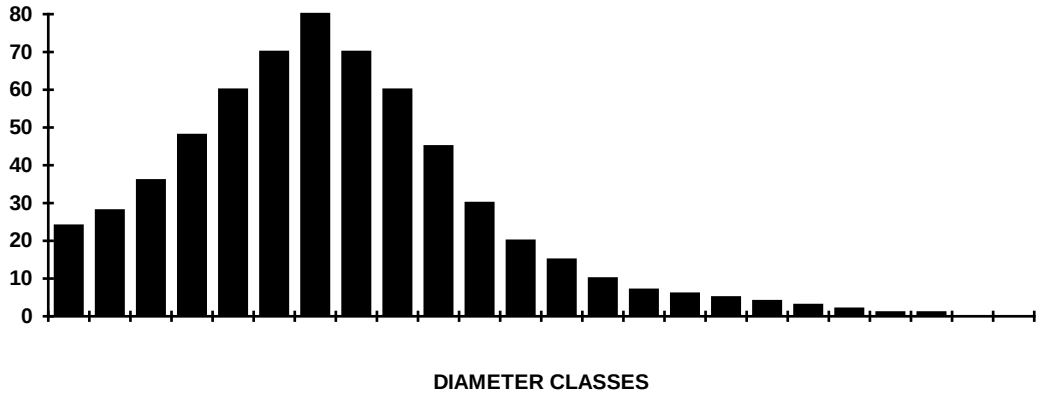
Trend A, depicted below in **Graph 2**, is one that mimics the ideal population, that is, a population that peaks in the smallest diameter class and gradually decreases as diameters increase. In other words, the ideal represents a population that will perpetuate itself for some time in the future, since there is an abundance of trees in the lower diameter classes to replace the trees that are over mature.



Graph 2 - Trend A Diameter Distribution Curve

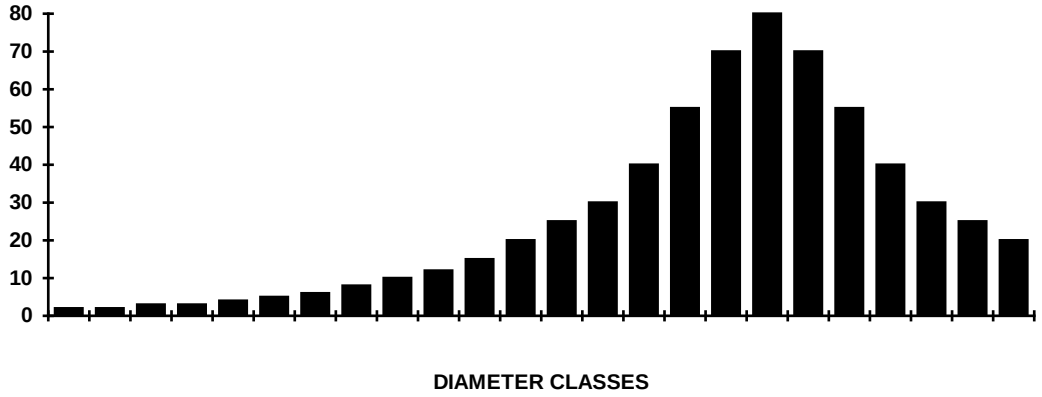
As each group of trees within a specific diameter class matures, the numbers within the group diminish through attrition. To perpetuate a specific species, the largest representation must be in the smaller diameter classes. As a rule of thumb for any given species, twice as many trees need to be planted as are removed in any one year in order to maintain the exponential shape of this graph.

Trend B, shown below in **Graph 3**, simulates a situation in which plantings of a species have tapered off in the recent past (10-30 years). The population peak is centered on the 12- to 16-inch diameter class. These species will have peaks that continue moving up the scale over time as the few small-diameter trees move into larger diameter classes. As these species age, the diameter curve will resemble that of Trend C **(Graph 4)**.



Graph 3 - Trend B Tree Population Curve

Trend C, below, is one in which the population peak is centered on the larger diameter classes, which are usually greater than twenty inches. The planting of these species drastically decreased between twenty-five and forty years ago. This trend is a progression from Trend B.



Graph 4 - Trend C Tree Population Curve

Species that mimic Trend C will soon be missing from the City's landscape. This trend is probably healthy for some species that the City wants to eliminate such as boxelder and silver maple. However, if the bur oak shows this trend, it means that an important species is dwindling from the landscape.

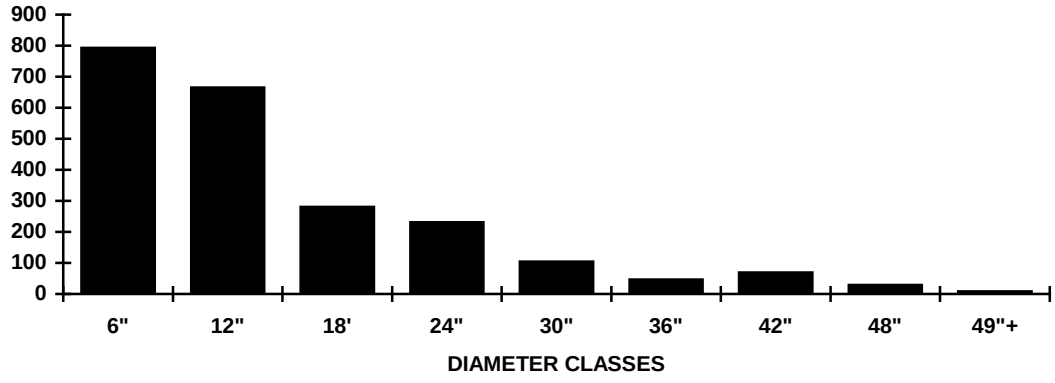
Table 1 depicts the diameter distribution for all of Genoa's trees inventoried.

Diameter Class	Total # of Trees	Percent of Total	Cumulative Percentage
6"	793	35.5	35.5
12"	665	29.8	65.3
18"	280	12.5	77.8
24"	231	10.3	88.1
30"	104	4.5	92.6
36"	46	2.6	95.2
42"	69	3.1	98.3
48"	29	1.3	99.6
49"+	8	0.4	100.0
TOTAL	**2,225**	**100.0**	**100.0**

Table 1 - Diameter Distribution for all Trees Inventoried

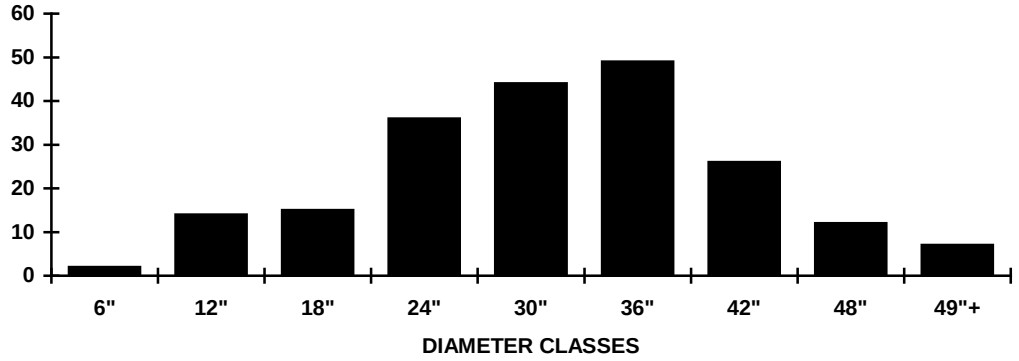
The graphs that follow depict the diameter distribution of Genoa's total tree population as well as the distributions of selected species within the population.

Graph 5 depicts the above diameter distributions in graph form. The vertical axis represents the number of trees. The horizontal axis represents diameters in six-inch size classes. As **Graph 5** shows, the peak concentration of trees is in the six to twelve-inch diameter class.



Graph 5 - Diameter Distribution for all Trees Inventoried

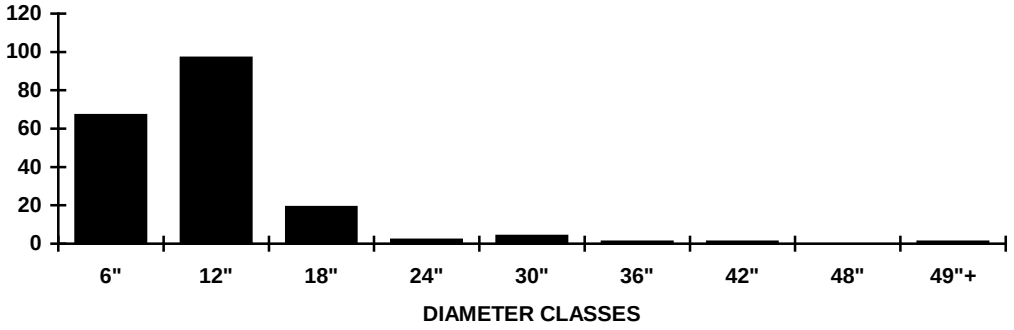
As is the case with species composition, examining diameter distribution numbers for the City as a whole does not convey the complete picture. An examination of the diameter distribution at the species level illustrates some unhealthy trends in the City's urban forest. **Graphs 6 through 8** each depict the number of trees in a diameter range for a specific species. Each graph approximates one or more of the three population trends described earlier in this section. As predicted the trend has moved from the 30" class in 2010 to the 36" class in 2017 being dominate for this species.



Graph 6 - Diameter Distribution for Silver Maple

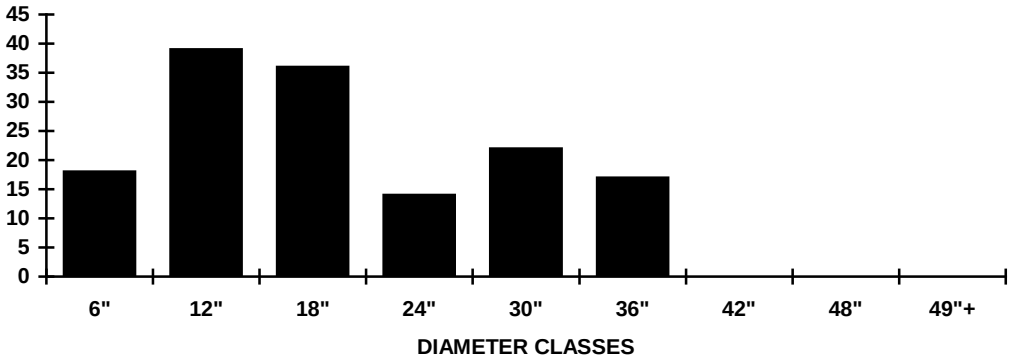
In this case, the concentration of trees lies not with the very youngest trees, but with the 36-inch diameter class. Unfortunately, this concentration of silver maples will be costly to maintain in the immediate future. In another fifteen to forty years, as the large diameter trees reach senescence and begin to decline, maintenance and removal costs will rise.

Until recently, few municipalities regulated tree plantings. The tree of choice planted by developers and homeowners was the silver maple because of its inexpensive price and quick shade production.



Graph 7 - Diameter Distribution for Oak

The pattern shown by oak above demonstrates Trend B. The peak diameter is in the twelve-inch class. This important graph shows that while there are very few mature bur oaks in the community, a resurgence of plantings is reestablishing this species. 2010 graph showed 6" dominate which is trend A. In order to continue with perpetuating the genus more oak need to be planted.



Graph 8 - Diameter Distribution for Honeylocust

The distribution trend for Honeylocust is Trend B. Because of weakness under wind sheer, this species will be a maintenance issue for the City. The positive side is the City has cut back from planting these trees and the numbers are within reason.

In conclusion, these statistics demonstrate the significant role diameter distributions play in maintaining the health of the urban forest, especially when they are examined on a species-by-species basis.

Species that the City wants to preserve in perpetuity should mimic the diameter distribution exhibited by Trend A, while trees that the City wants to phase out should fall into Trends B and C.

