URBAN FOREST MANAGEMENT PLAN

For the Village of Mount Prospect, Illinois

August 2013

URBAN FORESTRY LLC

Photograph i-1. American elms were extensively planted when the Village was incorporated in 1917 and for many years after. The era of elm-lined streets is now mostly gone due to Dutch elm disease, but the parkway tree management program has allowed the benefits of shaded, tree-lined streets to continue in the Village.

Acknowledgements

This Urban Forest Management Plan was developed with grant funds from the Illinois Department of Natural Resources, Urban and Community Forestry Program. Urban Forestry LLC gratefully acknowledges the cooperation and assistance of Sandy Clark, Forestry/Grounds Superintendent; Laura Fowle and David Hull, Forestry/Grounds Staff; and Village Public Works staff for their assistance in development of this plan.

Village of Mount Prospect

Elected Officials

Mayor ..... Arlene A. Juracek

Trustee ..... Paul Wm. Hoefert

Trustee ..... A. John Korn

Trustee ..... John J. Matuszak

Trustee ..... Steven S. Polit

Trustee ..... Richard F. Rogers

Trustee ..... Michael A. Zadel

Public Works Management

Public Works Director ..... Sean Dorsey

Public Works Deputy Director ..... Jason Leib

Forestry/Grounds Superintendent ..... Sandy Clark

Urban Forestry LLC
Christopher J. Luley, Ph.D., Vice President, Project Manager
Andrew G. Pleninger, Vice President, Consulting Urban Forester

urbanforestryllc.com

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Executive Summary

On nearly all accounts, the Village of Mount Prospect, Forestry/Grounds Division has maintained a progressive and effective parkway tree management program over the past 20 years. This urban forest management plan documents these efforts and updates a previous management plan completed in 1993. This plan also provides benchmarks of the current parkway tree conditions as well as a summary of management approaches and accomplishments. However, its primary objective is to provide guidance for planning and the management of Mount Prospect's urban forest resource into the future, with the ultimate goal of enhancing the quality of living in the Village. Major findings and highlights of the plan are presented in six sections as summarized below.

On nearly all accounts, the Village of Mount Prospect, Forestry/Grounds Division has maintained a progressive and effective parkway tree management program over the past 20 years.

Summary of Major Findings

Although there are some issues that threaten the stability of parkway trees, the majority of the forest is healthy and has a good representation of young and mature trees. The inspection and maintenance of the forest is exemplary. Efforts to reduce the risks that trees may present to people and property are comprehensive and progressive. Forestry/Grounds staff is well trained and competent.

The Village goes to exceptional effort to inform and educate the public regarding forestry activities and to provide current and timely information on tree care and health threats. Policy and legislation are clearly defined and adequate to provide for the protection and management of the resource. Village officials and the public recognize the functional value and beauty of the urban forest, and its importance in making Mount Prospect a healthy and attractive place to live, work and play.

It is the role of government to allocate the public resources in the most effective, efficient and professional manner. This review of the Village's urban forest management practices exemplifies how closely Village officials hold this charge. Although the Village is providing exceptional urban forest management, this management plan revealed the following areas where improvement is possible:

- Continuing to improve its efforts to diversify the species distribution of the urban forest by suspending the planting of at risk tree genera and species until the populations of these trees fall below an established tree diversity policy.
- Updating the Village's pruning program and specifications to improve structural pruning.
- Consolidating the numerous documents that detail procedures and specifications that guide the daily management of the resource and developing an updated Arboricultural Specifications Manual and a Technical and Administrative Procedures Manual.
- Continuing to streamline procedures and techniques to efficiently use Hansen® management software to digitally manage the urban forestry resource.

The recommendations and objectives outlined in this plan are designed to address these findings based on an extensive review of the past 20 years of urban forest management in the Village.

Section 1. Introduction and Urban Forest Benefits

The Village's parkway trees and urban forest management practices have been subjected to a number of significant influences in the past 20 years. Several new pests and increased frequency of major storm events have caused significant parkway tree losses. Many positive changes have also occurred including better management practices for pruning and risk assessment, improved digital tracking of tree needs and locations, and the ability to

Several new pests and increased frequency of major storm events have caused significant parkway tree losses.

quantify parkway tree benefits. Parkway trees have significant environmental and economic value which can now be measured (Section 4), although research is showing the most significant impact of tree-shaded streets may be the social and psychological benefits provided to Village residents.

Section 2. Physical Environment

The Village's physical environment would seem mostly to be static, but several important changes have occurred in the past 20 years. In 1993, the Village was placed in Plant Hardiness Zone 5A (based on annual temperature extremes); now it is designated as 5B, a half hardiness zone warmer. Experts on climate change have predicted increased intensity and frequency of rain and wind storms, more intense periods of droughts, and elevated summer temperatures. Recent weather patterns support these predictions, at least in the short term. The climatic changes could greatly impact planning and management of parkway trees in the Village both in the short and long term.

Section 3. Past Management History

The Village has historically provided a high level of urban forest management. This is demonstrated by the continued support of the Forestry/Grounds Division program budget and the progressive and responsive services the Division provides for the citizens of Mount Prospect. The following important benchmarks support this statement:

- Maintenance of a five-year rotational pruning program since the early 1970's through the present by pruning on average over 4,700 trees annually.
- Maintaining adequate budgets to support the parkway tree program over the past 30 years, including providing budgetary support to slightly increase the tree population over the past 20 years and maintain the pruning rotation.

The Village has historically provided a high level of urban forest management.

- In 2012 the Village planted 800 trees including 37 different species of trees. The stocking level was 88% (trees divided by the number of sites that could hold trees). The stocking level in 1993 was 86%.
- Servicing on average over 2,900 requests from citizens annually.
- Minimizing losses from several important and destructive pests such as Dutch elm disease (DED), emerald ash borer (EAB), and elm yellows.
    - The Village's elm disease management program significantly extended the life and population of elms, which now number only 319 trees from an original population of 5,200 elms.
    - EAB has resulted in the removal of 919 trees. The remaining 2,779 trees, from an original population of over 4,400 trees (in 2006), will likely die over the next five years. The Village has chosen to protect 800 high-quality ash trees using trunk injection of an insecticide.

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- Responding to and managing severe damage from several wind storm events. For example, a single event in June 2011 damaged over 2,800 trees resulting in the removal of over 300 trees, and generating over 300 service request calls in a single day.
- Updating the Village Ordinance and establishing a Standards and Specifications manual to improve the consistency of management and protection of parkway trees.
- Providing extensive public outreach via multiple mediums on management issues such as EAB, DED, drought, tree removal and watering, and tree planting.

- Minimizing risk to citizens to such a level that has virtually eliminated any claims from failure of trees or branches.
- Providing training opportunities for Forestry/Grounds staff to maintain current credentials and updates on technical specifications and issues.
- Receiving numerous accreditation and awards for the effort and impact of the tree program, including a recent award to Forestry/Grounds Superintendent Sandy Clark from the Tree Care Industry Association.

Section 4. Current Conditions

The urban forest management plan allows benchmarking of current conditions, an important task that allows for measurement of future changes and development of goals for the parkway tree program. The following conditions were present at the time the plan was developed:

- A parkway tree population of 23,724 trees, of which the vast majority are in very good or excellent condition.
  - Based on the Council of Tree and Landscape Appraisal (2000) methodology, parkway trees have an appraised value of nearly $118 million, up from $47 million in 1993.
- A size or age distribution that has increased since 1993, but is still adequately well distributed to provide for sustainable tree populations into the near future.
- The representation of several tree genera and species populations that are higher than generally accepted tree diversification guidelines.
  - Most common species is silver maple, comprising 14% of the population followed by Norway maple (12.7%), honeylocust (12.1%), green ash (6.7%), crabapple (5.2%) and littleleaf linden (5.1%).
  - The most common genera are maple (35%), honeylocust (12%), ash (12%), linden (9%), and oak (6%).
  - Increasing tree diversity is still one of the biggest challenges ahead for the Forestry/Grounds Division.
- Tree longevity is estimated at 36 years with the population showing high variation from this mean, and greater longevity than is reported nationally from other communities. Longevity is 43 years when transplant failures are eliminated from the population, although some trees on parkways may be from the time of incorporation of the Village in 1917.

A parkway tree population of 23,724 trees, of which the vast majority are in very good or excellent condition.

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- A benefit to cost return where the investment of each $1 returns $2.29 based on i-Tree Streets modeling of the environmental and economic benefits of parkway trees. Annually, the parkway tree population returns the following benefits:
    - Energy Savings = $482,000 or $18.06 per tree
    - Carbon Sequestered = $132,000 or $5.57 per tree
    - Air Quality Improvement = $154,000 or $6.49 per tree
    - Storm Water Runoff Reduction= $1,132,000 or $47.74 per tree
    - Aesthetic Benefits = $1,111,000 or $ 46.87 per tree
    - Total Benefits of $2,958,000 or $124.72 per tree

A benefit to cost return where the investment of each $1 returns $2.29 based on i-Tree Streets modeling of the environmental and economic benefits of parkway trees.

Section 5. Long-term Projections

Based on the present conditions, the existing parkway tree population's condition and structure is likely to mature into the future without significant changes, if current management approaches and appropriate budgeting are used to offset several important, short-term issues. Several of these issues will have an influence on the urban forest in the near term, while others may be important in the future, including:

- Losses due to EAB will peak in the next few years, resulting in loss of most ash trees in the Village.
    - Loss of ash will reduce many economic and environmental benefits from parkway trees, as ash contribute over $300,000 in benefits annually.
- American elms, which provide a significant contribution to the large tree population in the Village, will fade completely from the population over the next 10 years.
- Given current attrition rates and losses due to EAB, the parkway tree population could be reduced to half of the existing population in as little as 25 years, if tree planting is halted.
- Severe storms and new introduced pests pose the greatest threat to parkway tree health and survival over the long term.
- Maintenance costs will be elevated in the short term due to EAB removals and replacement. Otherwise, maintenance costs should remain stable unless the elevated storm frequency continues or prevailing wages are required for maintenance contracts.

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Section 6. Summary of Findings and Goals and Objectives

This plan is intended to guide the management of the urban forest over the next 10 years with a recommended programmatic review at five years to assess progress and make adjustments as needed. The successful implementation of a plan requires clear objectives that are well organized and prioritized. To that end, the recommendations made by Urban Forestry, LLC and Village staff were compiled, organized and collapsed into management objectives. This process revealed the five overriding management categories defined below.

- **Forest Health** – Objectives aimed at improving the health and structure (size, age and species distribution) of the urban forest.
- **Management** – Objectives to improve the management of personnel, work practices and information technology.
- **Funding** – Objectives to maintain acceptable funding levels.
- **Public Outreach and Education** – Objectives to improve notification of the public regarding forestry work activities, fostering public involvement and support as well as the education of the public on current arboriculture practices and urban forest management issues.
- **Public Safety and Health** – Objectives to improve public safety and health as it relates to urban forest management.

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Each objective was assigned to the appropriate management category and prioritized based on its importance (Table 6-1). In addition, each objective includes notations to its applicable plan section and Village urban forestry goal (as defined in the Village ordinance), as well as whether the objective will have an impact on the Forestry/Grounds or Village budget.

Section 1. Introduction

A recent survey of communities by the Illinois Natural History Survey (Sass et al. 2010) found that over 98% of respondents in the State felt trees improve the appearance of a community, help maintain a healthy community environment, and enhance the quality of life. The citizens and Village government of Mount Prospect have historically held this view, beginning with extensive tree planting when the Village was incorporated in 1917, and continuing with nearly 100 years of urban forest management to the present day.