The difficulty in maintaining these graphs by species is that some overplanted species have numbers that range in the high numbers. In order to maintain the shape of the curve, hundreds of the same species would have to be planted. In order to realistically maintain healthy distribution curves, threshold numbers to maintain for each species should be determined. Once determined, annual plantings can be calculated to meet threshold targets for each species to maintain that species in perpetuity.

C. CONDITION

Identifying the condition of each tree in an urban forest is extremely important for prioritizing maintenance work. Those trees in the poorest condition classes need the most immediate attention. The majority of Genoa's trees are in good condition. The majority of the tree population for a typical community is found in the "Good" condition class, with an even distribution in the "Fair and Excellent" classes. With the introduction of regular pruning cycles, tree monitoring inventories, and general improvements in species selection and diameter distribution, the condition of the City's trees will only improve more. **Table 2** shows, for all trees inventoried the number of trees in each condition class and the percentage of the total that each class represents.

Condition	Population Total	Percent
Excellent	46	2.1
Good	1,987	89.4
Fair	150	6.7
Poor	39	1.7
Dead	3	0.10
TOTAL	**2,225**	**100.0**

Table 2 - Condition Distribution by Number and Percent

The defects most frequently recorded during the field survey were branch dieback, appressed fork and basal decay. The presence of a large amount of dead wood, extensive decay in basal and trunk areas, and poor form, play the greatest role in reducing the condition ratings of these trees.

E. APPRAISED VALUES

The monetary value of a tree is based on standards adopted by, "The Council of Tree and Landscape Appraisers Guide for Establishing Values of Trees and Other Plants." There are two methods for determining the appraised value of a

tree, the replacement cost method, and the trunk formula method. The choice of whether to use one formula or the other is a function of the size of the tree. The Replacement Cost Method is used to calculate the appraised dollar value for trees 8-inches and under in diameter. For trees greater than 8-inches in diameter, the Trunk Formula Method is used. A brief explanation of each method is given below.

REPLACEMENT COST METHOD

This method is based on the cost of replacing the plant in question (tree, shrub or vine) with the same or comparable species and size from an area nursery minus any condition and location defects of the plant being replaced. The installed cost of the new plant includes the costs of: removing the old plant, supplying the new plant; transporting it to the site; planting it in the same location; monitoring it during the maintenance period; guaranteeing the plant; and the profit margin for the nursery. The installed cost is then adjusted by the condition and location ratings of the old plant.

TRUNK FORMULA METHOD

This method is used for trees commonly considered too large to replace from a local nursery. The Appraised Value of a large tree is the calculated Basic Value adjusted by the species, condition and location ratings of the tree.

APPRAISAL EXAMPLE

The following is an example of a tree appraisal done on a twenty-seven inch diameter bur oak in poor condition and in a good location. Because of the size of the oak the trunk formula method was used to determine the appraised value. Based on the condition of the specific tree and using parameters defined by the Illinois Arborist Association, the appraised value for this particular tree is $ 4,823.

The total value of Genoa's street trees inventoried using the CTLA's trunk formula method is approximately $ 6,895,500. The average value per tree is $3,100.

F. AVAILABLE PLANTING SITES

By identifying the number of available planting sites, a City can evaluate the number of existing trees to the number of potential trees that can exist. This relation is known as percent stocking. The number of potential trees is the sum of the number of existing trees plus the number of available planting sites. Percent stocking is used as a tool to compare the affect of long-term planting programs over time on the overall forest density within a community.

Typically the percent stocking for rural communities in northern Illinois hovers around 65%. Communities with aggressive planting programs, such as Oak Park, Illinois, currently have percent stockings that are close to 100%, that is, every available planting site is filled. The only planting the Village of Oak Park has to implement each year is to replace the trees that were removed that year.

A total of 375 planting sites and 2225 trees were identified in the inventory. The City of Genoa's percent stocking is 2,225 / 2,600 = 85 %, which is above average for the region.

SECTION 3 – RECOMMENDATIONS

3.1 Maintenance

A regular pruning cycle is a critical component of an effective forestry program. The City of Genoa will derive the following benefits from an ongoing cyclic maintenance program.

- Simply by pruning, the condition ratings will be upgraded for a large number of Genoa's trees. As was noted in the **FINDINGS** section, one of the primary reasons for downgrading tree condition in Genoa was the amount of dead wood over six inches in diameter.

- Cyclic maintenance guarantees that every tree in the City will be regularly reviewed by staff and/or contractors.

- By maintaining the pruning maintenance cycle, the City of Genoa will maintain a proactive and defensible urban forestry program.

- Service requests and storm damage will be reduced.

- The overall value of Genoa's forest will be increased by the heightened quality of care; while the actual time and money spent servicing trees will decline as problems are addressed before they become costly.

- The City can demonstrate that they are exhibiting "reasonable care" in maintaining their urban forest. The notion of "reasonable care" is the strongest defense the City has in litigation due to a tree, or tree part failure.

Most community forestry programs try to implement a five to eight year pruning cycle. If the City cannot afford to contract services for all trees a number of options are available. For example, the trimming of trees with diameters greater than six inches can be contracted out and trees with diameters of six inches and under can be pruned by volunteers. The overall objective is getting on a cyclic pruning program within fiscal and human resource constraints. Pruning standards should follow ANSI A300 standards.

3.2 Plantings

1. General Concepts

One way to determine the relative abundance of trees on public streets is to calculate the percent stocking, that is, the relation of the number of existing trees to the number of potential trees. The tree inventory information shows that Genoa has a percent stocking of **85%**. The average stocking for communities in rural Northern Illinois is about 65%.

To guarantee the long-term good health and a perpetuation of the urban forest, a good program must continue to plant trees on an annual basis. An important element of a planting program is Genus diversification. It has long been known that a monoculture stand of trees is more likely to be heavily damaged by disease and insect infestation than is a well-mixed stand. Dutch Elm Disease is a classic example of how disaster can strike monoculture plantings in the urban forest. The disease began its destruction along the eastern seaboard of the United States and reached epidemic proportions in the Midwest in the sixties and seventies. More recent issues such as Emerald Ash Borer and Asian Long-Horn Beetle reemphasize the importance of Genus diversity. As within any ecosystem, Genus diversity within the City provides insurance against a single disease or blight destroying large sections of the urban forest. In short, diversity brings stability to the urban forest.

The following guidelines provide direction for developing a diverse, healthy, low-maintenance, and aesthetically improved urban forest.

☙ Recommended Street Trees

As was noted in the Section 2, a small number of species dominate the City's urban forest. This is very typical for American communities, large and small. The planting palette for any community is quite broader than what the numbers demonstrate. The number of high-quality Genus should be greatly increased. Long-term population targets for high-quality Genus should hover around 10-15%.

In conjunction with high-quality species, planting sites should always be selected that maximize tree growth and health and minimizes long-term infrastructure conflicts.

In landscaped areas, such as broad boulevards and City entrances, large group plantings can be incorporated. In addition to large deciduous trees, conifers and ornamental shrubs should be considered for these areas. This additional list will serve to broaden the planting palette of the City.

Species to Avoid

A number of species should be avoided when selecting street trees. The primary reasons for avoiding these species are that they have a high maintenance cost; short-lived, high storm damage potential; and a high hazard potential. These species are such an economic and risk liability to communities that they should not be encouraged.

Monitor

The first step toward diversifying the composition of an urban forest is to monitor the number of trees within each species. The tree inventory can be used to keep track of how many trees represent each species, as well as the percentage of each species represented in the total tree population. When population imbalances occur, a strategy should be devised to correct the over-planting or under-planting of a particular species.

Avoid Over Planting a Single Genus and Species

Species that are already over-represented should be planted sparingly. As a general rule of thumb, any given species should constitute no more than five to eight percent of a community's total tree population. This rule can also be applied at a micro level within a town. Therefore, species concentrations should be monitored both for a town overall, and within the town at the neighborhood level. **The City of Genoa abides by planting no more than 10 percent of one Genus.**

Plant Compatible Forms

Some urban planners and landscape professionals argue in favor of monoculture plantings in order to achieve a more uniform and organized look to the streetscape. Although aesthetics should always be secondary to considerations of species adaptability, a vegetation manager can create a more even appearance, while not compromising diversity, by selecting a variety of species which have similar forms. When selecting for visual effect, consider the size, texture, form, and coloring of a tree.

☙ Longevity and Maintenance Requirements

All trees have a "useful" life expectancy. After a certain age, all trees exhibit signs of decline. As the trees get older and their potential hazards increase, the cost of maintaining them becomes increasingly prohibitive. When large numbers of trees are planted within a short time period, they become expensive and difficult to manage when they mature.

Multiple-aged stands are more desirable because they will disperse maintenance costs, eliminating a large outflow of capital sums all at once. A relatively predictable distribution of maintenance expenses each year helps make the annual cost of managing the forest attainable, and simplifies the budgeting process within the forestry department.

Slower-growing, but longer-living trees play an important role in minimizing maintenance costs because the most costly and time-intensive tree work is tree removal. Planting trees that live three times as long means spending approximately one third as much in removal costs over the same number of years. In general, the same slower-growing trees also demand less pruning over their lifetime. Furthermore, slower-growing species are generally better quality trees and will have higher appraisal values.

☙ Broaden Waste Wood Utilization Options

Landfill space is becoming limited and has increased the need for communities to find alternative solutions that are both economical and practical for their wood waste. Converting the tree population from one dominated by soft wooded trees to one dominated by more resilient hardwoods increases a community's potential for finding alternative solutions for waste wood disposal.

The wood from these removed trees has greater potential to be an economical and recyclable resource. The least economically advantageous use of wood is converting it into chips. However, converting waste wood to high-quality firewood or, even better, to low- and medium-grade lumber for the large secondary-wood industry in the Chicago area introduces a possibility of generating revenue.

☙ Increase the Monetary Value of the Urban Forest

The selection of high quality species plays a critical role in increasing the monetary value of an urban forest. A comparison between the monetary values of two different species of street tree–one of poor quality and one of excellent quality–demonstrates a large monetary disparity between the two:

A 24-inch-diameter silver maple in good condition is valued at $5,465.00, while a 24-inch-diameter bur oak in good condition is valued at $7,468.00. The bur oak is $2000.00 or 40 percent more valuable than the silver maple. Moreover, since the bur oak lives longer than the silver maple, the bur oak is more likely to contribute to the worth of the urban forest over a longer period of time.

2. Tree Planting Applied to the City of Genoa

The inventory project has identified a number of issues with the plantings currently occurring. Recommendations for the City tree planting program include.

- No more than three of the same species can be planted adjacent to each other in new subdivisions.
- Instead of linear plantings of the same species, they should be grouped across the street from each other.
- No more than **10%** of any one Genus is permitted in any new subdivision.
- Ten percent of the total trees for any one subdivision must comprise oaks (Bur, White, English, and Swamp White).
- Minimum distances from infrastructure must be adhered to.
- Minimum distances between trees must be adhered to.
- Throughout the town mix species choices between mature large and mature small trees.

3.3 Tree Risk Management

1. General Concepts

Tree risk management is an important component of any community's urban forestry program. While trees that have been properly cared for throughout their life generally pose little safety concern, there is always some risk associated with maintaining large-diameter, over-mature trees in public use areas.

A management program's overall focus is to identify those features of the tree population that pose the highest risk to the public, and then concentrate the available resources to mitigate those features. A long-term risk reduction program defines a level of care that is appropriate within a community's available resources. As a result, a defensible program will have been established. A community manages the tree resource to reduce the potential of harm occurring. When properly managed and documented, the financial risk to the City will be diminished.

The management of a large number of trees requires that management decisions be based on the collective health of the urban forest, not on individual trees. A risk management program establishes management strategies for continuously evaluating and monitoring trees that pose a risk, and defining what level of care is reasonable for a community.

Reasonable care in respect to high-risk trees should be defined by each community according to its resources. For instance, in several court cases for which I have served as expert witness, it has been an attorney that defined the level of care that a community should demonstrate. The City or parks department rarely has an established policy that defined a reasonable level of care for their agency, and as a result, was subject to the attorney's definition.