In 1993, an Urban Forest Management Plan (ACRT 1993) was developed to guide the Village into what was an evolving era of urban forest planning and management. Twenty years later, the Village is embarking on a renewed planning effort to address today's issues and challenges, and to develop strategies to guide the Village in the future management of the urban forest resource. Indeed, much has been accomplished and changed in the last 20 years. This current planning effort will provide Village managers and citizens with a synopsis of past accomplishments, a snapshot of current conditions, and most importantly, a comprehensive plan to maintain the Village's existing urban forestry canopy cover and legacy into the future.

Since the Village's last urban forest plan in 1993 there have been many new influences, management tools, and forces acting on the urban tree population. These include:

- Computerized modeling of urban forest environmental and economic benefits that quantify and monetize the significant contribution trees make to urban environments
- New research, approaches, and standards for urban tree risk management, tree pruning, and pest management
- Devastation of ash tree populations by emerald ash borer (EAB) in Illinois and the Midwest
- Threat of wide-scale loss of urban trees due to other introduced pests such as Asian longhorned beetle, sudden oak death and gypsy moth, and the continuing threat global trade presents in the introduction of other unknown pests
- Improved digital management and geo-referencing of urban tree inventory and management data
- Recognition of urban trees as an integral part of the urban infrastructure because of the environmental, economic and other functional benefits trees provide
- Realization of climate change impacts, with catastrophic weather events causing large-scale loss of urban tree populations locally and nationally

Updating the existing urban forest management plan will allow the Village of Mount Prospect to adapt their management practices to prepare for these real and potential impacts. This is a critical step in avoiding significant loss or degradation of the urban resource, and in providing continued, high quality urban forestry services to the citizens of the Village.

1A. Environmental Benefits of Urban Trees

In the Village's 1993 management plan, the environmental and economic benefits of urban trees were generally cited as important reasons for their maintenance and planting. In the ensuing 20 years, evidence for the environmental and economic value of urban trees has been unequivocally established in the scientific literature, primarily through the efforts of the USDA Forest Service. Numerous publications have quantified the importance and value of urban trees. In a recent study by Nowak et al. (2013), the following benefits of the urban forest were documented for the Chicago region:

- Improved air quality by reducing health damaging ground-level ozone concentrations and other air pollutants. Urban trees removed 18,080 tons of air pollution annually and this air cleansing has a value to society of $137 million.
- Reduced greenhouse gases by removing and avoiding the release of 61.9 million tons of the carbon dioxide. The reduction of this greenhouse gas was valued at $349 million.
- Reduced heating and cooling energy costs by $44 million dollars.

Research has progressed on quantifying urban tree environmental and economic benefits so that this task can now be completed by any community through the use of the USDA Forest Service's i-Tree software programs (i-Tree.org) (Photograph 1A-1). The value of these services is derived from costs associated with engineering or other methods used to improve the environment. Using this approach, investment in urban tree management has been consistently shown to provide dollar value returns in excess of maintenance cost (McPherson et al. 2005). This approach also allowed the benefit to cost ratio of Mount Prospect's parkway trees to be determined for this management plan.

In addition to the dollar value of the environmental services trees provide, urban trees also directly affect community economics as illustrated by the following examples:

- Residential real estate values are often 3-7% greater with trees in a yard, and homebuyers are willing to pay a premium for denser, greener vegetation
- Trees can increase commercial property rental rates by 7%
- Reducing urban heat island effects can directly lower cooling costs and trees also reduce heating costs in winter
- Shaded pavement requires replacement less frequently
- Consumers are willing to spend 9-12% more in treed retail areas

Therefore, expenditures for maintenance of parkway trees in the Village return both environmental and economic benefits to residents that can be measured in monetary terms.

Photograph 1A-1. Trees provide many environmental benefits to the citizens of Mount Prospect which have quantifiable monetary value.

Since the 1993 plan, researchers have increasingly documented the critical importance of trees to the psychological, social, and physical health of urban dwellers (Photograph 1A-2). Research has shown trees impact numerous aspects of human life, or in a sense trees provide "human health services" to residents. Where trees or access to natural settings are present, research has shown the following benefits:

- Increased desirability of streets for walking and increased time spent outside,
- Greater connection with nature through wildlife presence, marking the change of season, and softening of urban hardscapes,
- Improved recovery from surgery and illness,
- Increased healing, shorter post-operative stays and reduced need for pain medications,
- Lower crime rates,
- Reduced violence and conflict in domestic relations,
- Improved social ties in neighborhoods,
- Reduced stress, anxiety and ADHD symptoms.

A recent study (Donovan et al. 2013) highlighted the importance of these human services to urban dwellers' psychological and physical health. In that study, respiratory illness and cardiac mortality rates were shown to increase significantly when trees were abruptly removed due to EAB infestation. One must conclude, based on the preponderance of research evidence, that a significant impact and value of parkway tree management in the Village is the subtle, daily contribution that trees make to the quality of everyday life of residents. This contribution, along with the measurable environmental and economic value provided by parkway trees, are tangible returns the Village receives for its investment in its urban tree resource.

Photograph 1A-2. In addition to the many environmental benefits of parkway trees, research has documented the subtle, but real impact that urban trees have on human social, psychological, and physical health.

Section 2. Physical Environment

Introduction

The Village of Mount Prospect, IL was incorporated in 1917 and occupies 10.41 square miles with 135.63 miles of streets in Cook County. Census data from 2010 showed the Village's population at 54,167. The Village parkway or street tree resource is divided into 17 management areas or Forestry Sections (Figure 2-1). In addition to parkway trees, there are over 40 acres of Village managed green space, with the Union Pacific Railroad right-of-way the largest of these. Melas Park, the largest treed open space in the Village, is owned by the Metropolitan Water Reclamation District and managed by the Arlington Heights and Mt. Prospect Park Districts. Four local park districts also manage several other green spaces within the Village limits (Appendix Section 2-1).

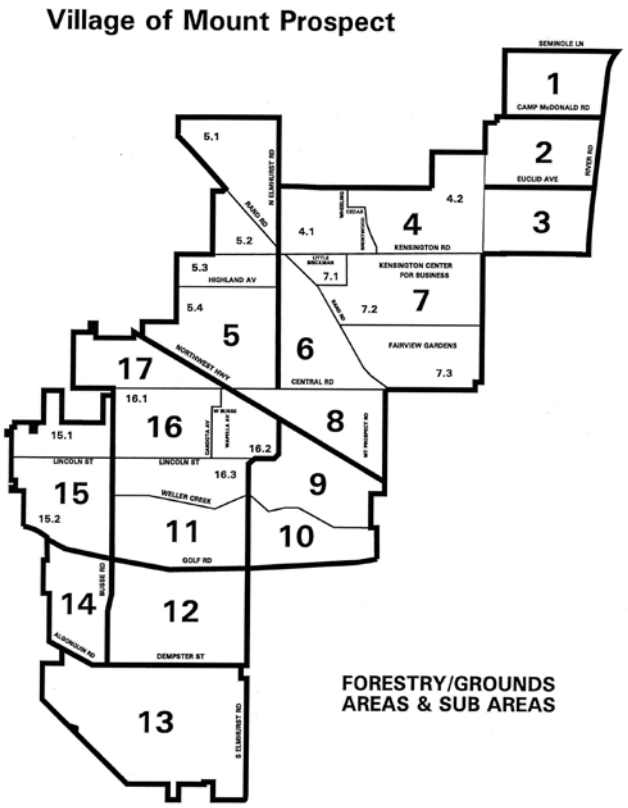


Figure 2-1. Forestry/Grounds management areas in the Village of Mount Prospect.

2A. Vegetative History

Driving through the Village today, one would hardly believe that prior to its settlement the Village was devoid of trees and was primarily long-grass prairie with several creeks and scattered marshes or wet areas. The original survey of Wheeling and Elk Grove Townships where Mount Prospect resides, and study of pre-settlement vegetation at the Morton Arboretum (Bowles and McBride 2002), clearly document the very low tree cover of the area (Appendix Section 2A-2) (Figure 2A-1).

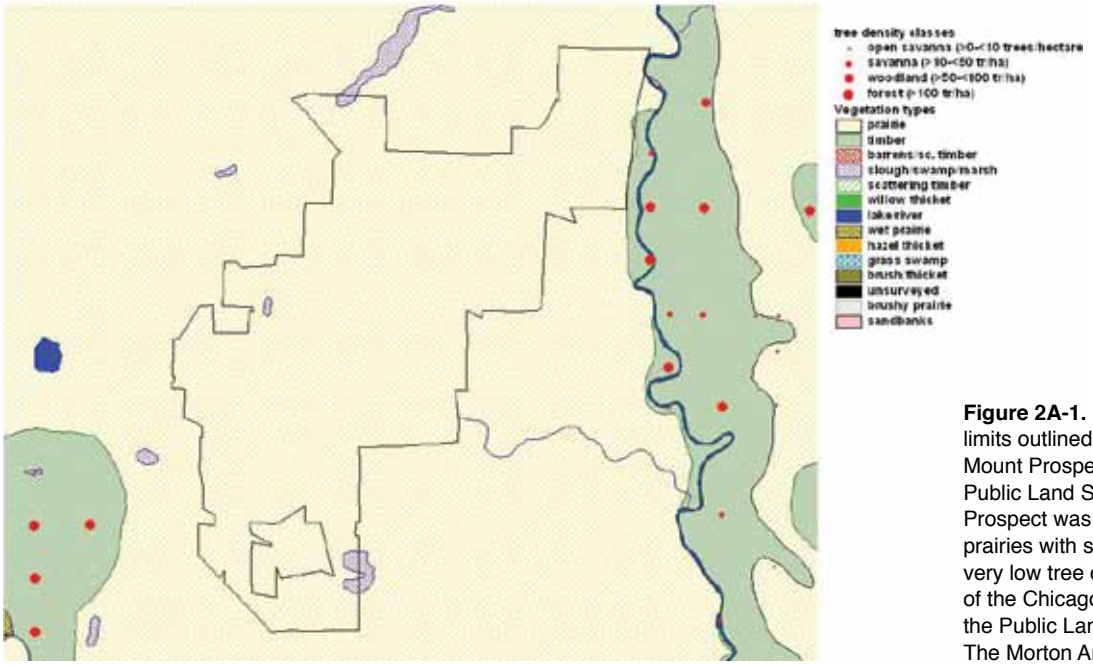


Figure 2A-1. Vegetation map (Village limits outlined) of the area in and around Mount Prospect as mapped by the Public Land Survey 1821-1845. Mount Prospect was essentially all long grass prairies with scattered marshes and very low tree cover. (Source: Vegetation of the Chicago Region as Mapped by the Public Land Survey, Jenny McBride, The Morton Arboretum, Lisle, IL.)

Low tree cover is also a feature of pre-settlement conditions for most of Cook County. The county was comprised of 73% prairie, wet prairie and marsh, and 20% woody vegetation coverage. Trees existed in fragmented forest stands restricted primarily to the eastern sides of watercourses which offered protection from eastward moving fires. Two general forest types predominated, oak-hickory (oak clearly predominated) on drier sites and elm-ash-soft (silver) maple and basswood on wetter sites. This historic assessment sheds light on the better performance of certain tree species in the Village, such as elm, ash, silver maple, and linden (basswood). These species were a part of the original vegetative composition and would be adapted to the local area's soils and climate.

It is likely that many of the larger diameter elms in the Village date back to when the Village was incorporated (Photograph 2A-1), as a recent diameter-age analysis of Chicago area trees showed these elms could be well over 100 years old based on their size (Dwyer and Schroeder 2013). Removal of the largest known elm in the Village showed the tree was from around the time the Village was formed (Photograph 2A-2).

Expansion and development of the Village allowed for additional street tree planting as well as invasion of open areas by woody vegetation. Study of trees in suburban Cook County by the USDA Forest Service (Nowak 1994) showed street trees constitute one of every 10 trees in residential areas (but 20% of the total leaf surface area), and one of every 37 trees over all land use types (but 9.5% of the total leaf area) (Nowak 1994). Given that residential land use dominates in Mount Prospect, the importance of the parkway tree population becomes more apparent, particularly since street trees are on average larger than other trees (Nowak 1994). Species composition (frequency) in suburban Cook County is dominated by buckthorn, ash, cherry, elm and boxelder. However, silver maple and elm dominate in terms of importance based on size and leaf area, and silver maple and ash dominate as street trees outside of Chicago (Nowak 1994).

Photograph 2A-1. Photograph circa 1910 taken near the CNWRR depot. Elm trees were planted along streets even before the Village was incorporated in 1917. Lowland habitat species such as elm and silver maple were well adapted to the Village's climate and soils (Photograph courtesy of the Mount Prospect Historical Society).

Photograph 2A-2. Growing in front of 118 S. Albert, the largest known elm in the Village (52" DBH) was removed in 2001 for structural reasons. It was likely planted before the time the Village was incorporated.

2B. Soils

Soils in the Village have a parent material (unconsolidated geologic material from which soils develop) primarily of glacial origin and to a lesser degree of wind deposition. Soil development was strongly influenced by the proximity to the Des Plaines River, several creeks, wet and marshy areas, and the effects of the long grass prairie vegetation which dominated prior to settlement. Most of this influence was altered or degraded as the wetlands were drained, farmed and eventually developed (Photograph 2B-1).

The original soils were primarily silt clay loams and silt loams, with high clay content subsoils (NRCS 2011). The higher clay content in many areas of the Village, along with elevated pH common for Midwest soils and soils in urban areas, limits the palate of species that will thrive on parkway sites (Photograph 2B-3). The excellent growth of elm, ash, and silver maple, and generally poorer success of upland species such as sugar maple, white and red oak, indicate that soil type and origin plays an important role in influencing species performance in the Village.

Soils of the Chicago area were recently mapped (NRCS 2011). This is an unusual undertaking because soil in most urban areas are not classified to this degree. The interactive maps developed by the USDA's Natural Resource Conservation Service allow determination of the soil type in most locations in the Village (Figure 2B-1) (websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx).

Photograph 2B-1. Main St. north of Central Ave. Mount Prospect was originally open prairie that was converted to farmland before the Village was developed and trees were planted (Photograph courtesy of the Mount Prospect Historical Society).

Photograph 2B-3. Soils on parkways typically have high clay content as shown below the dark topsoil layer in the planting hole. The clay limits to some degree the palate of tree species that can successfully be used in the Village.

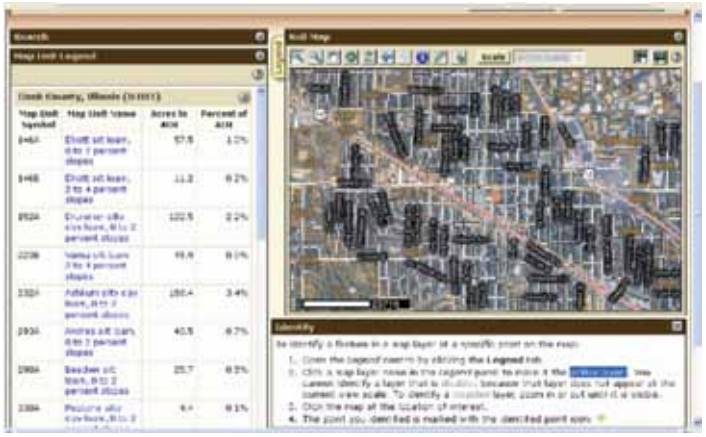


Figure 2B-1. Example of soil map and data from the Village created using the interactive web-based soil mapping tool from the Natural Resource Conservation Service (websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx).

As noted in the 1993 plan, the original, undisturbed soil characteristics are more often intact in the older areas of the Village. Modern construction techniques in newer areas of the Village have contributed to increased soil disruption resulting in soils with greater compaction, less structure and depth, increased pH, and increased conglomerate composition. All these characteristics are detrimental to tree growth and longevity.

Flooding has sporadically been a problem in selected areas in the Village and still occurs in some locations after heavy rainfall events today. Therefore, periodically saturated soils are a problem for parkway trees where flooding occurs.

2C. Climate

Mount Prospect is located in USDA plant hardiness Zone 5b (-15 to -10° F minimum annual temperature extreme), a half climate zone warmer than reported in the 1993 plan (5a, -20 to -15° F minimum) (Figure 2C-1). As noted in 1993, the local climate is moderated to some degree from the mid-continent extremes (cold winters and hot, humid summers) by its proximity to Lake Michigan. Annual precipitation is 36.89 inches (Chicago O'Hare AP Climate Station ID 094846, 1981-2010) and mean annual temperature is 49.9°F. Prevailing winds are from the west and south (Appendix Section 2C-1) and most high winds occur during the change of seasons. Elevated wind gusts are also frequently associated with summer thunderstorms which are common in the Chicago area. Freezing rain occurs on average four times annually (Appendix Section 2C-2), which is less than other parts of the state because of the moderating effect of Lake Michigan (Cortinas 2000).

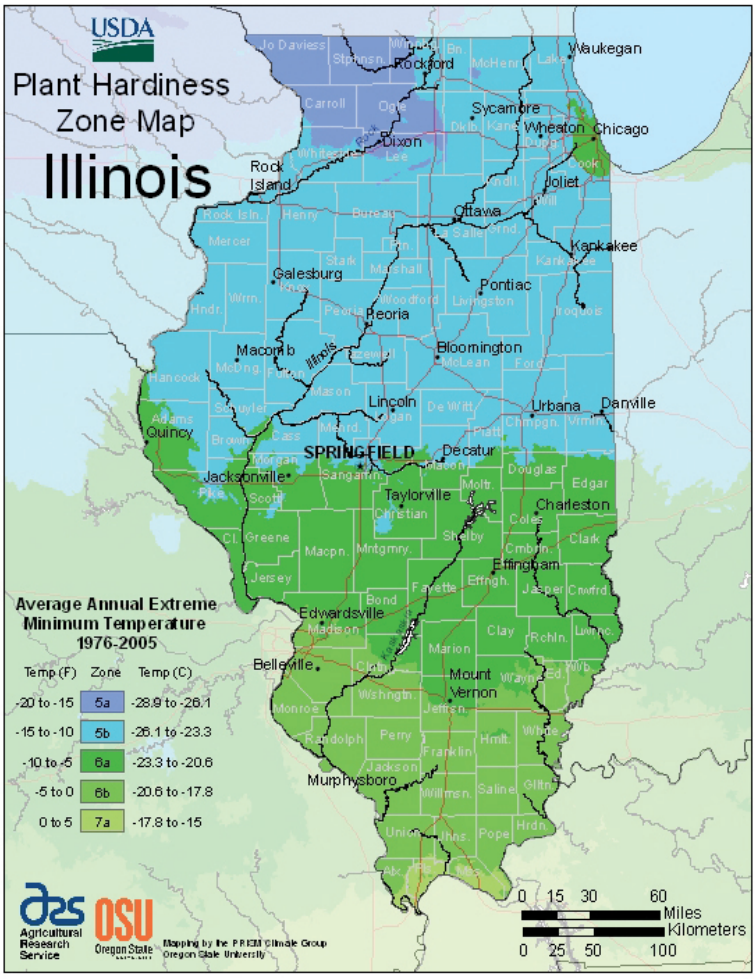
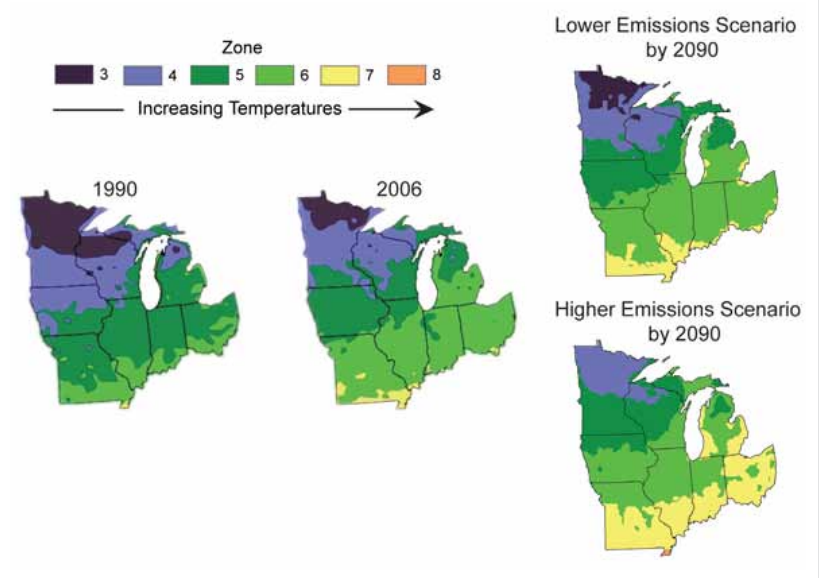


Figure 2C-1. Current USDA plant hardiness zone for Illinois. Mount Prospect is Zone 5b, half a climate zone warmer than when the 1993 management plan was written.

Observation and study of climatic weather patterns in the Midwest have documented several significant changes since the writing of the 1993 management plan. These changes have occurred over the past several decades and are being attributed primarily to global climate change (USGCRP 2009). The effects of climate change will impact many aspects of life in the Chicago area. Trends measured by climate scientists that impact the urban tree resource include the following:

- Average annual temperatures increased over the last several decades.
  - o Heat waves are becoming more frequent and cold periods are becoming rarer.
- Snow and ice arrive later in the fall and start to melt earlier in the spring.
- The frost free growing season has been extended by more than one week, mainly due to the earlier dates for the last spring frost (the median date is currently between April 11–20), and further change in hardiness zone is expected (Figure 2C-2).
- Heavy downpours now occur twice as frequently as they did a century ago.
  - o The last three decades have been the wettest in a century for the Midwest and there have been three record breaking floods in the past 15 years.

Observed and Projected Changes in Plant Hardiness Zones



Plant winter hardiness zones in the Midwest have already changed significantly as shown above, and are projected to shift one-half to one full zone every 30 years, affecting crop yields and where plant species can grow. By the end of this century, plants now associated with the Southeast are likely to become established throughout the Midwest. In the graphic, each zone represents a 10°F range in the lowest temperature of the year, with zone 3 representing –40 to –30°F and zone 8 representing 10 to 20°F. Image Source: © 2006 by Arbor Day Foundation®[25]; Image Reference: CMIP3-B[27]

Figure 2C-2. Plant hardiness zone in Mount Prospect is expected to change in the future due to winter-warming-associated climate change (USGCRP 2009).