There can be no universal definition of reasonable care for a community's risk trees since the resources available to each community vary. In other words, the level of care given to the trees in one community may not be a reasonable level for another. There are four basic steps to defining the level of care that is right for the community. They are: assess the dynamics of the tree population, define the resources available to manage the tree population, create a risk management policy statement, and develop and implement a risk-reduction plan.

The overall focus of any risk management program should be identifying the features of the tree population with the highest potential of failure, and then

concentrating the available management resources on mitigating those features within an appropriate timeline. By establishing a long-term risk reduction program for the City, a defensible and definable level of care is established for the community.

Two broad goals are required of every well-defined tree risk program: establishing a reasonable program and clearly documenting the program. The first goal establishes a community's risk program that addresses reducing the risk of physical harm. The second goal allows a community to defend their program if litigation occurs, thus minimizing the financial risk. Both goals are realized by initiating activities policies at both the micro-scale and the macro-scale. Microscale refers to activities centered on how an individual tree is maintained in the community. Macroscale refers to community policies directed at managing the total urban forest.

Goal 1 (Establish a Reasonable Community Tree Risk Program) – Design and implement a program that identifies and mitigates the highest risk features in the tree population.

> **Microscale** – Promote activities that increase staff's knowledge, skills and experience evaluating individual trees for risk.
>
> **Macroscale** – Activities within this area promote policies and activities that allow the community to create and manage risk at a reasonable level for all of the trees under its stewardship.

Goal 2 (Defensible Program) – The community must be able to articulate the specific program that it has developed. The easiest way to accomplish this is through documentation.

> **Microscale** – Document that the staff are fully qualified to assess trees for risk and to make recommendations on how to best mitigate that risk.
>
> **Macroscale** – Document all elements of the City-wide risk management program.

All documents created to meet Goal 2, from both the micro-scale and macro-scale elements, should reside in a tree risk management manual. The single manual allows easy access for staff and forms the basis for articulating the community's tree risk program.

Every community should have a process for assessing, monitoring, and mitigating high-risk public trees. While trees that have been properly cared for throughout their life, generally pose little safety concern, there is always some

risk associated with maintaining large-diameter, over-mature trees in public use areas.

The key to a defensible tree-risk management program is a reasonable program of monitoring and mitigation. This program must be systematic to be successful. The emphasis is on managing the resource and identifying the issues that pose the greatest potential for causing harm.

Tree removals are an integral part of a good urban forest management program. Removals are as necessary to the urban forest's life cycle as are tree plantings and maintenance. Removals do, at times, stimulate a public reaction because people grow attached to the trees in the vicinity of their homes. Nevertheless, a successful urban forestry program demands that a removal policy be adopted and applied uniformly throughout the City. A clear policy provides coherent guidelines to enable City officials and crews to make informed removal decisions.

The goal of a risk management program is to develop a comprehensive hazard mitigation program that will increase the safety of the public right-of-way. The program will improve the accurate identification of high-risk trees, initiate the timely removal of potentially hazardous trees, and heighten staff awareness of hazard abatement procedures.

There are four important benefits to establishing a strong risk management policy:

- Maintain safe public roads and public spaces by reducing potentially hazardous trees and the liability associated with them.
- Remove dead and declining trees to make room for new diverse plantings, which in turn increases the overall health of the community forest.
- Allocating limited fiscal resources toward maintaining healthy trees is more efficacious and responsible than allocating funds toward maintaining decadent, senescing, over-mature trees.
- The City is able to demonstrate that it exercises a reasonable degree of care maintaining its urban forest.

There are eight important elements to a City tree risk management program:

Element 1 - Assess the Tree Resource

A key element in developing a reasonable risk management policy is identifying the extent of the high-risk features in your tree population. A tree inventory is the best tool for identifying these features. Risk features may not pose a problem individually, but the risk increases when combinations of the following four features occur. One task of the urban vegetation manager is to anticipate tree failures before they occur. There are no absolutes in determining hazards – only sound judgment based on experience at recognizing structurally unsound trees, and some basic guidelines.

The City should strive to reduce the most problematic features in the tree population. These features are: poor-quality species and high-risk structural defects. A key element in developing a reasonable risk management policy is identifying the extent of these two items in the tree population. The tree inventory is the best tool for identifying them. Individually they may not pose a problem, but risk increases when combinations of the following four parameters occur:

- <u>High-risk or Problematic Species:</u>

  Invariably, there are species in each community, that are more problematic then others. Some characteristics of a high-risk, problematic species are a high storm damage rate, enhanced structural decay, repetitive dieback, and a short life span.

  By identifying the problem species and their quantity in the population, the City narrows the focus to a manageable number of trees to monitor the ones with the highest potential for problems.

  Not all are at risk now, but high-risk species may pose problems in the future. Taking into account size and diameter classifications can substantially lower the number that requires immediate attention.

- <u>Large Diameter Trees</u>

  It is important to look at the diameter distribution of individual problem species. Large-diameter, poor-quality species will be more problematic than small-diameter, poor-quality species. The most immediate attention should be given to trees in the larger-diameter classes; however, a progressive risk-reduction policy will incorporate the gradual removal of small diameter problem species as well.

The smaller-diameter trees of problem species are not immediate risks to the community but they have a high potential to be so in the future. The removal of problem species when they are young is less of an expense and also allows you to replace these species with more appropriate species at an earlier time.

- Trees with Structural Defects

  Identify trees in the population that have structural defects such as basal decay, trunk cavities, or extensive root rot. These trees have a higher potential for being risks to the community and should be monitored more closely. Structural defects are not typically species specific, but a problem species you have identified in conjunction with a structural defect increases the risk factor of that particular tree. A "hazard tree" is any tree or tree part that demonstrates a high risk of failure or fractures, which would result in damage or injury to persons or property. Usually, high-risk trees demonstrate visible or otherwise detectable defects.

- Trees in Poor or Worse Condition

  Assess the tree population by condition classes. Trees in the poorest condition class are the most problematic in the short term to the City. Poor conditioned trees typically comprise the smallest portion of the population, but pose the most liability.

- Target

  Problematic trees located in high-use areas have a greater potential for causing harm. For this reason, the City prioritizes inspections based on use.

Taking any combination of these features and applying it to the total tree population being maintained will result in a filtered list of problematic trees. The goal is to take a large number of trees and apply some reasonable assumptions about the population to develop a more manageable subset of trees to a conduct a more extensive risk monitoring program. By evaluating the unique interrelationship of these four parameters within the tree population the City can begin to develop a template for an action plan of removal, monitoring and mitigating.

Element 2 – Evaluate the Resources Available to Manage

Once a refined list of trees has been created, assess the budget and labor force to design a risk management program that is suited to the community.

- Assess Personnel Activities

  There are certain times during the year that risk trees can be monitored without conflicting with regular activities. For instance, if a community usually reserves two to three weeks in November to remove trees, the appropriate time to monitor for hazard trees is immediately before removals begin. In addition, there are certain activities such as stump grinding or leaf pickup that may be more time and cost effective to contract out, which would free up staff to conduct risk assessments.

- Review Work Schedule

  Calculate the minimum time available for staff to conduct assessments and removals of hazard trees. It is easy to argue that a community should monitor trees and conduct removals every day. Isn't this the only way to guarantee reasonable care? No. Every facet of a progressive forestry program incorporates risk management. A cyclic pruning program improves health, facilitates monitoring, and reduces risk. Plantings allow for the replacement of poor-quality species with more appropriate ones. Service request responses allow the City to effectively use the public to pinpoint problem trees.

- Assess Monetary Resources

  Assess the financial resources traditionally available to conduct risk assessments and removals. If removals are contracted, assess the amount of money that is spent each year in removal contracts and the total number of trees that are removed. Likewise, if an in-house crew performs all of the removals, assess the amount of time that is devoted to this activity as well as the total number of trees they remove. It may be possible to modify the budget and personnel time to allow for a slight increase in risk management tasks.

By evaluating management resources a community will be able to define the maximum amount of time available to conduct risk assessments and removals as well as who will be responsible for carrying out the work. The City may find that they have no additional time or money available to conduct assessments, but at least they can document this conclusion.

Element 3 – Create a Tree Risk Policy Statement

Once a level of care has been determined, the next step is to develop a clear policy statement. Review the policy on an annual basis to make sure the level of care remains appropriate. An established risk reduction policy is the strongest defense a community has in court in respect to hazard trees.

The risk reduction policy statement should include the following:

- State the City's understanding of its responsibility to maintain a safe public area.
- Identify the manager of the risk reduction program.
- List any general constraints on managing hazard trees such as financial or personnel.

Element 4 – Identify Risk Reduction Goals

Goals define the short and long term direction of the program. The clear and measurable goals presented here are examples of important elements of a tree risk management program.

Element 5 – Develop an Action Plan for each Goal

To meet the risk reduction goals initial action strategies should focus on the removal of the highest-risk trees. The strategy in the long-term should incorporate the removal of poor-quality species and high-risk defects. While several communities may have the same overall goal for risk reduction, the defined objectives and associated actions will, and should, vary greatly between each community.

Element 6 – Risk Zone Map

Develop an implement a regular schedule of monitoring and mitigation that can be conducted within the limited resources available to the City. The action plan should define clear short and long-term objectives.

Element 7 – Staff Training Log

The training log verifies that Municipal staff is receiving ongoing and pertinent continuing education. If a training log is stored in some other document within the City, a simple reference to its location can be referenced in the tree risk plan.

1. List any and all specific training courses attended. Include the title of the course, the date, the duration, and any applicable CEU credits.

2. List any specific certifications achieved. Include the title, affiliation, and date.

3. List all conferences and workshops attended. Include the title, location, date range, and sessions attended.

4. List all "tailgate" training attendance. Include the subject, date and duration.

5. List all forensic discussions attended. Include the location, date, species, diameter, type of failure, and the final determination by staff of what caused the failure to occur.

Element 8 – Tree Failure Log

A simple tree failure log allows staff to better understand the circumstances surrounding failures in their particular community. When the situation allows for it, staff should, as a team, carefully assess the circumstances surrounding a significant failure. The knowledge and experience gained by staff in these events is significant. Staff skills and abilities to interpret defects in the future become more refined. Documenting the significant failures demonstrates that the community takes every opportunity to learn from actual events. Participation in the North American Tree Failure Database would further allow a greater number of people to learn from these failures.

Element 9 – Program Review

The annual risk program review allows staff the opportunity to critically evaluate the program over the last year. Staff can determine whether the defined goals are being met. If they are not being met, address why and what to change in the program to realize the planned outcomes. The creation of a tree risk working group for this purpose assures that there is a clear process for the different tree risk elements and activities carried out by the City to be critiqued, modified if necessary, and implemented.

2. Tree Risk Management Applied to the City of Genoa

All small communities have the conundrum of providing a safe environment for its residents and visitors with limited resources. With the completion of the tree inventory, the City has taken a large step toward managing the issue of risk.

Short –Term Goals:

- Remove all trees identified on the recommended removal list.
- Initiate an annual inspection of all recommended monitor trees. Natural Path will work with the City on these annual inspections for three years.
- Implement a cyclic pruning program.

Long-Term Goals:

- Reduce the number of Eastern Cottonwood, Mulberry, Box Elder, Siberian Elm and Silver Maple in the City.
- Develop a risk zone map that will serve both as a hazard inspection and storm preparedness map.

3.4. Exotic Pests

1. General Concepts:

This section is retained in this management plan because it is a good blueprint for any exotic species. Over the years we have learned that exotic pests are usually host specific, examples are Dutch Elm Disease, Asian longhorn beatle, and Emerald Ash Borer. Each pest had a preferred genus, such as Elm, Maple, or Ash. This is why we are more focused on Genus diversification rather than species, although diversity of species within each genus is also of great value. Genoa is at the end of removing ash trees from the parkways. Replacement still continues.

Survey Goals:

- Locate any existing infestations.
- Identify and survey the most likely areas of introduction and establishment.
- Provide a format for reporting and recording both positive and negative detections at the state and national level.
- Provide outreach and education materials that support a survey program.