Scientists project (USGCRP 2009) that the following trends are likely to continue under future climate change:

- Average summer temperatures are projected to increase by 3°F over the next few decades and could increase by over 10°F by the end of this century.
- Heat waves are projected to increase in frequency, duration and severity.
- An increase in damage from destructive insect pests is expected as warmer winters increase survival and higher summer temperatures can contribute to larger populations.
- Precipitation in the Midwest is likely to fall more frequently in heavy downpours, which will increase the likelihood of flooding, property damage, travel delays, and disruption in services.
- Between heavy rainfall events, there will likely be longer periods without precipitation (Photograph 2C-1).
- Increased evaporation during warmer summers could increase the likelihood of water shortages or drought in the Midwest.
- Concentrations of ground-level ozone are expected to increase, posing an increased threat to human and plant health.

Recent weather patterns seem to substantiate several of the above projections: Mount Prospect and the Chicago area have experienced two significant droughts (2005 and 2012) and three flooding events in the past 10 years (2008, 2011 and 2013). The rainfall event that produced the flooding in 2011 was the most intense ever recorded in a three hour period, amounting to 6.86 inches that fell in the early morning of July 23, 2011.

Photograph 2C-1. The drought of 2012 directly killed many trees such as these in the Village. Experts predict that periods of drought are likely to become more frequent in the future as a result of climate change.

2D. Land Use

Land use in the Village has changed little since the 1993 management plan. Two-thirds (66%) of the Village is residential land use, 12.4% is occupied by commercial and service uses, 8.5% is open space, and 9.5% is industrial and transportation (CMAP 2006). Specific land use as zoned in the Village is presented in Figure 2D-1.

Given the small amount of vacant land (1.4%), there is realistically little land available for new development. Population growth is also unlikely to be driving further development, as population in the Village has declined 6% from 2000 to 2010 according to recent census data. However, the Chicago Metropolitan Agency for Planning and Development projects that the Village's population will increase to 58,049 by 2030.

The large amount of residential land use offers relatively wide planting strips or "tree lawns" for parkway trees. Average tree lawn width in the Village is 15.1 feet. Tree lawn width by Forestry Section is presented in Figure 2D-2. Sections 12 and 14 have the smallest average tree lawns (12 and 12.1 feet, respectively), while Section 5.2 has the widest (23.6 feet average).

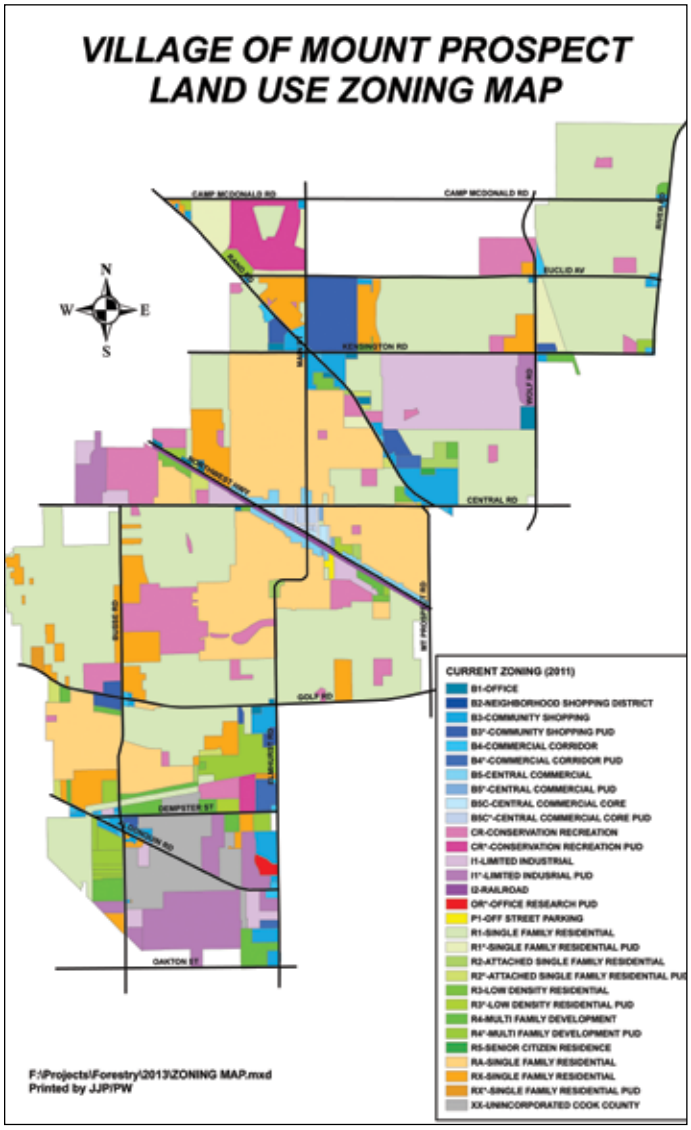


Figure 2D-1. Current zoning in the Village of Mount Prospect.

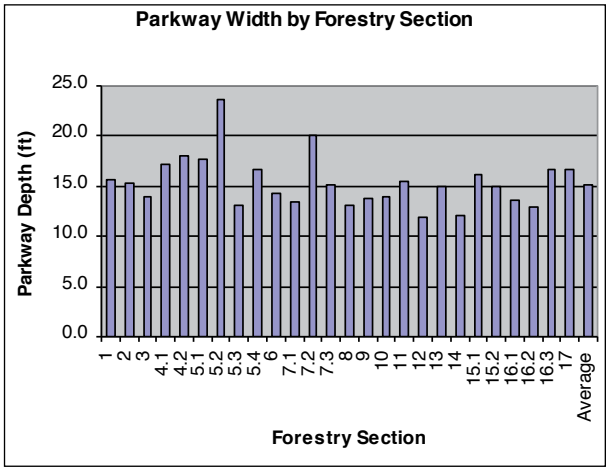


Figure 2D-2. Width of the parkway (tree planting strip) in the public right-of-way, by Forestry Section.

Section 3. Forestry Management History

Introduction

Care of Parkway Trees in Mount Prospect Between 1917 and 1976
(Prepared by Sandy Clark, Forestry/Grounds Superintendent)

It is unknown exactly when the Village first began any formalized tree care activities. It appears that parkway tree planting was common from the early days of real estate development in Mount Prospect. According to a Mount Prospect Historical Society website, an 1875 Chicago Tribune article reported that E.C. Eggleston was "superintending the planting of over 200 trees" on newly purchased farmland he was hoping to develop into a town called Mount Prospect. Eggleston's project failed financially and he moved on to other ventures. However, members of local farming families continued to build up the community, and they too appeared to recognize the value of trees (Photograph 3-1a). A circa 1910 real estate advertisement for lots in Busse and Wille's Resubdivision (the area that is now Forestry Section 8) touted "Eighteen trains daily. Gas and cement walks; trees in front of every lot" (Photograph 3- 1b). Photos taken around the time of Village incorporation in 1917 consistently show rows of American elm trees lining the newly built streets. Public Works has no records showing how those trees were first maintained, or by whom. However, it appears that the arrival of Dutch Elm Disease (DED) was the impetus for the beginnings of a formalized tree care program in Mount Prospect.

Photograph 3-1a and 3- 1b. Left: Early (1923) aerial photograph of the Village showing that tree planting had started when the Village was in its early stages of development. Right: An old real estate ad from around 1910 announcing "trees in front of every lot". (Photograph and ad courtesy of the Mount Prospect Historical Society).

Dutch Elm Disease

Dutch Elm Disease was first reported in Illinois in 1950, and causing widespread losses in the Chicago area by 1959 (Photograph 3-2). The Mount Prospect Village Board passed its first DED ordinance on September 4, 1956. This ordinance declared infected elms on public and private property to be public nuisances and established requirements for their prompt removal. This ordinance was amended slightly in 1959.

Photograph 3-2. Aerial photograph of the Village from 1956 showing the maturing elm population along streets. Dutch elm disease was just beginning to affect trees in the Chicago area at that time (Photograph courtesy of the Mount Prospect Historical Society).

A 1965 Public Works report indicated that the following quantities of trees were removed due to DED: 71 trees in 1961, 28 in 1962, 52 in 1963 and 53 in 1964. A letter written by the Public Works Director in the fall of 1965 indicated that the Village had removed 389 elms that year due to DED, and had counted 4961 existing elms. Besides removal and trimming activities, the Village tried several means of chemical control of DED over the years, including some elm spraying with the insecticide methoxychlor, as well as injection of fungicides and insecticides (1966-Bidrin, 1974-Benlate, 1976-77 Correx and Lignasan).

Public Works regularly provided data about their elm losses to Dr. Dan Neely of the Illinois Natural History Survey, who tracked elm losses and the control measures used in 21 Chicago area communities from 1957 to 1982.

Tree Ordinance

A fairly comprehensive Tree Ordinance was adopted by the Mount Prospect Village Board in September of 1960. At that time, Sections 9.501 through 9.509 of the Village Code included multiple tree-related provisions. These included the following:

- Requirement of a permit from the Village President and Trustees before planting trees or shrubbery on parkways. Trees were to be planted at least fifty feet apart, under the direction of the Superintendent of Streets.
- Requirement of a permit from the Superintendent of Buildings before removing a parkway tree.
- Limited restrictions on injuring parkway trees or attaching things to them.
- Requirements for property owners to keep private trees from endangering users of the public right of way.

Ordinance #1186 was approved by the Village Board in December of 1966, and this ordinance amended Section 9.501 of the Code to include a list of 24 tree species/cultivars acceptable for parkway planting.

Tree Planting

During the 1960's, records show that the Village was ordering mostly 2-2 ½ inch diameter trees; the species were mostly honeylocust, red maple, Norway maple and green ash. Some 'Christine Buisman' elms, mountain ash and birch trees were also ordered. Records are incomplete, but it appears that during some years about 200 trees were planted by a variety of nurseries, and the cost was around $20 per tree (including planting). Developers were also being required to put money in escrow to assure that they would plant parkway trees in their developments, and if the trees were not planted the Village would use the escrow money to have the planting done.

Sometime in the 1970s the Village began a contractual growing arrangement with Wandell's Nursery of Urbana, IL. By 1974 the Village was buying 700-1000 trees per year; at that time they were planted by Public Works crews. The arrangement with Wandell's was terminated around 1978, and thereafter the Village began bidding out and contractually planting trees from a variety of local growers. Originally those growers' fields were relatively close to Mount Prospect, but as time progressed the nearby fields were developed, and the nurseries moved further away. A 1974 news article mentioned that Wandell's was using a "new" technique where the tree root balls were enclosed with wire after digging at the nursery.

It appears that the Village was trying to replace trees at no cost to the adjacent property owner in the 1960's and early 1970's. A 1975 news article announced that the Village could no longer afford that, and asked property owners to pay for the trees at a cost of $40 to $73 each. In 1978 the Village started a "50-50 Cost-Share" program in which property owners were asked to contribute ½ the cost of planting each parkway tree. In 1980 the property owner's contribution was changed to a flat rate of $35 per tree, and by 1991, as tree prices rose, this increased to $100 per tree.

Staffing

Although the Public Works Department apparently did not specifically have a Forestry/Grounds Division in the 1960's, it is clear that by the late 1960's certain personnel were regularly assigned to tree-related duties. A daily notebook detailing Forestry activities was kept between November 20,1967 and October 30, 1969. This notebook described work such as tree removals, trimming, cabling and "rodding", soil application of Vapam (a soil sterilant) for DED prevention, installation of drain tubes, spraying, and climbing. Brush and logs were taken to a burning site. Crew sizes were occasionally listed and ranged from two to six people. The last entry in the notebook, on October 30, 1969, simply reads "EXIT", implying that that was the author's last work day. The current Forestry/ Grounds Superintendent was told after her arrival in 1977 that there had been one college-trained forester on staff in the past, but he was let go after boldly telling Village administrators that they were not doing things correctly; perhaps this person was the notebook's author.

By the 1960s the Village had begun supplementing in-house forces with contractual forces (Photographs 3-3a and 3-3b). Records show that specifications for a tree maintenance contract were issued in September 1963. These specifications described a 1964 contract for trimming, pruning, removing, repairing, cabling, and treating trees at an hourly rate. Workers were to clock in at Public Works daily. The contract was to be supervised by a state-licensed Tree Expert. All brush generated was to be stacked on parkways and removed/disposed by Public Works personnel. Public Works has no records showing the actual award of this contract.

Photographs 3-3a and 3-3b. Photographs of tree maintenance activities being conducted in the Village in 1974. Left: Brush loaded with a Hough end-loader. Right: Tree trimming conducted by A. J. Davis.

Tree Pruning and Maintenance

New specifications were written in 1967 that asked for unit prices for trimming trees in various size classes. With the exception of one year, it appears that this contract, or various versions of it, were awarded to the A.J. Davis Company of Forest Park, IL until 1972. At that time new contract terms were proposed. A memo written in August of 1972 by the Chairman of the Public Works Committee proposed that a new comprehensive contract, to include a wide range of tree work at the Village's discretion, would effectively replace several in-house Public Works personnel whose positions were at that time unfilled. Interestingly, the memo noted that Public Works "has been plagued with the never ending problem of retaining qualified forestry personnel". The memo went on to say that this problem "truly reflects the

rapid turnover in this employment area". The Chairman's proposal was accepted and A.J. Davis was then awarded a contract in which he was paid $6500 per month to provide 120 hours of labor each week, plus all necessary equipment, to perform the tree related tasks assigned by the Village.

By the late 70s, A.J. Davis was still under contract, and DED losses were continuing to ramp up. By then the Village had additional Public Works personnel who were most often assigned to forestry duties.This included current Village Trustee Michael Zadel, who was then Mount Prospect's Forestry Foreman, and several maintenance workers with tree work experience but limited formal forestry training.

The Village established a goal of a five-year pruning cycle, apparently sometime in the 1970's. A map prepared by the Forestry Foreman in 1976 showed that trees along roughly 75 % of the Village's streets had been trimmed in the four previous years. Most such work was being done contractually but some was also done by in-house personnel.

Tree Inventory

Public Works possesses records showing that a parkway tree inventory was completed on February 17, 1972. Each tree's species was denoted as a symbol (or in some cases a symbol combining similar species) drawn on a December 31, 1970 version of the Village's Zoning Map book. No additional tree information was recorded, but handwritten margin notes on many pages indicated if the area consisted mostly of young, mature, or mixed-age trees. A separate map, entitled "Prospect Heights Annexation", was similarly marked and stored with the Zoning Map Book (This map showed the neighborhoods now known as Forestry Sections 1-3 and bordered by Seminole Lane, River Road, Kensington Road and Wolf Road, plus the part of Forestry Section 4 bordered by Kensington Road, Wolf Road, Kensington Road and Brentwood Lane/Crabtree Lane. Note that this area was annexed to the Village of Mount Prospect on September 28, 1971; the ordinance referred to the "Camelot and New Town Prospect Heights Annexation").

A chart summarizing the survey results is stored at Public Works; this chart shows the number of trees by species as well as by the mapped Sections. The last page of the chart showed a total of 14,003 trees counted in the existing Village neighborhoods, plus 3307 trees in the "Prospect Heights Annexation", for a total of 17,310 trees (Note that 1395 trees, or 42% of the trees, in the annexation area were Silver Maples). The summary also noted that 1203 planting spaces had been recorded in the Prospect Heights annexation area.

The page explaining the species symbols indicated that at least 39 individual species had been recorded. At that time the following species were most heavily represented: American elm (3,911 trees or 22.4% of the total parkway tree population), silver maple (3,660 trees or 21%), Norway maple (2,774 trees or 15.9%) honeylocust (1,985 trees or 11.4%) and ashes (green, black, blue and white were combined, totaling 1,836 trees and comprising 10.5% of the tree population). These species alone made up 81.2% of the Village's total population.

The remainder of the population was broken down as follows: 3.7% sugar maples, 3.5% European/Asian/hybrid elms, 2.1% red maples, 2.1% conifers (multiple species), 1.7% pin oaks, and 1.1% crabapples. Nineteen additional species or genera each made up less than 1% of the population.

The current Forestry/Grounds Superintendent was hired in 1977, and the existing parkway tree program was developed by her and her staff. The remainder of Section 3 details the history of that program over the past 36 years.

3A. Ordinance, Standards, Specifications & Procedures

Introduction

The Village code contains the ordinances that define the legal authority of the Village to manage trees located within the Village boundaries. A State's corporate charter typically authorizes the existence of local governments such as the Village of Mount Prospect. Incorporated municipalities are then permitted or required to enact ordinances dealing with the various activities of local government including the management of trees on public and private property (Miller 1988). The citizens of the Village, through their elected officials, then enact the ordinances that reflect their desires regarding the management of the urban forest. The survey conducted by the Illinois Natural History Survey on urban forestry completed in 2010 revealed that 72% of respondents felt tree ordinances were important for the protection and maintenance of the urban forest (Sass et al. 2011).

Work standards, specifications and procedures are the other management tools government uses to guide and implement the maintenance of the urban forest. These are important documents for a community to maintain. A citizen, service provider, or Village staff, can refer to these documents to easily find specific policies, standards, specifications and work procedures that are required in the management of trees in the Village.

Current Management

There are six chapters in the Village code that reference trees or define the requirements, protection and penalties regarding their management within the Village; Chapters 9, 14, 15, 16, 21 and 23. A summary of these chapters and the ordinance language can be found in Appendix 3A-1. Chapters 9 and 16 detail the primary requirements and responsibilities for the protection and management of public trees in the Village. Chapters 14, 15 and 21 cover the requirements and responsibilities for the protection of trees on private property in the Village.

- Chapter 9 – Public Utilities, Pavement and Tree Regulations
    - Article 7 – Trees & Shrubs
- Chapter 14 - Zoning
- Chapter 15 – Subdivision, Site Development and Site Improvement Procedures
- Chapter 16 – Site Construction Standards
- Chapter 21 – Building Code
- Chapter 23 – Offenses and Miscellaneous Regulations

Chapter 9, Article 7 of the Village code cites the requirement of the Village to maintain an Arboricultural Standards Manual. This document details policies, standards and specifications for the management and protection of public trees in the Village. It is the responsibility of the Forestry/Grounds Superintendent to revise and maintain the document. The document is "living", meaning it can undergo revisions and updates as the Forestry/Grounds Superintendent sees fit to keep it current with developing challenges as well as advances in arboriculture and urban forest management.

The Forestry/Grounds Division also maintains numerous documents that detail standards, specifications and procedures that guide work planning and activities on a daily basis. Examples of these documents include but are not limited to the following:

- Foreman's Manual,
- Service Request Manual,
- Tree Inventory Procedures,
- Quality Control Procedures,
- Storm Mitigation Plan,
- Tree Risk Plan,
- Numerous memoranda detailing guidelines and procedures.

Historical Summary

The 1993 management plan summarized the ordinances in the Village code that pertained to the management and protection of trees in the Village. It noted Chapter 9, Article 5 as containing the requirements for the management and protection of trees on public property (ACRT 1993). Chapter 14 included the requirements for landscaping and the protection of trees on private property during development. Chapter 16 also included provisions for landscaping and tree protection on private property as well as the protection of public trees during development projects.

The Plan also contained several recommendations regarding the Village ordinance and matters of legal concern. They are summarized as follows.

- Village Ordinance
    - Update and remove technical specifications from the ordinance and put them in a separate specifications manual.
    - Add language that cites a technical specifications manual to be referred to for the Village's technical tree management standards and specifications.
    - Add language prohibiting topping of trees in the Village.
    - Suggested adding a Shade Tree Commission for an advisory role.
- Maintenance Agreement
    - Suggested a formal agreement should be authored detailing cooperative efforts in the management of trees on state and county properties.

The majority of the recommendations regarding revisions to the Village code from the 1993 management plan were completed. The period from 1993 to 2012 offered significant legal changes in the management and protection of trees for Mount Prospect. In April of 1997, as recommended, an Arboricultural Standards Manual was adopted; and this has undergone five revisions with the last being completed in 2010. Updates to the ordinance, Chapter 9 Article 7 Tree & Shrubs were made in 2002, 2010 and 2012. For example, provisions aimed at battling and managing EAB were added in 2012.

Chapters 14, 15, 16, 21 and 23 all saw revisions to language that related to trees. Most notable were changes proposed by the Community Development Department to Chapters 14 and 15 to protect trees on private property. The majority of these changes are designed to preserve and protect trees during redevelopment projects as well as require the planting of trees as part of these projects. However, one code section, 14.2302 adopted in 2009, suggests that a property owner must submit a landscape plan to the Village for authorization to remove more than 3 trees on any property.

Finally, although the Village did not establish a formal Shade Tree Commission, Forestry/Grounds sought and received an agreement that the Garden Club of Mount Prospect would serve as the Village's Citizen Advisory Group on tree-related matters.

Discussion

The Village ordinances are sufficient to fulfill the Village's management and protection goals of both public and private trees. The recent amendments to Chapters 14 and 15 have resulted in some management challenges regarding the interpretation and implementation of these provisions.

There are numerous documents that detail urban forestry policy, standards, and specifications as well as technical and administrative procedures Forestry uses to manage their work activities. The numbers of documents and their fragmented organization makes accessing the appropriate information difficult, and can lead to contradictions in and duplication of these guidelines. We highly recommend consolidating all Village forestry standards, specifications and procedures into two separate and distinct manuals as follows;

- Arboricultural Standards & Specifications Manual
    - Work activity policies, standards and specifications
    - Tree protection policies, standards and specifications
- Technical and Administrative Procedures Manual
    - Work activity administrative procedures
    - Work activity technical procedures

Other documents and procedures covering unique subject matters such as the Foreman's Manual that guide in-house crew safety and operations, or the EAB mitigation plan may warrant topic specific documents. In addition, these documents should include a regular review and updating process with all stakeholders. We also recommend that Forestry/Grounds should continue its efforts to transition from paper to electronic record keeping.

Recommendations

- Ordinance
    - Work with Community Development on the recent Chapter 14 and 15 tree protection ordinances and develop an implementation plan that matches the capabilities and needs of each department and fulfills objectives of these provisions.

- Compile and organize all forestry standards, specifications and procedures and develop two new documents.
  - o Arboricultural Standards & Specifications Manual
  - o Technical and Administrative Procedures Manual
- Complete regular reviews of all standards, specifications and procedures manuals and update as appropriate.
- Increase frequency of quality assurance and quality control (QA/QC) on Hansen service requests.
- Continue transition from paper to electronic record keeping without losing important historical records.

3B. Annual Budgets and Staffing

Introduction

The resources a community can dedicate to a program determine the level of urban forest management and services that are provided to citizens. These resources include personnel, expertise, as well as funding. There are many competing demands for public resources of which an urban forestry program is but one.