Survey Approach: Identify and visually survey locations within states where introduction of pest is most likely. Locate and visually survey as many declining and dying trees as possible. In areas deemed high risk for introduction establish trap trees if feasible. Supplement surveys with targeted outreach and education programs.

Selecting Survey Sites: Identify areas where introduction is most likely. These areas include: 1) nurseries that sell or broker trees; 2) high use recreational sites (firewood introductions); 3) hardwood sawmills that may use host tree.

In some states, USDA-APHIS and state regulatory agencies will be conducting surveys within “high risk” areas including sawmills, and nurseries. Most of those surveys are conducted within the confines of those establishments. To avoid duplication of effort, it may be appropriate to survey in areas surrounding these sites, within a 1-3 mile radius. States agencies should coordinate survey efforts with APHIS and other regulatory officials.

Number of Survey Sites: The number of sites surveyed will depend on the number of locations deemed a high risk for introduction and the portion of the existing **host** resource in poor health. In addition, states closer to the known infested area should have a greater sampling intensity than those further away.

At a minimum, all areas deemed a high risk for introduction should be evaluated for the presence of declining or dead **host** trees. If declining or dead trees are present, thorough visual surveys should be done at those sites. Finally, the type of survey, visual vs. trap-tree, may make a difference in how many sites can be surveyed. Trap-tree surveys may require more time and effort per survey site. The reason for this is that they require a minimum of two site visits during the year, one to establish the trap tree, the second visit to cut and sample the tree. However, if large numbers of dead and declining trees are reported as part of a visual survey, thorough follow-up on each of those trees can be a large time commitment.

Sampling Season: Many of the signs of infestation (this will depend on the invasive pest) can be observed at any time of the year. However, dead and declining trees can be most easily observed during the growing season. Fall coloration can mimic crown decline. Therefore, the best time periods for visual surveys are from June through mid-September. Again, depending on the pest a separate technique may be required.

Visual Surveys vs. Trap-tree Surveys: The initial visual inspections to locate declining and dead trees can be a quick way to cover large areas in a short amount of time. However, if suspect trees are found, thorough follow-up can be a relatively slow process. Infestations could be difficult to detect using only visual surveys. This is especially true if introductions are relatively recent. Trap-tree surveys require killing (girdling) some trees. Further, trap-trees require follow-up visits in late fall or winter when trees are peeled and inspected for signs of larval galleries. Therefore, this survey method can be more time consuming and labor intensive. Trap trees do provide the most reliable tool for locating low-level pest populations. It is recommended that states conducting surveys incorporate trap trees into their survey plans, again if applicable. Trap-trees are best utilized when established in areas identified as high risk for introduction.

2. Exotic Pests as they may apply to the City of Genoa

The presence of EAB in Illinois is significant. Ash losses in southeast Michigan have numbered over twelve million. A serious outbreak in Illinois could mean the total loss of most ash trees in the greater Chicago area. In Genoa specifically this could mean the loss of 12% of its street and public trees. The Illinois Department of Agriculture is the lead agency in Illinois for developing and implementing a control and eradication program.

The three primary activities that the City can do to minimize the impact of infestations are:

- Educate the Public – The pest should be identified and inform the public of the pest's form of travel, examples like via firewood. The residents of Genoa should understand how and where the pest could be infiltrating. Obtaining literature from the Department of Agriculture covering what residents can do to minimize the problem. The narrative can be incorporated into local newsletter or newspaper article.

- Stop Planting effected Genus and species – Until the problem is under control, all species should be placed on the City's deferred planting list.

- Coordinate Monitoring – Working in conjunction with the Department of

- Agriculture, develop a visual inspection monitoring program.

3.5 Policy

Policies define a course of action. The importance of a documented municipal tree policy can not be emphasized enough. There are two main reasons for having a documented policy. First and foremost, it clearly defines the direction and actions the City will follow to manage their tree resource. Second, if implemented, a documented policy is the basis for any defense if litigation were ever to occur due to a tree, or tree part, failure.

A community implements an urban forestry program to improve the overall health of the urban forest, to perpetuate the urban forest, and to assure the safety of the public from potentially hazardous trees. None of these goals can be effectively or completely met if the community lacks documented tree policies. In addition, in the rare instance of litigation involving a tree, the absence of any clear policy will guarantee that the opposing attorney will define the community's program for them.

It is a common misconception that implementing a policy increases the community's liability. Communities have an implied duty to be informed of potential risks to the public. Not to address this duty can place a community at a greater disadvantage if litigation were to occur. A tree policy that incorporates a risk element demonstrates that a community directly confronted the issue and took the necessary steps to address it.

When discussing urban tree management, City policies are presented in a variety of documents. Each document is an essential element of a community's larger urban forestry management program, and each plays a very specific role. The documents are:

ORDINANCES are regulations enacted by municipal government. Tree ordinances define the legal interaction between the public, the City, and its trees. Ordinances, by their very nature, are typically restrictive. They define, among other things, what a private individual can and cannot do to a public-owned tree. In some areas of the country, these restrictions may even extend to trees on private property. Tree policies that are best addressed through ordinances include:

- High-risk trees on private property that may affect the public Right of Way.
- Inappropriate tree-related activities (Planting deferred species).
- A definition of boundary trees.
- Clearance issues from private property trees.
- Reference an Arboricultural Standards Manual…

STRATEGIC PLANS define long and short term goals for the urban/community forestry program.

MANAGEMENT PLANS define how the individual goals are achieved through an action plan and timeline. Each goal must have an achievable and discernable outcome. This outcome is the policy that the community wishes to have representing their program. What do you have? What do you want? How do you get what you want? And, are you getting what you want?

ARBORICULTURAL STANDARDS define Best Management Practices (BMP's) for the care of public-owned trees. The standards are applied universally to all public trees regardless of who is doing the work—staff, contractor, or resident. The standards guarantee that, if invoked, a healthy, vigorous urban forest will be perpetuated. The document also demonstrates that the community is implementing currently accepted practices by the green industry and urban forestry profession. (**See Attachment 7 – Arboricultural Specifications Manual**).

TREE RISK MANAGEMENT PLAN is the document that defines the current tree risk management program for the community. It articulates the community's total policy on risk trees.


Lake Barrington
Bannockburn
Genoa
Hampshire
Wayne
Elburn
Steward
Indian Head Park
Palos Park
Beecher
Momence
Henry
Gridley
Pecatonica
Rockford
Belvidere
Union
Crystal Lake
Highland Park
Wheeling
Glenco
Winnebago
Byron
Davis Junction
Oregon
Esmond
South Elgin
Elgin
Evanston
Niles
Chicago
Dixon
Franklin Grove
Lee
Waterman
Aurora
Eldena
Amboy
Paw Paw
Sublette
Sandwich
Yorkville
Plainfield
Calumet City
Mendota
Leland
Shorewood
Joliet
Lansing
La Moille
Newark
Triumph
Wedron
Channahon
Frankfort
Princeton
La Salle
Ottawa
Morris
Manhattan
Peotone
Peru
Marseilles
Braidwood
Wilmington
Oglesby
Manteno
Tonica
Grand Ridge
Mazon
Bourbonnais
Lostant
Streator
Kankakee
Dwight
Reddick
Wenona
Blackstone
Herscher
Lacon
Varna
Cabery
Chebanse
Rutland
Cornell
Chillicothe
Minonk
Clifton
Martinton


GENOA RD
OLD GENOA RD
DEER CREEK
18
NORTH ST
Genoa-Kingston Middle School
DEERCREEK DR
A ST
HICKORY DR
N STATE ST
N LOCUST ST
Chamberlain Park
W MAIN ST
B ST
OAK ST
SPRING ST
W 2ND ST
ADAMS ST
WASHINGTON ST
MONROE ST
N EMMETT ST
Davenport Grade School
DUVAL AV
City Hall & Police Dept
EUREKA ST
E 2ND ST
W 1ST ST
E 1ST ST
72
C&E RR
W RAILROAD AV
E RAILROAD AV
PARK AV
W MAIN ST
S STATE ST
Library
S GENOA ST
S SYCAMORE ST
Fire Dept
N BROWN ST
N HADSALL ST
STILES ST
ROBINSON ST
PRAIRIE ST
EVANS AV
JACKSON ST
E MAIN ST
JACKSON WOODS CT
BURTON LN
MARKET ST
HERITAGE TRL
ELM ST
S EMMETT ST
S LOCUST ST
HOLLY CT
23
72
CENTRAL AV
Genoa-Kingston High School
HAWTHORN LN
W CHURCH ST
E CHURCH ST
WILSHIRE DR
WATSON DR
REDWOOD CT
W HILL ST
E HILL ST
S BROWN ST
KOCH DR
MIDDLETON ST
TYLER ST
COOPER CT
GRANITE WAY
STEARN DR
WINDING TRL
FORREST LN
RIVERBEND DR
PARKVIEW LN
MADISON ST
BIRCH AV
Genoa Cemetery
S STOTT ST
REID RD
Russell Forest Preserve
BOULDER CT
ANGLER LN
COTTONWOOD CIR
LORAINE DR
HOMEWOOD GT
HOMEWOOD DR
HOME-WOOD DR
Genoa Grade School
RESOURCE LN
COBBLESTONE CT
ASPEN WAY
Post Office
SANDSTONE WAY
PRESERVE DR
WINDING TRL
BIRCH LN
CEDAR LN
PEARSON DR
STEARN DR
CHERRY TREE LN
S BRANCH KISHWAUKEE RIVER
C C & P AC RR
STONE CREEK CIR
WALNUT ST
S HADSALL ST
SYCAMORE RD
SOUTH CENTRE DR
RIVERBEND DR
NICHOLAS DR
NICHOLAS CIR
WILLOWGLEN DR
S SYCAMORE ST
NORTH OAKCREEK DR
JOHN CT
OAK CT
PAT CT
SOUTH OAKCREEK DR
WALNUT ST
DERBY LINE RD
OAKVIEW PL
JOSHUA LN
JOEL LN
GARYS WAY
OAKVIEW DR
PERSIMMON DR
CHERRY RD
MAPLE LN
DANIELS DR
BRIANS WAY
ELLWOOD GREENS RD
MADISON ST
BRIDDY WAY
CHERRY RD
SECRETARIAT DR
WHIRLAWAY DR
ELLWOOD GREENS RD
OAK ST
HICKORY CT
TIMBER TRL
SOUTHWOODS DR
SOUTHWOODS DR
WAR ADMIRAL DR
JAMES CT
ROYAL OAK RD
Donation Park
OAKVIEW LN
GALLANT FOX DR
23
SIR BARTON DR
CAROLWOOD DR