Every community is unique in the level of available resources, the allocation of those resources, and the management strategies it chooses to employ to meet the demands for public services. The 2010 Illinois Natural History Survey's survey of Illinois urban and community tree programs reported 71% of the respondents agreed that the benefits of street trees outweigh the cost of maintenance (Sass et al. 2010).

The American Public Works Association's (APWA) budgeting and funding Best Management Practices publication suggests many communities use a "level of service" concept when determining annual budgets. It classifies expected levels of service as minimum, adequate or high. A minimum service level is characterized as response or emergency based management and a high service level is a proactive management strategy with expenditures in preventative maintenance. The BMP also provided an average national urban forestry budget allocation summarizing expenditures by work activity type (Figure 3B-1).

Another common method to compare budget expenditures among different communities is using per capita spending. This allows a community to compare their budget allocations with other communities as a whole, or with communities of similar size or geographic location.

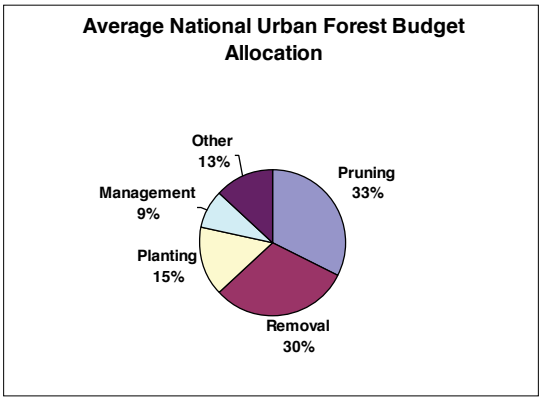


Figure 3B-1. Average national urban forestry work activity budget allocations (APWA BMP).

Current Management

Mount Prospect's fiscal year 2012 Forestry portion of the Forestry/Grounds Division operating budget was approximately 1.4 million dollars. Tree and stump removal represented the highest percentage of the budget followed by pruning, and planting and establishment (Figure 3B-2). Mount Prospect's per capita spending on forestry activities in 2012 was $26 per capita.

The current Forestry/Grounds Division staff includes three managerial/leadership positions, two administrative and technical support positions, as well as nine operational maintenance staff. Forestry/Grounds is a Division of the Department of Public Works and the Director of Public Works provides senior management oversight for the Division. The management of the Division is led by Sandy Clark, the Forestry/Grounds Superintendent. Supervision of daily operations, maintenance staff and contractual services is provided by the Forestry/Grounds Foremen.

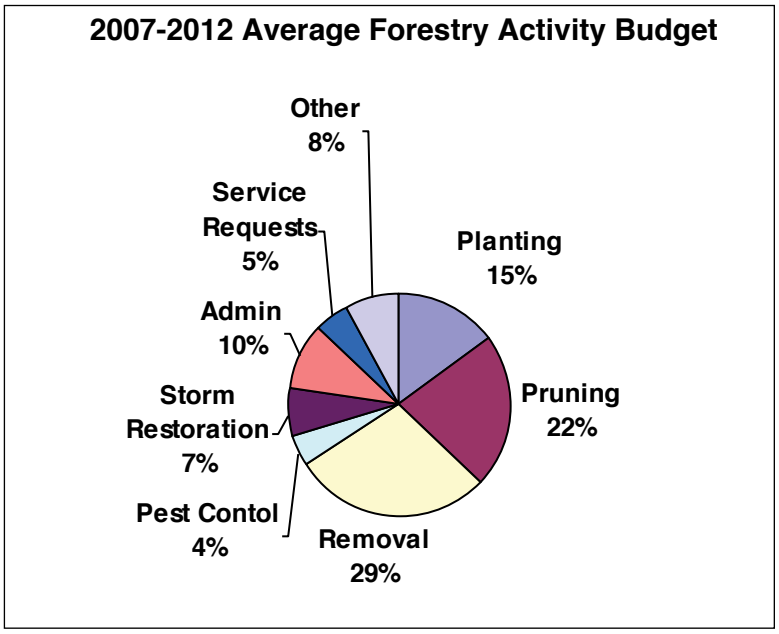


Figure 3B-2. Mount Prospect's average forestry budget by work activity from 2007 through 2012.

Technical support for the Division's activities is provided by the Forestry Assistant as well as the Seasonal Forestry Intern. Administrative support is provided by a seasonal position in addition to daily support from Public Works administrative staff. Forestry and Grounds work activities are largely completed by contractual labor augmented by nine, full-time Maintenance Workers.

In 2012, the Village planned to spend approximately $943,200 on contractual tree and landscape services. In recent years, the Illinois Department of Labor (IDOL) has begun expanding the definitions of the types of services that will require contractors to pay prevailing wage rates (Appendix 3B-2). The Forestry/Grounds Superintendent estimates that contract costs would increase between 65% and 100% to maintain the current levels of service if prevailing wages were required for all the division's current contracts (Dorsey, S. 2012; Appendix 3B-3). A 65% increase in contractual costs would require an additional annual budget allocation of $789,900. If these changes are enacted, they will have an unfavorable impact on the costs the Village pays for contractual services and the level of services provided by the Village.

Fortunately, in May of 2013 IDOL issued the clarification letter seen in Appendix 3B-4; this document seems to indicate that IDOL intends to require prevailing wages on some, but not all, Forestry/Grounds contracts.

Historical Summary

In the fiscal year 1977-78 the Forestry budget was approximately $113,000 and it grew at an average annual rate of approximately 12% to $421,000 in fiscal year 1992-93 (Figure 3B-3). Over these 15 years, the Forestry budget represented an average of 1.33% of the total Village budget (Figure 3B-4), with a high of 1.8% in 1981-82 and a low of 0.8% in 1977-78. For the same period, the total Village budget grew at an average annual rate of 10.5%. The per capita spending on forestry activities for this period averaged $6 per capita.

The Forestry budget was approximately $488,000 in fiscal year 1993-94 and grew at an average annual rate of 8.3% to approximately $1.6 million in 2013 (Figure 3B-5). For the same period, the Village budget grew at an average annual rate of 3.96%. Over these 20 years, the Forestry budget has represented an average of 1.39% of the total Village budget (Figure 3B-6). The per capita spending on forestry activities for this period averaged $17 per capita.

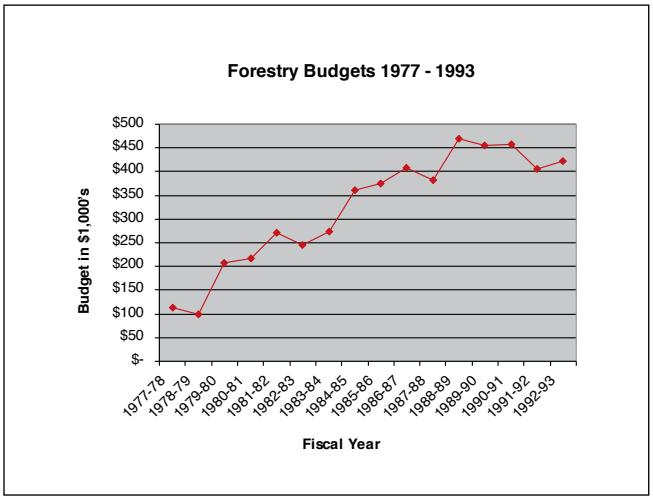


Figure 3B-3. Forestry budgets for fiscal years 1977 through 1993.

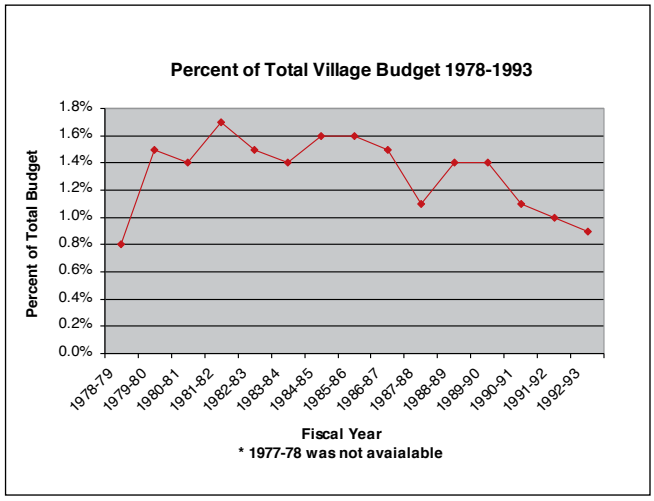


Figure 3B-4. Forestry budget as a percentage of the total Village budget from 1978 -1993.

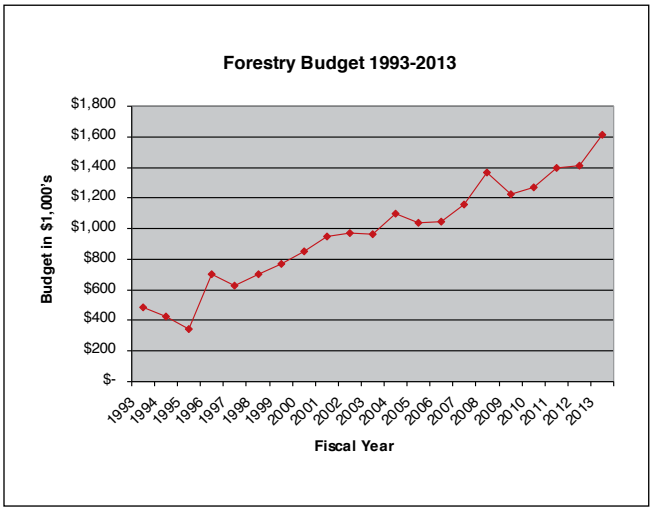


Figure 3B-5. Mount Prospect Forestry Division budget for fiscal years 1993 through 2013 (The Village changed the fiscal year to coincide with the calendar year in 1994).

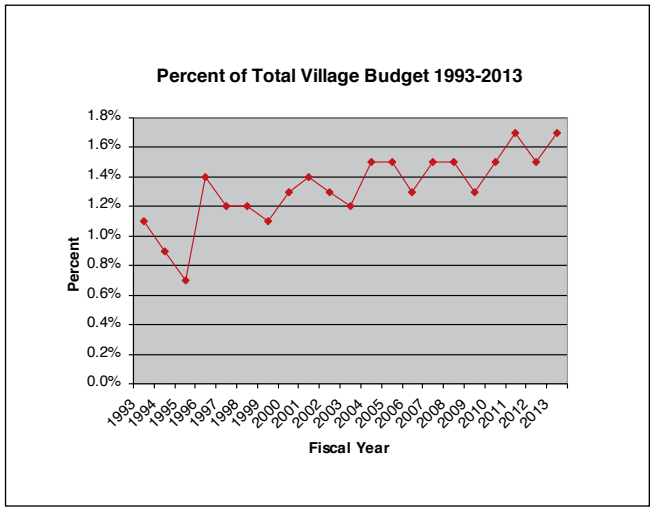


Figure 3B-6. Forestry budget as a percentage of the total Village budget from 1993 – 2013.

The Forestry/Grounds Division received approximately $206,500 in grants between 1993 and 2012. These grants, listed below, were used for tree planting as well as planning, management, and public outreach projects.

- 1993 - Urban Forestry Management Plan ($3,000) – Worked with consultant to review Forestry Program and recommend future goals.
- 1993 - SBA Tree Planting Grant ($15,000) – Planted 210 new trees.
- 1994 - Tree Risk Assessment Project ($10,000) – Developed guidelines for a parkway tree risk management program. – Assessed 300 trees in the first year.
- 1994 - SBA Tree Planting Grant ($25,000) – Planted 348 new trees; also used project to experimentally plant trees in Gro-Bags for the first time.
- 1994 - ISTEA Enhancement Funds ($4,000) – Planted 10,000 daffodils at Village Grounds Areas in one day; joint project between Village staff, Chamber of Commerce, and School Districts.
- 1995 - Ordinance, Brochure and Manual ($4,500) – Updated tree ordinance; developed Arboricultural Standards Manual; created "Trees of Mount Prospect" booklet in a joint project with Mount Prospect's citizen advisory group, the Garden Club of Mount Prospect.
- 1996 - Tree Manager/GIS Link ($10,000) – Developed application for mapping inventoried trees.
- 2000 - Analysis of Tree Risk Program ($5,000) – A review of the Village's Tree Risk program and recommendations for improvements.
- 2005 – Urban and Community Forestry Assistance Grant ($20,000) – Planted 85 parkway oak trees to further diversification efforts.
- 2011 – Illinois Urban Forestry Restoration Grant ($30,000) – Planted 206 new parkway trees to replace ashes lost to EAB.
- 2012 – Illinois Urban Forestry Restoration Grant ($30,000) – Planted 204 new parkway trees to replace ashes lost to EAB.
- 2012 – Community Development Block Grant ($25,000) – Planted 165 trees in low-income neighborhood to replace those lost to EAB and storms.
- 2013 – Urban and Community Forestry Grant ($25,000) – Hired a consultant to review program, help establish future goals, and create updated Urban Forest Management Plan.

In 2012, Mount Prospect ranked 21st in spending per capita among Illinois municipalities applying for Tree City USA designation (Appendix 3B-1). The top 25 per capita spending Illinois municipalities are presented in Table 3B-1.

Discussion

Over the past 20 years, Forestry has been provided sufficient funding to manage Mount Prospect's public tree population. Budget growth rates clearly have kept pace with annual inflation rates and the growth rate of the total Village budget. Forestry has also received over $206,500 in grant funding over the last 20 years. Per capita spending on Forestry activities has also grown. Applying the "level of service" budgeting concept offered in the APWA budgeting and funding BMP, we would classify Mount Prospect's level of services as a "high".

Forestry has sufficient resources to manage Mount Prospect's public tree population. We do offer one budget administrative recommendation. In order to compare activity costs year to year we recommend publishing additional forestry budget performance measures, such as the parkway tree population, in the Village's Forestry/Grounds performance measures section of the annual budget. This will provide historical information to facilitate monitoring the population statistics and accomplishments and compare Mount Prospect funding and expenditures with other communities.

Table 3B-1. Top 25 2012 Illinois Tree City USA applicant's per capita expenditures for urban forestry expenditures.

Municipality	Population	Forestry Expenditures	Per Capita Expenditure
Glencoe	9,100	$810,665	$89.1
Lake Forest	22,400	$1,883,667	$84.1
Highland	10,000	$659,407	$65.9
Lincolnwood	12,500	$564,217	$45.1
Winnetka	12,419	$544,422	$43.8
Hinsdale	16,816	$612,951	$36.5
St Charles	32,000	$1,152,365	$36.0
River Forest	11,635	$412,820	$35.5
Bolingbrook	70,977	$2,517,602	$35.5
Evanston	74,486	$2,396,098	$32.2
Burr Ridge	10,599	$332,420	$31.4
Naperville	147,433	$4,618,197	$31.3
Northbrook	33,170	$1,038,672	$31.3
Algonquin	30,145	$896,360	$29.7
Elmhurst	44,000	$1,289,498	$29.3
Riverwoods	3,660	$104,964	$28.7
Addison	37,000	$1,047,165	$28.3
Northfield	5,420	$152,011	$28.1
Downers Grove	47,833	$1,282,319	$26.8
Glen Ellyn	27,000	$710,351	$26.3
Mount Prospect	54,167	$1,409,524	$26.0
Lincolnshire	7,275	$186,875	$25.7
Marquette Heights	2,824	$71,696	$25.4
Moweaqua	1,831	$46,411	$25.4
Oak Park	52,000	$1,313,079	$25.3

Source: Randy Gordon, Program Manager at the Arbor Day Foundation, Lincoln, NE - June 2013

The unresolved and evolving potential changes to the prevailing wage rate requirements for contractual services by the Illinois Department of Labor could certainly result in increases in the costs the Village pays for contractual services. The result on the Forestry/Grounds budget would be to negatively impact the level of forestry services the Village can provide if current funding levels were maintained. Resolution of the prevailing wage issue is a complex political, legislative and legal issue that is largely determined at the State level. Village officials will need to dedicate the time and resources to help ensure the final ruling is consistent with the people of Mount Prospect's wishes.

Recommendations

- Revise annual published Forestry/Grounds budget performance measures to include the actual total tree population figure at the beginning of the fiscal year and other historical events such as Ash trees removed or treated for EAB.
- Continue to fund Forestry at current levels and make short-term adjustments for emerald ash borer removals and replacements as projected in Section 5.
- To the extent possible, work for clarification and favorable legislation regarding prevailing wage issues, as prevailing wage changes could significantly increase budget expenditures.

3C. Pruning History

Introduction

Pruning is essential to reduce conflicts within urban spaces and increase the safety and longevity of urban trees. Defective branches must be pruned to reduce the risks of property damage and personal injury. Adequate clearance must be provided over public streets and from other elements of the urban infrastructure.

Regular or rotational pruning of urban street trees has also been shown to reduce priority or high maintenance needs and service requests from the public (Luley et al. 2002), and increase their appraised value (Miller and Sylvester 1981). To be effective as a management tool, pruning should be initiated shortly after trees are planted and continue as they mature in the landscape (Pleninger and Luley 2012; Gilman and Lilly 2002; Gilman 2011). Public benefit from regular or rotational pruning is significant because of the reduction of pruning costs associated with more frequent pruning, improved tree condition, and decrease in liability from conflicts and harm resulting from unmanaged trees.

Current Management

A significant benchmark and important accomplishment of the Village's forestry program has been maintenance of a five year rotation pruning program since 1977. The rotational pruning is maintained by pruning management areas (Appendix Section 3C-1 and 3C-2) on a carefully established, pre-planned schedule.

The majority of trees in the Village are pruned by contract crews and overseen by a contractor with International Society of Arboriculture (ISA) Certification, as well as Village forestry staff. Pruning is conducted by a specification developed from current ANSI Standards for pruning (ANSI 2008) and ISA Best Management Practices for Tree Pruning (Gilman and Lilly 2002). The trim bid specification identifies five size classes of trees and pruning specifications for those individual classes. Contractors take over pruning on the five year rotation after trees exceed 3 inches in diameter.

Newly planted trees are pruned for structure one year after planting and again three years after planting. Small trees (all trees 3 inches or less in diameter) are subsequently pruned by Village forestry staff according to an in-house pruning specification during the five year rotational pruning cycle for the management unit where they are located. Village staff also prune for traffic control sign clearance on an annual basis after Village street sweeping crews identify signs that have clearance issues.

Forestry staff also prunes trees in response to service requests from citizens and other sources (Photograph 3C-1). This specialty or request pruning is coded by pruning type request within the Village's database management system. Pruning related to service requests are summarized in Section 3I.

Photograph 3C-1. Village crews prune trees at the request of citizens.

Historical Summary

The current rotational pruning program commenced prior to 1977 and has been consistently maintained through 2013. Up to 1993, the Village was pruning nearly 4,200 trees at a cost of $23.16 per tree (ACRT 1993). Most recommendations made in the 1993 management plan, such as using Village forestry staff for pruning of small trees (less than 3" in diameter), and extending pruning contracts to more than one year when of benefit to the Village, were implemented.

Since 1993, the Village has maintained close to a five year rotation by pruning on average 4,143 trees annually via contracts, and on average 572 trees by Village forestry crews, for an annual average of over 4,700 trees. Based on the current tree population of 23,724 trees, 4745 trees require pruning annually to maintain a five year rotation. The trend line for both contract pruned trees (Figure 3C-1) and trees pruned by forestry staff (Figure 3C-2) shows a slow, but consistent increase in the number of trees pruned annually.

Cost for the contract tree pruning remained relatively low over the period from 1993 to 2012, averaging $28.71 per tree. Pruning costs began to escalate in 2006; average per tree pruning cost for the last five years was $39.96. However, pruning costs as a percent of the total Forestry annual budget has remained stable since 1995, varying between 10 and 20%(Figure 3C-3).

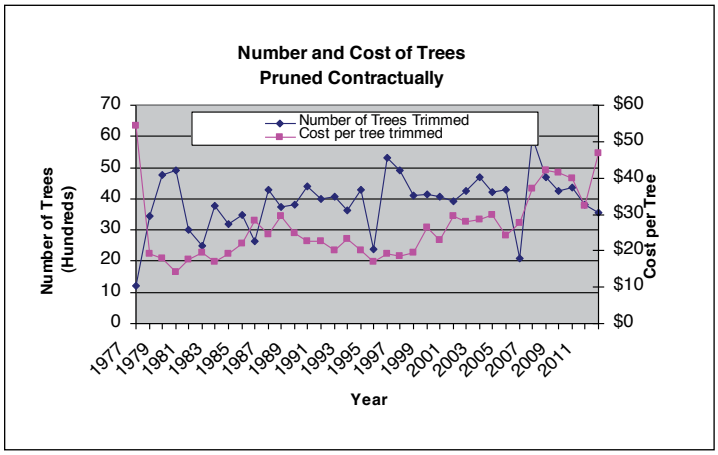


Figure 3C-1. The number of contractually pruned trees per year and the cost for pruning since 1977.

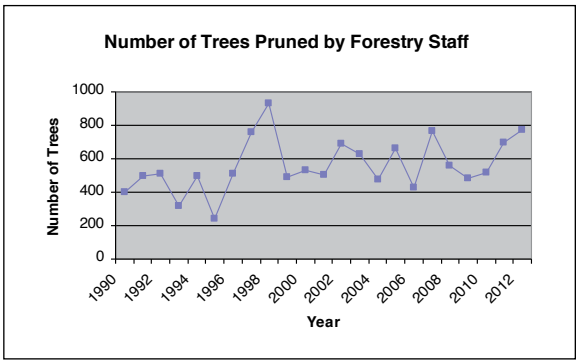


Figure 3C-2. Number of trees pruned by year by Mount Prospect forestry staff.

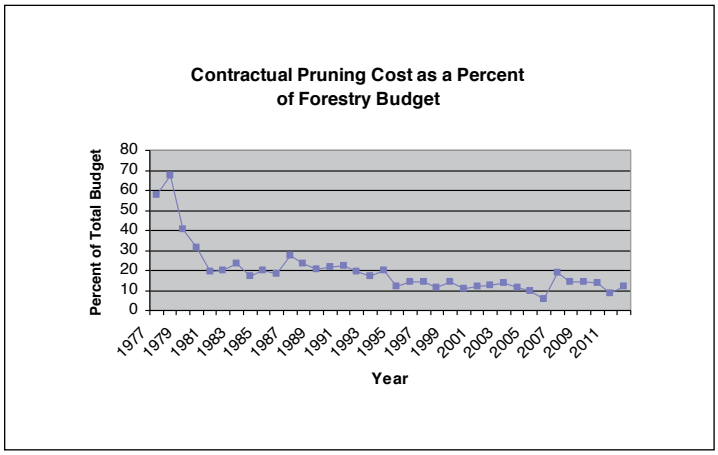


Figure 3C-3. Contractual pruning costs as a percent of the total Forestry annual budget.