City of Genoa Street Index

Updated: March 2013

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Daniels Dr	4-C-1 & B-2-F
Deercreek Dr	4-C-2 & B-1-D
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Ellen Dr	5-A-1 & C-1-A
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Ellwood Greens Rd	4-B-5 & B-2-F
Elm St	4-C-5 & B-1-F
N Emmett St	4-C-5 & B-1-E
S Emmett St	4-C-4 & B-1-F
Eureka St	5-A-1 & B-1-E
Evans Av	5-A-3 & B-1-F
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Forrest Ln	4-B-6 & B-2-A
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S Hadsall St	5-A-1 & B-2-C
Hawthorn Ln	4-C-3 & B-2-A
Heritage Trl	4-B-6 & B-1-F
Hickory Ct	4-C-2 & B-2-F
Hickory Dr	4-C-3 & B-1-D
E Hill St	4-C-6 & B-2-A
W Hill St	4-C-4 & B-2-A
Holly Ct	4-C-4 & B-1-F
Homewood Ct	4-C-5 & B-2-B
Homewood Dr	5-A-1 & B-2-B
Homewood Dr	4-C-6 & B-2-B
Jackson St	4-C-4 & B-1-F
Jackson Woods Ct	4-C-3 & B-1-F
James Ct	4-B-6 & B-3-A
Joel Ln	4-C-1 & B-2-E
John Ct	4-C-2 & B-2-D
Joshua Ln	4-B-6 & B-2-E
Kishwaukee Dr	4-C-2 & B-3-E
Koch Dr	5-A-1 & B-2-A
N Locust St	4-C-6 & B-1-D
S Locust St	4-C-6 & B-1-F
Loraine Dr	4-C-5 & B-2-B
Madison St	4-C-2 & B-2-A
Madison St	4-C-3 & B-2-E
E Main St	4-C-6 & B-1-F
W Main St	4-C-2 & B-1-D
W Main St	4-C-4 & B-1-E
Maple Ln	4-C-1 & B-2-E
Maple Ln	4-C-4 & B-2-B
Market St	4-B-6 & B-1-F
Middleton St	4-B-6 & B-2-A
Monroe St	4-C-4 & B-1-E
Nicholas Cir	4-C-2 & B-2-C
Nicholas Dr	4-C-2 & B-2-C
North Oakcreek Dr	4-C-2 & B-2-D
North St	4-C-3 & B-1-D
Oak Dr	4-C-4 & B-2-A
Oak Dr	4-C-5 & B-3-F
Oak Meadow Dr	4-C-3 & B-3-F
Oak St	4-C-1 & B-2-F
Oak St	4-C-2 & B-1-E
Oakview Dr	4-C-3 & B-2-E
Oakview Ln	4-C-2 & B-3-A
Oakview Pl	4-C-2 & B-2-E
Old Genoa Rd	4-B-6 & B-1-C
Park Av	4-C-2 & B-1-F
Parkview Ln	4-C-1 & B-2-A
Pat Ct	4-C-3 & B-2-D
Pearson Dr	5-A-2 & B-2-B
Pebble Beach Dr	4-C-1 & B-3-C
Pebblebeachcir	4-C-1 & B-3-B
Persimmon Dr	4-B-6 & B-2-E
Prairie St	5-A-2 & B-1-F
Preserve Dr	4-B-5 & B-2-B
E Railroad Av	4-C-6 & B-1-E
E Railroad Av	5-A-2 & B-1-E
Redwood Ct	4-C-3 & B-2-A
Reid Rd	5-A-2 & B-2-A
Resource Ln	5-A-2 & B-2-B
Riverbend Dr	4-B-6 & B-2-A
Riverbend Dr	4-C-1 & B-2-C
Robinson St	5-A-2 & B-1-F
Royal Oak Rd	4-C-1 & B-3-A
Sandstone Way	4-B-6 & B-2-B
Secretariat Dr	5-A-1 & B-2-E
Sir Barton Dr	5-A-1 & B-3-A
South Centre Dr	5-A-2 & B-2-C
South Oakcreek Dr	4-C-2 & B-2-D
Southwoods Dr	4-C-3 & B-3-A
Southwoods Dr	4-C-4 & B-3-A
Spring St	4-C-3 & B-1-E
N State St	4-C-4 & B-1-D
S State St	4-C-4 & B-1-F
Stearn Dr	4-B-6 & B-2-C
Stearn Dr	4-C-1 & B-2-A
Stiles St	5-A-1 & B-1-F
Stone Creek Cir	4-C-3 & B-2-C
S Stott St	4-C-6 & B-2-A
Sycamore Rd	5-A-1 & B-2-C
S Sycamore St	4-C-5 & B-1-F
S Sycamore St	4-C-5 & B-2-C
Thornapple Ln	4-C-4 & B-3-E
Thornton Dr	4-C-3 & B-3-F
Timber Trl	4-C-2 & B-2-F
Tyler St	4-C-3 & B-2-A
Walnut St	4-C-1 & B-2-D
Walnut St	4-C-3 & B-2-C
War Admiral Dr	5-A-1 & B-2-F
Washington St	4-C-4 & B-1-E
Watson Dr	5-A-2 & B-2-A
Westwoodcir	4-C-2 & B-3-A
Whirlaway Dr	5-A-1 & B-2-F
Williams Cir	4-C-5 & B-3-F
Williams Rd	4-C-6 & B-3-F
Williamscir	5-A-1 & B-3-F
Willow Glen Dr	4-C-4 & B-2-D
Wilshire Dr	5-A-2 & B-2-A
Winding Trl	4-B-6 & B-2-A
Winding Trl	4-B-6 & B-2-B

INVENTORY FIELDS AND METHODOLOGY

This section is divided into two distinct parts. The first describes the methodology used to inventory the City's street trees, which should serve as a quick reference for staff on how individual data was collected. The second summarizes the data collected and provides a snapshot of the City's street tree population. This inventory acts as a foundation from which most of the recommendations found in this plan are derived.

The data collected on this project and stored in the tree inventory software system falls into two general categories of information: location and item. The following is a narrative of each field collected and the relevance of the data.

LOCATION INFORMATION

There are nine pieces of information contained in the location category of data collected. Five fields pertain to location and two relate to infrastructure.

Management Zone:

The community has been divided into six easily discernable management zones. The zones are defined by subdivision. The purpose of this field is to allow the City the opportunity to query on trees residing in unique geographic areas within its corporate boundaries. Subdivisions are retained as unique zones within the inventory.

Street:

Each street within the corporate limits was logged into the software system. **(See Attachment 3 – City of Genoa Street Names)**. The streets field will allow the City to query trees at the street level.

Address:

Each property address was logged. When an address was not discernable a proxy address was assigned that corresponded with the address sequence of the lot and street. As time evolves, these proxies will be resolved by NPUFC working in cooperation with the City. Cul-de-sac islands, medians and vacant lots were assigned proxy addresses. A list of these addresses can be generated.

On Street

The frontage field identifies the street on which the tree is physically located regardless of the tree's street address. This field allows the City to run a list of all trees at a particular address or run a list of all trees physically located on a particular street.

From Street

To Street

Side:

Each property has been divided into a series of quadrants (hereafter known as sides) to assist locating trees within the property. A side defines only the public right of way, and each possible side abuts a street. There are four side designations: B (Back), S (Side), M (Median), and F (Front). The "F" quad defines the parkway area found at the front of the property. The "S" defines the parkway area around the corner from the front depending on which end of the block the property is located. The "B" or back side defines the rare cases where a single, large property, such as a school or park, fills an entire City block.

Site:

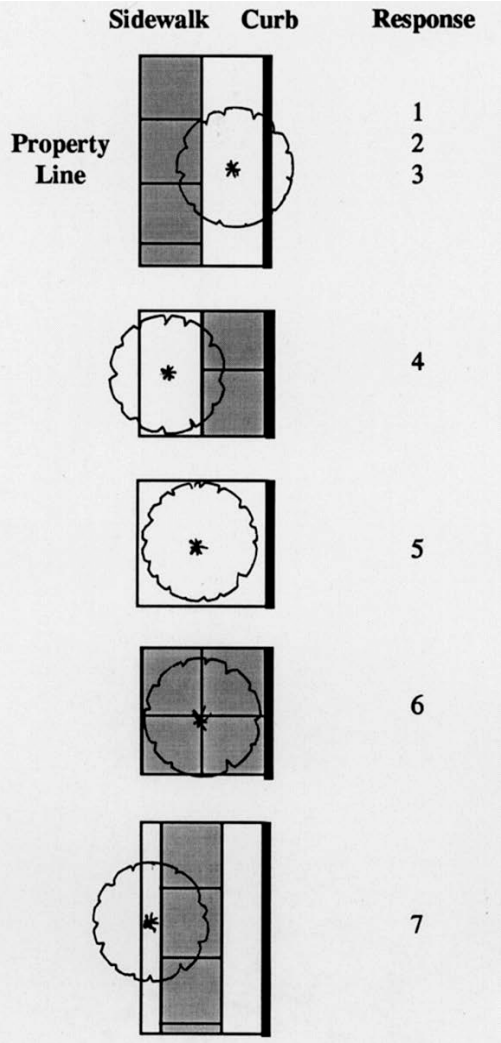
All trees within a site are given a sequential number. All trees are numbered in the direction of the progression of addresses.

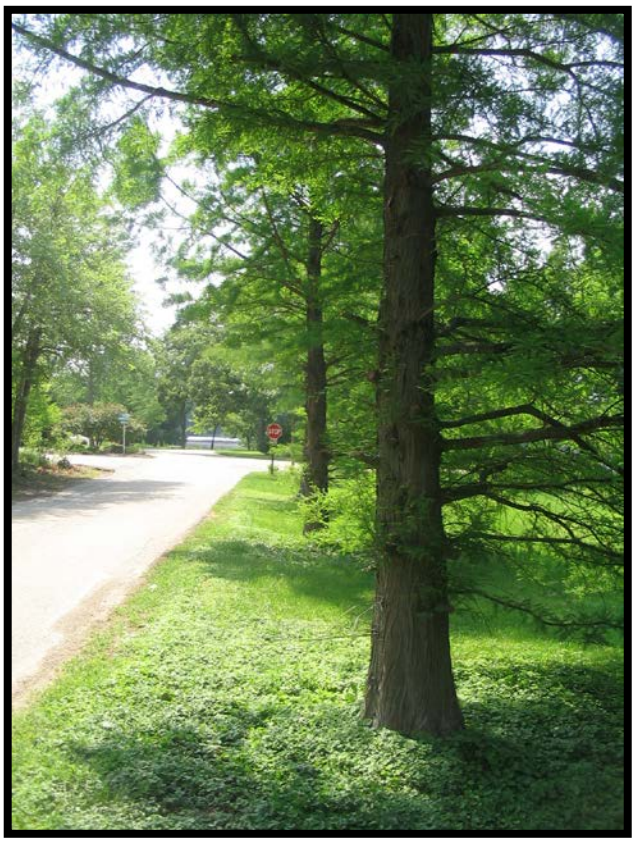
Growspace:

The parkway refers to the area between the curb and the edge of the right-of-way. The following descriptions and illustration distinguish the seven different parkway types:

1 - The width from the curb to sidewalk is 1' to 4' wide
2 - The width from the curb to sidewalk is 5' to 9' wide
3 - The width from the curb to sidewalk is > 9' wide
4 - Sidewalk is attached to the curb

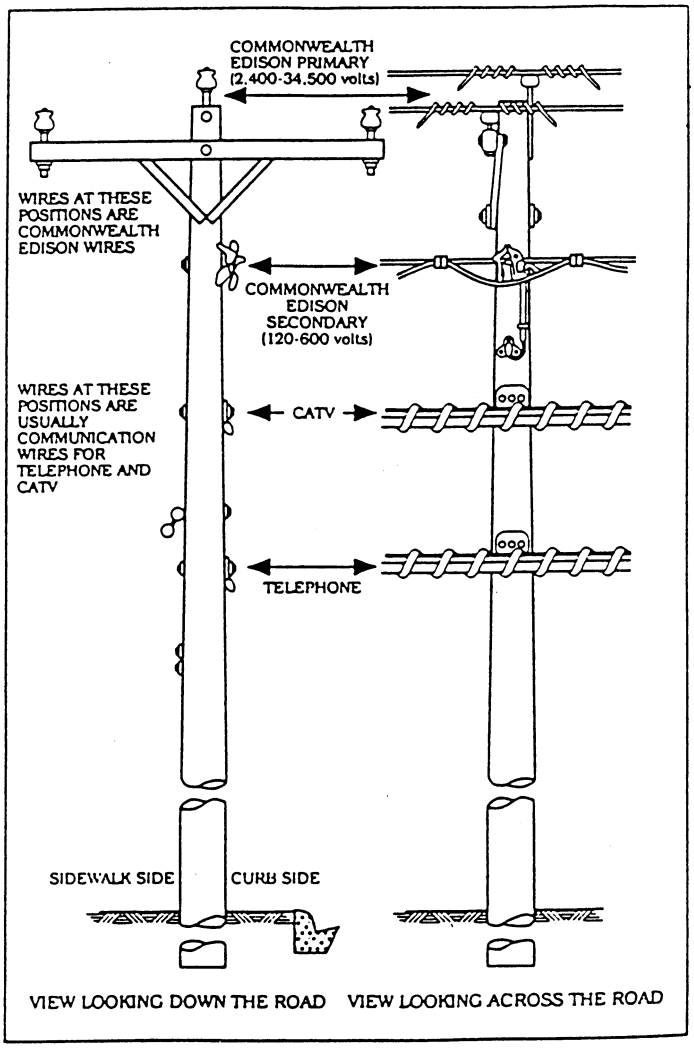
5 - There is no sidewalk
6 - Tree well
7 - Tree is behind an unattached sidewalk





Utility:

The presence or absence of overhead lines was noted with either a “Yes” or “No”…


COMMONWEALTH
EDISON PRIMARY
(2,400-34,500 volts)
WIRES AT THESE
POSITIONS ARE
COMMONWEALTH
EDISON WIRES
COMMONWEALTH
EDISON
SECONDARY
(120-600 volts)
WIRES AT THESE
POSITIONS ARE
USUALLY
COMMUNICATION
WIRES FOR
TELEPHONE AND
CATV
CATV
TELEPHONE
SIDEWALK SIDE
CURB SIDE
VIEW LOOKING DOWN THE ROAD
VIEW LOOKING ACROSS THE ROAD

ITEM INFORMATION

There are nine pieces of information contained in the item category of data collected. An item can be either a tree or a planting site.

# of Stems:

This field identifies the number of individual stems that exist at diameter breast height (DBH). The typical response for a tree is "1".

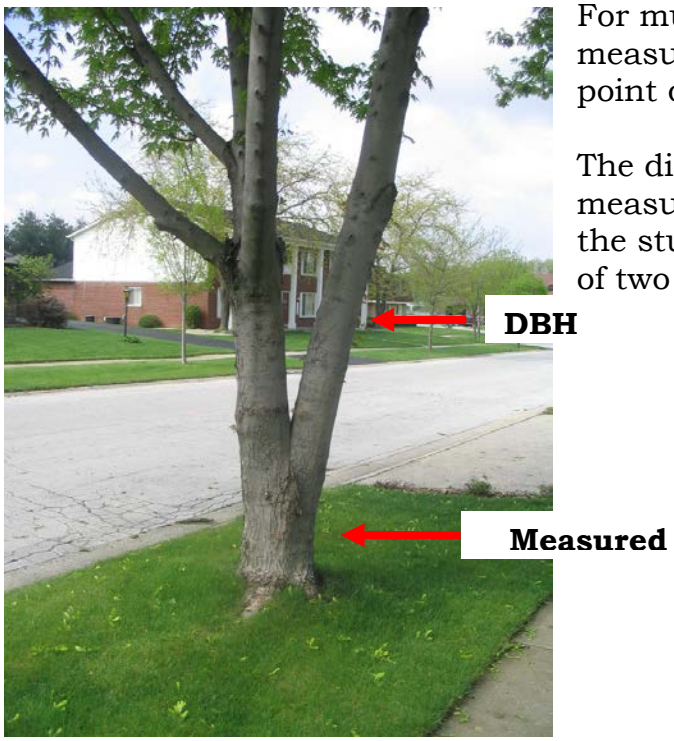
Species:

Each tree is identified to the species level and where possible to the cultivar. If a tree stump was encountered, "stump" was noted.

Diameter:

All trees were measured to the nearest inch. The diameter measurement for all trees is based on the American Standard for Nursery Stock (ANSI Z60.1-1986) as approved by the American National Standards Institute, Inc. All are measured in the following manner:

Trees that are four-inches or less in caliper are measured at six inches above the ground. Trunks above four inches in caliper are measured at four-and-a-half feet (DBH) from ground level.



For multi-stemmed trees the diameter was measured at the narrowest point below the point of branch attachment. See diagram.

The diameter for a stump is recorded by measuring across the face of the stump. If the stump is irregular in shape, an average of two measurements was made.

Condition:

A global condition value is entered into the dataset based upon a composite assessment of the following components: trunk, scaffold branches, smaller branches and twigs, foliage, and roots. The overall condition ratings are: Good, fair, poor or dead.

Defects

A tree can be assigned up to three defects.

Roots:
The following defects refer to the root system, which includes the root crown.

13 - Girdled Roots
A root that is partly or entirely encircling the trunk or a portion of the root crown is a girdling root. Symptoms that a root is girdling include: tree decline, premature leaf drop, and a vertical or indented trunk at the point of soil entry.

16 - Basal Cavity
Since basal cavities can often compromise the stability of the tree, it is extremely important to log them. A basal cavity can be identified by the presence of small mounds of frass, sawdust, or fine soil at the base of the trunk. It may be necessary to probe the areas behind the mounds if the cavity is not apparent, perhaps using a stick.

17 - Basal Decay
Decay can occur at any wound where bacteria or fungi are degrading the integrity of the wood. Degraded wood at the tree's base can reduce its structural strength. If basal decay is not identified promptly it can lead to a basal cavity. As in all wound cases, loose bark should be removed to further inspect the extent of decay. A conk (spore producing body) on the tree is one sign of decay.

18 - Basal scar
A basal scar is a scar that penetrates the soil. It can reduce the overall vigor of the tree, and may lead to basal decay as a result of the high level of moisture generally present at the wound.

Trunk:
The following defects refer to areas of the trunk and scaffold branch attachment.

21 - Appressed Fork
Tight or appressed forks occur when a branch or branches form at overly acute angles, causing the branches to form a weak union.

23 - Crack
A crack is a longitudinal split in a stem that can result from structural failure due to wind, end weight, snow loads, or a combination of these effects.

28 - Lean
A lean is identified when the tree's trunk is not vertical or near vertical. A lean places additional stress on the root system, especially if the crown weight does not compensate for the lean.

32 - Sweep
A sweep is identified by a curve in the trunk. While a lean generally begins at the root crown, a sweep originates on the straight portion of the trunk. The sweep may return to a vertical position without causing an imbalance in the overall tree weight.

35 - Trunk Cavity
A trunk cavity is a hollow area in the main stem. Trunk cavities are extremely important to record since the structural integrity of the tree may be in question. Ants are often indicators of cavities or decay.

36 - Trunk Decay
Decay can occur around a wound that has bacteria or fungi degrading the integrity of the wood. Degraded wood on the main stem is the result of decay and should be recorded. A conk (spore producing body) on the tree is an indicator of decay.

37 - Trunk Scar
A trunk scar is found on the main stem. A scar can reduce the tree's overall vigor and allow decay organisms to infect the tree.

Crown:
The following defects are located in a trees' crown area: its main branches, twigs, and foliage.

41 - Chlorotic
Chlorosis is identified when leaves are entirely yellow, yellow at the tips, or yellow along the veins. The yellowing is the result of a lack of chlorophyll, which may be caused by a lack of nutrients or water.

42 - Dead Top
A dead top is when the upper portion of one or several main branches is dead.

43 - Decline
Decline is a result of various factors that reduce the vitality of the tree. Some symptoms of decline are the reduction in shoot growth, slow callus closure, and dieback.

44 - Dieback, Major
Major dieback is present when a preponderance of small limbs, less than one-inch in diameter are dead, or when one or more larger limbs, are dead. A tree with major dieback should be assigned a pruning maintenance action.

45 - Dieback, Minor
Minor dieback is present when a small number of limbs, less than one-inch in diameter, are dead. Pruning may or may not be necessary in these cases.

49 - Catface
A catface is a limb that has broken out of the crown at a fork. A large rough scar will be evident. A split can be a result of a fork being appressed, which creates a poor union, or by the weight at the end of a limb being excessive.

53 - Topped
Topping is the removal of a tree's main branch stems. These wounds rarely close, exposing the tree to decay. New shoots have very weak attachments. Unless more severe defects are present, topping should always be recorded.

54 - Utility Damage
Trees under and near utility lines often suffer utility pruning damage. This damage is the result of limbs that were pruned too close to utility lines. Utility damage includes topping and V-pruning.

55 - Storm Damage
Scars from broken branches and torn crotch bark indicate storm damage. These injuries may need to be assigned a pruning maintenance action to reduce the potential for decay.

57 - Crown Cavity
A crown cavity is a cavity in any of the branches other than the scaffold branches. These cavities are usually visible at old pruning wounds, storm damage sites, or where a branch has broken. The cavities can extend through the branch and into the main stem.

58 - Crown Decay
Crown decay can be present at any crown wound where bacteria or fungi are degrading the integrity of the wood. A conk (spore producing body) on a tree is a sign of decay.

59 - Crown Scar
Crown scars can be the result of passing trucks or careless pruning techniques. You should record a crown scar if bark is removed and the wood is intact. Do not record scars of properly pruned trees.

Diseases:
The following are common diseases that can infect trees.

81 - Anthracnose
Anthracnose is a leaf disease that causes irregular dead areas on the leaf margin. In severe situations leaves can die entirely, and shoots and small twigs can be injured.

82 - Canker
A canker is a callus formation resulting from a bacterial or fungal infection.

84 - Dutch Elm Disease
This disease is a fungus which is transmitted by elm bark beetles or through root grafts. Trees are usually infected in the spring and late summer. Leaves will discolor and droop at the tips of one or more of the branches. If the tree's foliage died quickly it remains on the branch longer than if the leaves yellow and droop. Flagging occurs when shoot tips wilt and droop.

86 - Root Rot
Root rot is the result of infection by a soil-borne fungus. The fungus causes death to a tree one branch at a time or wilts the entire tree at once. The tree's decline is usually accompanied by yellowing foliage and leaf drop.

87 - Verticillium Wilt

Verticillium wilt is a soil-borne fungus disease which invades and plugs water-conducting tissue. Typically, the leaves on a single branch wilt. Depending upon the severity of the infection, symptoms may be visible only after hot, dry days, or when leaves have died quickly and remain on the branch. Young trees are more susceptible than older trees and can be injured more severely.

Foreign Objects
Foreign objects are important to note for a variety of reasons; it may be necessary to inspect them periodically, and their identification can aid in avoiding injury to crews working on the tree. The following is a list of common foreign objects found on trees.

95 - Bolt in Trunk
Split forks are often bolted to stop the split from continuing and to encourage healing. In many cases, these bolts are completely overgrown, becoming invisible to work crews.

96 - Cable in Crown
Cables are used to support weak attachments or limbs with high-end weight. By recording a cable in the crown, crews are assisted with pruning activities and awareness is raised regarding cables that require maintenance and may need to be replaced.

97 - Concrete in Cavity
Historically, concrete was poured in tree cavities based on the thought that it would increase the structural integrity and healing process of a decaying tree. Later research on this procedure found that it actually increases decay and reduces the strength of the tree. Presence of concrete should be noted.

98 - Foreign Object
This category includes any object that is not mentioned above. Generally, this category includes items sticking out of the trunk, including pipes; address brackets, or railroad spikes. It is not necessary to record nails. The object and its position on the trunk can be described in greater detail in the notes section.

Action

Each tree can be assigned up to two maintenance actions. Alternatively, all stumps entered in the Species field are automatically assigned an action code of Grind Stump when the data is downloaded.

The following actions could be assigned to a tree:

Prune – This action was assigned in instances where numerous large limbs were present and constituted an imminent risk to the public.

Remove - This action was assigned to all trees that were either dead, severe decline, or in imminent danger of a major failure.

Monitor – This action was assigned to trees that have some noticeable defect, yet did not constitute an imminent threat of failure.

Notes

The Notes field is used to denote special circumstances about the specific tree being inventoried.

	Genus	Species	Common	# Total	%
1	**Acer**	saccharinum	Silver Maple	205	9.21
		platanoides	Norway Maple	179	8.04
		saccharum	Sugar Maple	117	5.26
		rubrum	Red Maple	117	5.26
		x freemonii Marmo	Marmo Maple	78	3.51
		platanoides "Crimso K"	Crimson King Maple	53	2.38
		x freemonii "Aut. Blz"	Autumn Blaze Maple	21	0.94
		campestre	Hedge Maple	14	0.63
		truncatum	Norwegian Sunset	9	0.4
		platanoides "Schwedler	Schwedler Maple Red	4	0.18
		negundo	Boxelder	4	0.18
		ginnala	Amur Maple	3	0.13
			TOTAL	**804**	**36.12**
2	**Quercus**	bicolor	Swamp White Oak	88	3.96
		rubra	Red Oak	45	2.02
		macrocarpa	Burr Oak	31	1.39
		alba	White Oak	14	0.63
		robur	English Oak	14	0.63
			TOTAL	**192**	**8.63**
3	**Malus**	species	Species	**163**	**7.32**
4	**Gleditsia**	triacanthos	Honeylocust	**149**	**6.7**
5	**Tillia**	cordata	Little Leaf Linden	96	4.31
		americana	American Linden	26	1.17
		euchlora	Redmond Linden	4	0.18
			TOTAL	**126**	**5.66**
6	**Pyrus**	calleryana	Chaunticlear Pear	**102**	**4.58**

				#	

	Genus	Species	Common	Total	%
Genus Frequency Report 2017 with Species #'s					
7	**Picea**	pungens	Colorado Spruce	51	2.29
		pungens 'glauca'	Colorado Blue Spruce	43	1.93
		abies	Norway Spruce	1	0.04
			Total	**95**	**4.26**
8	**Celtis**	occidentalis	Hackberry	66	2.97
			Prairie Pride' Hackberry	3	0.13
			Total	**69**	**3.1**
9	**Syringa**	reticulata	Japanese Tree Lilac	60	2.7
		vulgaris	Common Lilac	3	0.13
			Total	**63**	**2.83**
10	**Pinus**	sylvestrus	Scotch Pine	37	1.66
		strobus	White Pine	32	1.44
			Total	**69**	**3.1**
11	Prunus	virginiana	American Cherry/Plum	40	1.8
		americana	Cherry	5	0.22
		serotina	Wild Cherry	4	0.18
		cistina	Purple leaf Sandcherry	2	0.08
		mandshurica	Apricot	1	0.04
			Total	**52**	**2.32**
12	Ginkgo	biloba	Ginkgo	**46**	**2.07**
13	Betula	nigra	River Birch	25	1.12
		pendula	White Birch	7	0.31
			Total	**32**	**1.43**

Genus Frequency Report 2017 with Species #'s

#	Genus	Species	Common	Total	%
14	Platanus	occidentalis	Sycamore	**26**	**1.17**
15	Ulmus	frontier	Frontier Elm	20	0.9
		rubra	Slippery Elm	2	0.09
		americana	American Elm	2	0.09
		pumila	Siberian Elm	1	0.04
			Total	**25**	**1.12**
16	Amelanchier	grandiflora	Serviceberry	**22**	**0.99**
17	Fraxinus	americana	White Ash	8	0.36
		pennsylvanica	Green Ash	5	0.22
		americana 'Aut. Purple'	Autumn Purple Ash	2	0.09
		Innoculated Ash	Innoculated Ash	2	0.09
			Total	**17**	**0.76**
18	Juglans	nigra	Black Walnut	17	0.76
19	Arborvitae		Arborvita	17	0.76
20	Taxodium	distichum	Baldcypress	17	0.76
21	Ostrya	virginiana	American Hop Hornbeam	13	0.58
22	Juniperus	virginiana	Eastern Red Cedar	9	0.4
23	Cercis	canadensis	Eastern Red Bud	8	0.36
24	Cladrastis	lutea	Yellowwood	8	0.36

Genus Frequency Report 2017 with Species #'s

	Genus	Species	Common	# Total	%
25	Liriodendron	tulipifera	Tulip Tree	8	0.36
26	Cornus	mas	Corneliancherry Dogwood	6	0.25
27	Viburnum	prunifolium	Blackhaw viburnum	4	0.18
28	Crataegus	crusgalle	Hawthorne	4	0.17
29	Catalpa	speciosa	Catalpa	3	0.13
30	Magnolia	x soulangiana	Saucer Magnolia	3	0.13
31	Fagus	sylvatica	European Beech	3	0.13
32	Forsythia		Forsythia	3	0.13
33	Gymnocladus	diocious	Kentucky Coffee Tree	3	0.13
34	Carya	ovata	Shagbark Hickory	3	0.13
35	Aesculus	gladbra	Ohio Buckeye	2	0.09
36	Euonymous	montrouses	Burning Bush	2	0.09
37	Salix	species	Willow	2	0.09

Arboricultural Specification Manual

Authority:

Pursuant to authority granted under Ordinances numbers 867 and 868, The Genoa Tree Board hereby promulgates the following as the Arboricultural Specifications and Standards of Practice for the City of Genoa, Illinois hereinafter called the Arboricultural Specifications Manual.

A. Policy

1. All work on public trees shall comply with the City's Unified Ordinances, the City's Municipal Codes and the Arboricultural Specifications Manual.

2. The Director of Public Works has the authority with the advice and assistance of the Tree Board to amend the Arboricultural Specifications Manual to reflect current trends, new information, and implement methods that will provide the necessary means to promote a healthy and sustainable urban forest.

B. Species, Cultivars or Varieties

1. The attached Table I contains a list of tree species or their varieties acceptable and approved for planting on City property.

2. Unacceptable trees species or their varieties and undesirable forms of any variety contained in the attached Table II shall not be planted on City-owned property, except in special locations where, because of characteristics of adaptability or landscape effect, they can be used to the public advantage.

3. Other tree species or their varieties not listed in Table I may be planted on City-owned property, but only desirable trees of good appearance, beauty and adaptability that are generally free from injury, injurious insects, (detrimental to the tree's health) disease or other limitations may be planted.

4. Where certain planting sites have been assigned a particular species or variety, only the designated species or variety shall be planted on such sites, unless the Director of Public Works or his/her designee, revise the landscape plan.

5. All trees removed for clearance under utility lines must be replaced with approved trees which conform to small tree heights from Table I.

6. New Subdivisions

New subdivisions shall have a mix of trees containing not more than 10% (ten) of any one species, or **genus** in a one block area. Species in selection must also meet an approximate blend of equal number of trees of large, medium and small mature heights. Special attention is given to the N, S, E, & W location, when selecting planting site. Refer to the City's Unified Development ordinance Title 6.6.3 and the City's Municipal Code Chapter 7-4 for specific requirements for land development and new construction.

a. Tree location plan is to be submitted to the Director of Public works or his/her designee before any tree planting is to take place.

b. Genus, species, and cultivar shall be made known on the plan to ensure proper plant diversity, growth rate, and adaptability.

c. The name of the nursery to supply trees is required to ensure quality stock and appropriate zone hardiness. <u>No auction stock will be accepted.</u>

d. Nurseries are to be within a 50-mile radius of the City of Genoa. Unless approved by the Director of Public Works or his/her designee.

e. The plan shall also show utilities, curb, sidewalk, fire hydrant, and driveway placement where applicable. Street addresses and north arrow are also to be shown.

f. Scale of plan shall be no smaller than 1" per 50'

g. The Director of Public Works or his/her designee reserves the right to change or refuse the tree location or a species at his/her discretion to ensure urban forest benefit and diversity.

h. Parkway to have a minimum of ten inches of topsoil. Soil to have substantial organic matter with nutrients, indicative to original soil removed.

i. Trees are to be planted by auguring or hand digging. Other may be used with City consent.

j. The Director of Public Works or his/her designee is to be notified 72 hours in advance of installation of trees for a site inspection. Installation will take place during regular working hours, Monday through Friday, 7 a.m. to 5 p.m., unless otherwise directed by the Public Works Department.

k. Trees to be inspected before planting in the parkway.

l. All trees to be tagged with Genus, Species, Cultivars, and indicate the nursery where purchased. Stock will be deemed unacceptable if tags are not in place or tree size is not indicated on the invoice.

m. All trees to have good form and strong leader according to the genus.

n. Arboricultural Specification manual to be adhered to in new subdivisions to include, appropriate species, sizes, and stock standards.

7. Trees shall be planted at least fifteen (15) feet from intersections the distance shall be such as to provide for the Visibility Triangle as determined by the Director of Public Works. No tree shall be planted closer than fifteen (15) feet to a utility pole to allow room for line maintenance.

8. Spacing for all trees shall be determined in accordance with local conditions, the species, cultivars or varieties used, and their mature height to spread and form. Generally, all large trees, at maturity, shall be spaced forty (40) to sixty (60) feet center-to-center; all medium sized trees shall be spaced a minimum of thirty-five (35) feet center-to-center; and all small trees shall be spaced a minimum of twenty-five (25) feet center-to-center.

9. The minimum planting density of tree lawns in new subdivisions shall be one tree per lot for lots with less than 80 feet of right-of –way. Two trees per lot shall be planted for lots with a right-of –way in excess of 80 feet. Homeowners who are against having a tree in the parkway may waive the privilege of a tree. However, a tree shall be planted for the City's urban forestry benefit. The price per tree will be estimated at the time that the trees are planted for that specific section of the subdivision to include the price of planting. Location of tree shall still be on city property, at the discretion of The City.

10. All planting on unpaved streets without curbs or sidewalks must have approval of the Director of Public Works, who shall determine the location of the tree, so that it will not be injured or destroyed when curbed and paved, or when sidewalks are constructed.

C. Planting Stock Requirements

1. Size
   a. Unless otherwise specified all medium to large deciduous trees and their cultivars or varieties shall conform to American Association of Nurserymen Standards.
   b. Tree shall be free of branches to a point not more, not less than sixty (60) percent of their height.
   c. Tree shall be at least 2.5 – 3 inches in diameter at a point (6) inches above ground level or 2 inches upon approval by City.

d. Tree shall be at least eight (8) to ten (10) feet in height when planted, or indicative to genus specie to caliper ratio upon approval of Director or his/her designee.

2. Grade
   a. Unless otherwise allowed for specific reasons, all trees shall have comparatively straight trunks, well developed leaders and tops, and the roots shall not only be characteristic of the species, cultivar or variety, but also shall exhibit evidence of balance between top and root.
   b. At the time of planting, all trees must be free of mechanical injuries, diseases, insects, and other objectionable features that tend to affect the future form and beauty of the tree.

3. Location and Spacing

   a. Based on a 40-year cycle, no tree that will attain a trunk diameter greater than fifteen (15) inches shall be planted in a tree lawn less than five (5) feet in width. In the tree lawns less than five (5) feet of width, or where overhead lines or building setback presents a special problem, the selection of planting site and species, shall be determined by the Director of Public Works. Delete with approval of tree board.

   b. Trees shall be planted at least fifteen (15) feet from driveways and alleys, and at street intersections. The distance shall be such as to provide for the Visibility Triangle as determined by the Director of Public Works.

   c. No tree shall be planted closer than fifteen (15) feet to a utility pole to allow room for line maintenance.

   d. Spacing of trees shall be determined in accordance with local conditions, the species, cultivars or varieties used, and their mature height, spread and form. Generally, all large trees, at maturity, shall be spaced forty (40) to sixty (60) feet, center-to-center; all medium sized trees shall be spaced a minimum of thirty-five (35) feet center-to-center; and all small trees shall be spaced a minimum of twenty-five (25) feet center-to-center.

4. Methods of Planting and Support

   a. All deciduous and coniferous trees shall be balled and burlaped. Balled roots should be prevented from drying out at the surface of the ball and they should be protected against freezing.

   b. Shrubs may be moved balled and burlap or as a container grown stock.

   c. Tree planting guidelines as illustrated in the attached Table III; Tree Planting Standard shall be adhered to at all times.

d. Planting pits should be twice as wide as the root ball and dug only as deep as needed to have the root flare level with the soil surface. If necessary, remove soil from top of ball to expose root flare.

e. If there are root sprouts above the root flare remove when only a few are present and the main root system appears healthy. Do not remove when an entirely new root system has formed above the old one, plant at the new root flare. (See Table V)

f. Remove the burlap and wire basket from the upper 1/2 of the root ball. Remove entirely, if possible. Backfill planting pit without placing soil on top of the root ball**.**

g**.** A section of eight (8) inch black plastic drain pipe, one side cut, shall be placed around the base of the trees.

h. Hardwood mulch shall cover the entire pit to a depth of 3 inches**.** Mulch should be no deeper than one (1) inch next to the trunk.

i. Pruning at the time of planting shall be done only to eliminate crossed branches, v-crotches, and dead wood. Proper pruning techniques must be followed.

j. When environmental conditions deemed necessary, tree trunks shall be suitably wrapped and guyed, or supported in an upright position. Place stakes outside the rootball (B&B), and should be parallel to the sidewalk and street. The wire and straps should be placed as high as possible on the tree to prevent vandalism. Do not over-tighten the wires, so the tree is free to move. Wrap the wire ends around the stake and clip the excess to prevent injury to the public. Necessity for this is to be determined by the Director of Public Works. Tree supports are not to be used on one tree for more than one year. Unless, otherwise specified by the Director of Public Works or his/her designee.

k. Plants must be adequately watered at planting time.

D. Early Maintenance

1. General
   a. Newly planted trees, shrubs and other plants require special maintenance for one to three growing seasons following planting.

   b. All maintenance practices shall follow approved Arboricultural Standards.

2. Watering

a. Ample soil moisture shall be maintained following planting. Thorough water once in five (5) to ten (10) days, depending on soil type and drainage provisions, is usually adequate during growing season.

b. A soil auger can be used to check the adequacy of moisture in the soil ball and/or backfill.

3. Fertilization

Provision of good drainage and adequate moisture of the backfill or the soil ball on balled plants is more important than fertilization immediately following planting.

4. Insect and Disease Control

a. Frequent and thorough inspections shall be made to determine when measures for the control of insects and disease shall be taken. Plants are in a weakened condition following transplanting and they are more susceptible to insects, especially borers, and disease than are vigorously growing trees.

b. Bio-remediation shall be the first recommended control practice. When it is necessary, then spraying of insecticides or fungicides shall be used, that is labeled for the intended use.

c. Application of pesticides to be done only by the Director of Public Works or his/her designee.

E. Pruning, Early Maintenance

1. General

a. Pruning newly planted trees shall consist of removing dead, broken or injured branches, and the suppression of rank, uneven growth that affects form. Water sprout shall be removed when they reach the diameter of a pencil.

b. Pruning shall be practiced thereafter as needed to assure sturdy crotch development.

c. Tree crown should be elevated as growth characteristics and location dictate. Newly planted trees need not have lower branches removed until they are well established.

F. General Maintenance, Established Trees

1. Pruning and Removal

a. No topping of the trees shall be permitted.

b. All large, established trees shall be pruned to the following height to allow free passage of pedestrians and vehicular traffic: at least eight (8) feet over sidewalks and a minimum clearance of thirteen (13) feet over all streets.

c. It shall be the policy of the Director of Public Works to cooperate with the municipal or utility lighting engineer, and vice versa, in the placement and selection of lighting standards and the development of a system of tree pruning that will give effective street illumination.

d. All cuts shall be made with a saw or pruner and only at the nodes or crotches. No stubs shall be left. No spurs or climbing irons shall be used on the trees, except when trees are to be removed. All dead branches shall be removed; branches that cross or rub should be pruned to eliminate the problem.

e. To prevent the spread of infectious disease, all pruning tools must be disinfected before being used on a new tree.

f. All necessary cabling shall be done according to Arboricultural Standards.

g. The stumps of all removed trees shall be cut to at least **four (4) inches** below the ground level. The chips shall be removed, the soil cavity shall be filled with soil, the area leveled and seeded with a seed blend approved by the Director of Public Works.

2. Spraying

a. The Director of Public Works or his licensed designee shall do spraying. Suitable precautions shall be taken to protect and warn the public that spraying is being done.

b. Spraying shall be done only as a secondary means of control after bioremediation efforts have proven unsatisfactory.

c. Spraying shall be done only for the control of specific disease or insects, with the proper materials in the necessary strength and applied at the proper time, to obtain the desired control.

d. All spraying practices shall conform to federal and state regulations.

e. Dormant oil sprays shall not be applied.

3. Cabling and Bracing

a. The Director of Public Works or his licensed designee shall determine and approve cabling and bracing.

b. As a general rule, cables should be located above the crotch point approximately two-third (2/3) of the distance between the crotch and the tops of the branch ends. Rust-resistant cables, thimbles, and lags should be used. The ends of a cable should be attached to hooks or eyes of lags or bolts inserted near the ends of the branches; thimble must be used in the eye splice in each end of the cable. In no instance shall cable be wrapped around a branch.

c. All cabling and bracing practices with screw rods shall follow National Arborist Association or other accepted arboricultural standards.

G. Tree Protection

1. Construction Zone

a. It is the responsibility of the contractor, building inspector and building permit holder, as a condition of the permit, to protect all public trees located on the adjacent public right-of-way that may reasonably be expected to be affected or damaged by construction activities.

b. Existing trees subject to construction damage shall be guarded with a good substantial fence, frame, or box. Placement to be at a distance in feet from the tree equal to the diameter of the trunk in inches, diameter at breast height, or if space is limited, at the discretion of the Director of Public Works or his/her designee. All vehicles, construction equipment, building materials, dirt or other debris shall be kept outside of the barrier. (See Table V)

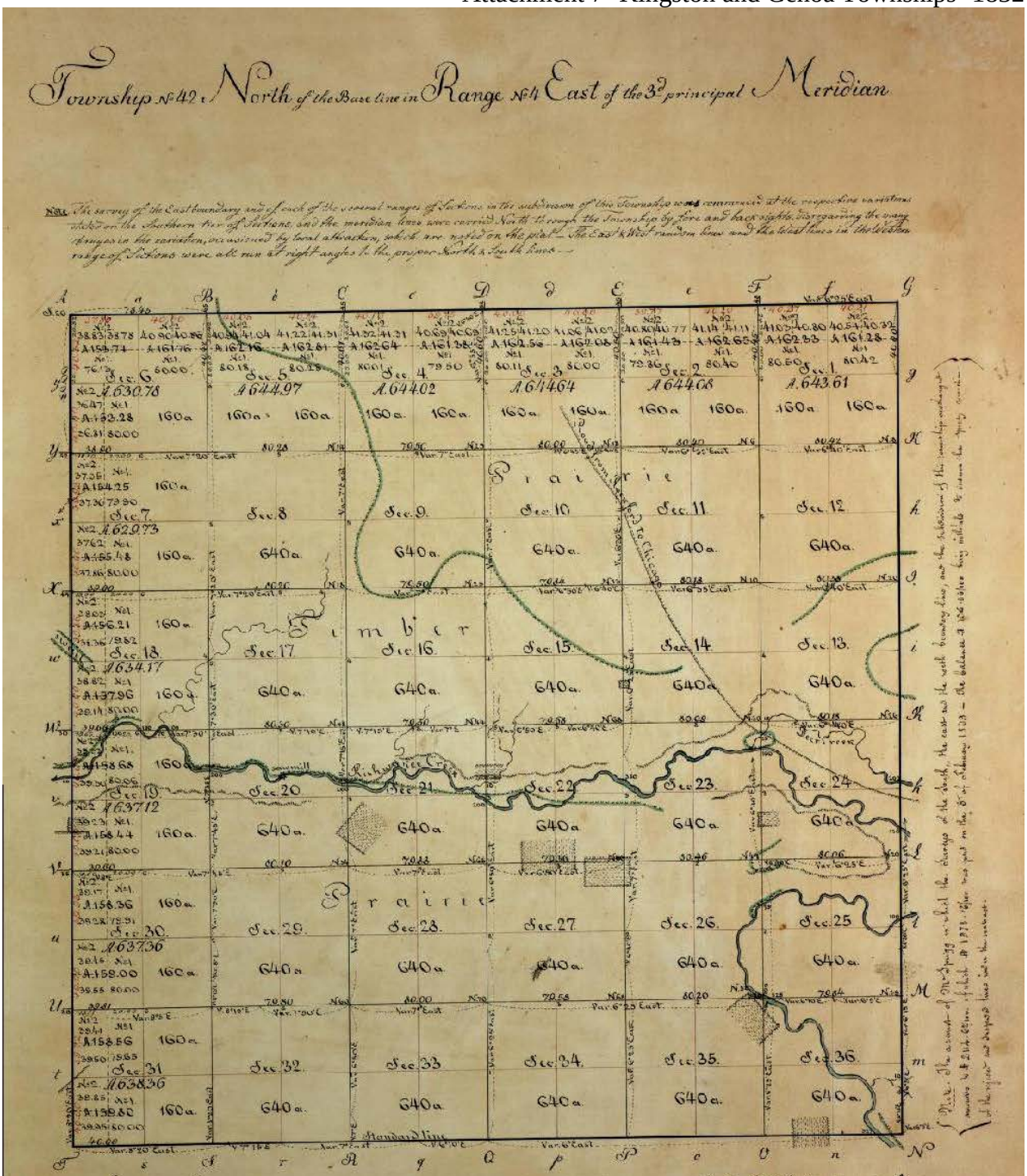
c. No person shall excavate any ditches, tunnels, trenches, or lay any drive within a radius of ten (10) feet from any public tree without first obtaining a written permit from the Director of Public Works.

2. Utility Installation (Underground)

a. All installations of underground utilities upon the public right-of-way are subject to approval by the City. Any and all conflicts (roots) are especially subject to the review and the approval of the Director of Public Works before the project starts.

b. All installations through tree dripline areas shall follow approved tunneling methods. The distance of the tunnel from the face of the tree is determined by the diameter of the tree 4.5 feet from the ground line. Unless specified other wise by the Director of Public Works, all dimensions apply as illustrated in Table IV.


Township № 42 North of the Base line in Range № 5 East of the 3d principal Meridian.
Prairie
Swamp
Sec. 6
Sec. 5
Sec. 4
Sec. 3
Sec. 2
Sec. 1
Sec. 7
Sec. 8
Sec. 9
Sec. 10
Sec. 11
Sec. 12
Sec. 18
Sec. 17
Sec. 16
Sec. 15
Sec. 14
Sec. 13
Sec. 19
Sec. 20
Sec. 21
Sec. 22
Sec. 23
Sec. 24
Sec. 30
Sec. 29
Sec. 28
Sec. 27
Sec. 26
Sec. 25
Sec. 31
Sec. 32
Sec. 33
Sec. 34
Sec. 35
Sec. 36
scattering timber
Road from Springfield to Chicago
Scale of 40 chains to one inch.
Aggregate area 23075.02 acres.
Surveyor General's office.
Saint Louis 22d July 1839.
The above plat of township 42 north of the base line, range 5 east of the 3rd principal meridian, is strictly conformable to the field notes of the survey thereof on file in this office, which have been examined and approved. The west, south and east boundaries, 6 miles each were surveyed in the 2nd quarter of 1831; the North boundary 6 miles and 81 links was surveyed in the 3rd quarter of 1837, and the subdivision lines 53 miles 5.17 chains + 1 mile and 31 links + 1 mile and 4 links — 60 miles 5.52 chains were surveyed in the 3rd quarter of 1837, and 2nd quarter of 1839, all by Ignatius T. Spragg, under contract signed by the Surveyor General on the 23rd of November



Surveyors Office
Saint-Louis. 14th of May 1839

The above plat of township 42 north of the base line, range 4 east of the 3d principal meridian, is strictly conformable to the field notes of the survey thereof on file in this office which have been examined and approved. — The west boundary (6 miles) was surveyed in the 4th quarter of 1836 by D. C. Spaulding, under contract of the 9th of June 1835, and was paid for in the 3rd quarter of 1837 — and charged in the account of the Surveyor General for that quarter — Voucher No. 8 — The South and East boundaries (6 miles each) and the north boundary (5 miles 78.45 chains) were surveyed in the 3rd quarter of 1837, and the subdivision lines (39 miles 78.38 chains) were surveyed in the 3rd quarter of 1837 — all by Ignatius Spragg, under contract signed by the Surveyor General on the 21st of November, and by the said Spragg on the 5th of December 1836 — and to the extent noted in the margin, they were paid for in the first quarter of 1839 and charged in the account of the Surveyor General for that quarter — Voucher No. 2

William Gilbert
Surveyor General