Discussion

The number of trees currently being pruned by contractors and forestry staff is on target to maintain a five year rotation at current population levels. Pruning needed by Forestry staff may increase as replacement trees are installed after emerald ash borer removals. Pruning costs are escalating over the last five years. This may be due to recent spikes in fuel costs and other external factors, as pruning specifications and contracts for pruning have remained stable over the same period.

Clearly, the maintenance of the five year rotational pruning program is producing trees with minimal pruning needs between pruning intervals, minimizing service requests from citizens, increasing public safety, and is maintaining trees in excellent condition. In fact, our site observations suggest that most mature trees have reduced pruning requirements, as once structure is established, most trees have few if any dead or defective branches, and additional pruning of non-structural branches is not needed. Forestry staff have also recognized the need to reduce non-structural pruning on mature trees by altering the pruning specification specifically to eliminate lions-tailing, or the over pruning of non-structural, healthy branches on mature trees.

Given these observations, mature trees (greater than 25 inches in diameter) could be pruned under a different pruning specification where crown cleaning (ANSI 2008) for dead or defective branches, and pruning for clearance are the only pruning specified. Crown thinning could be eliminated or deemphasized in the pruning specification for mature trees, or specified for use only when needed to address specific issues such as crown balance or overall branch distribution. Forestry staff is on-board and have been monitoring contractors to reduce thinning where it is not needed. This approach would be justified given current tree conditions and recent research that has implicated that smaller branches along scaffolds and larger limbs are important in mass dampening and reducing dynamic loading (James et al. 2006).

Based on our site observations, additional emphasis and development of the pruning specification for trees 3 to 12.5 inches in diameter (size class 1) should be considered. Forestry has recognized the need for increased structural pruning of small trees through increased staff training (Photograph 3C-2). Removal or reduction of codominant stems and competing laterals (Pleninger and Luley 2012) should be emphasized and prioritized in the pruning specification. Pruning of these branches when trees are larger becomes problematic, because undesirable or larger defective branches become too large to effectively prune. A separate pruning specification should be considered for size class 1 trees.

Photograph 3C-2. Structural pruning of young trees is an important aspect of the Village's rotational pruning program. Training young trees is completed by Village crews and establishes good tree form early in the life of the tree.

Recommendations

- Review and modify the current pruning specification to reduce or eliminate thinning of mature trees.
- Review and modify the current pruning specification for size class 1 trees to prioritize pruning sequence for structural pruning.
- Reinforce through staff training the importance of proper structural pruning when trees are young.
- Continue funding the five year rotational pruning as the most important element of the tree management program.

3D. Planting History

Introduction

In a natural setting, Mother Nature manages renewal of the forest; over time natural selection will maintain the numbers and species of trees that are appropriate for the environmental conditions in the forest. In the urban setting, humans are the stewards and tree planting and in particular species selection is one of the most important tasks in managing the health and longevity of the urban forest.

Individual tree species have evolved to grow in specific site conditions such as soils and climate. If they do not have those specific conditions they will grow poorly, will be susceptible to pests and disease, and in some cases die. Matching the tree species to the site conditions they are adapted to will help ensure the tree will live a long and healthy life.

In the larger urban forest ecosystem perspective, history has demonstrated that diversifying the numbers of tree species planted is of equal importance to site selection. There are several examples, such as Dutch elm disease and emerald ash borer, where these pests devastated the urban forest at a significant cost in terms of tree cover, financial burden and decreased quality of living (Photograph 3D-1).

As we renew our urban forest through tree planting, these lessons stress the importance of selecting tree species that are appropriate for the conditions of an individual site while also diversifying the numbers of tree species in the urban forest.

Photograph 3D-1. Elm-lined street in Mount Prospect, 1978. The disproportionally large population of American elms that were planted in many communities created the optimum conditions for Dutch elm disease to flourish and claim millions of elms in the United States beginning in the 1950s.

Current Management

In 2012, the Village planted 800 trees including 37 different species of trees (Appendix 3D-1). The stocking level was 88% and the Village removed more trees than were planted. Many of the trees planted in 2012 were plantings to replace trees removed as a result of EAB infestation in the Village.

The climate of this region of Illinois (Section 2C) offers a large selection of trees to plant in the Village. The soils, however, do present some limitations with regard to plant selection. The soils are primarily clay in texture, poorly drained and alkaline (Section 2B) and therefore tree species which will not tolerate these conditions cannot be used (Photograph 3D-2). The Village has planted 91 different tree species over the last 20 years utilizing species of trees that meet the following restrictions.

- Hardy to USDA Hardiness Zone 5b
- Tolerant of poorer drainage and high pH

The physical space and soil volume available are also a limiting factor in tree species selection. The mature size of a tree needs adequate space to grow and sufficient soil volume to remain healthy and reach its full age potential. Mount Prospect is fortunate to have large parkway tree lawns that provide adequate space and soil volumes. This also means the Village can use primarily large tree species that provide the most environmental benefits. Over 90% of the parkway tree lawns are larger than 10 feet in depth (Figure 3D-1).

There are several policies that guide the Village's tree planting efforts. These are found in Chapter 9, Article VII of the Village ordinance and the Arboricultural Standards Manual. Tables 3D-1 and 3D-2 summarize these policies.

Photograph 3D-2. A drainage sump being installed in a tree planting site in May 1975 in the Village to modify the site and make it more amenable to planting.

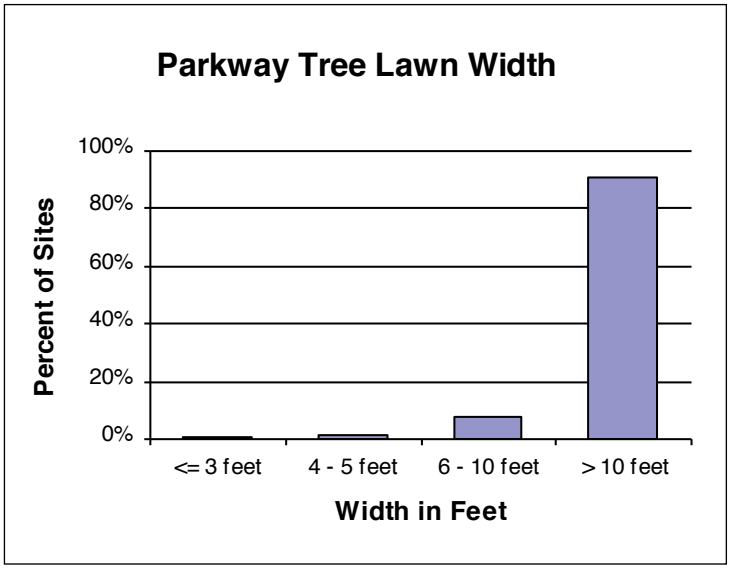


Figure 3D-1. Mount Prospect parkway tree lawn widths.

The Village has nine tree planting programs that guide and help fund the Village's tree planting efforts (Table 3D-3). The objective of these programs is to promote tree planting in the Village as well as secure other tree planting funding sources and provide tree planting options for Village residents. All tree planting is completed as Village funding is available.

Table 3D-1. Village tree planting policies extracted from the Village ordinance.

Village Ordinance - Tree Planting	
Chapter	**Summary of Language Related to Tree Planting**
9.703. B	Promote urban forest species diversity.
9.703. C	Select large tree species vs. small tree species to capitalize on the benefits of large trees species. Match the tree species selection to the site restrictions.
9.703. D	"Establish Optimum Canopy Closure" - implies selecting larger tree species to realize the environmental benefits of a high tree canopy cover.
9.709 A	Restricts the planting of shrubs and evergreens in the right-of-way.
9.709 B	Specifies permit requirements for planting deciduous trees in the right-of-way.

Table 3D-2. Village tree planting policies extracted from the Arboricultural Standards Manual.

Village Arboricultural Standards Manual - Tree Planting	
Section - Planting	**Summary of Language Related to Tree Planting**
1 - Plant Materials	Details standards and specifications for the selection of plant material.
2 - Transportation & Handling	Details the specifications for the transportation and handling of plant material.
3 - Planting Techniques	Details the specifications for planting a tree.
4 - Planting Locations	Details the spacing requirements between trees, minimum soil volume requirements in different applications and restrictions relative to other elements of the urban infrastructure.
5 - Tree Species	Specifies the list of tree species that are authorized for planting on Village property and those that are prohibited.

Historical Summary

Annual tree plantings surpassed the numbers of tree removals in 11 of the 16 years from 1977 through 1993 (ACRT 1993). In 1993 the Village parkway tree stocking level was 86%. Dutch elm disease was still a significant killer of trees during this time period and replacement trees were predominantly maple, ash and honeylocust. Other tree species were planted but they generally consisted of less than 5% of the total planted during this time period (ACRT 1993).

A Cost Share tree planting program was in place during this time period in which a resident could contribute $100 to the cost of planting a 2-1/2 inch caliper tree. During the 10 year period prior to 1992, an average of 197 trees was planted annually under this program (ACRT 1993). Trees were also planted under the programs outlined in Table 3D-3 including; Reforestation Program, Beautification Program, New Construction Plantings, Damage Losses and private donations.

Table 3D-3. Village tree planting programs.

Program	Description
Full Cost	A resident may pay the Village for the cost to plant a 2 1/2 inch diameter tree in the right-of-way; replaced Cost Share Program in 2010.
Cost Share	Resident paid $100 towards the cost of planting and received a 2 1/2 inch diameter tree. Suspended in 2010 due to budget issues.
Reforestation	As funding is available and at no additional charge to resident. Trees are planted in available sites in a specific neighborhood. The trees are 1 1/2 inch diameter and the residents do not have the choice of species selection.
Risk Tree	As funding is available and at no additional charge to resident. Trees are planted to replace risk tree removals if the site is appropriate for a replacement tree and the resident agrees. The trees are 1 1/2 inch diameter and the residents do not have the choice of species selection.
EAB Replacement	As funding is available and at no additional charge to resident. Trees are planted to replace EAB removals if the site is appropriate for a replacement tree and the resident agrees. The trees are 1 1/2 inch diameter and the residents do not have the choice of species selection.
Grants	The Village actively searches for grant monies to plant trees as part of the reforestation efforts. The trees are 1 1/2 inch diameter and the residents do not have the choice of species selection.
Beautification	As funding is available and at no additional charge to resident. Plant larger diameter trees (2½" to 4") in high visibility areas/sites throughout the Village.
Damages	Funds are charged or recovered when trees that are lost as a result of malicious activities or accidents, or a permitted work activity. These funds are used to plant replacement trees.
New Construction Plantings	Funds are collected as part of permitted construction projects and used to plant parkway trees after completion of the project.

During the 20 year period from 1993 to 2012, an average of 400 trees were planted annually, with a low of 119 trees in 2004 and a high of 800 trees in 2012. A total of more than 9,000 trees were planted in this period (Figure 3D-2) and the number of tree removals exceeded the number of trees planted. A significant increase in the number of tree removals occurred from 2007 through 2012 due to the arrival of EAB (Section 3F) and two severe storm events in 2007 and 2011 (Section 3K).

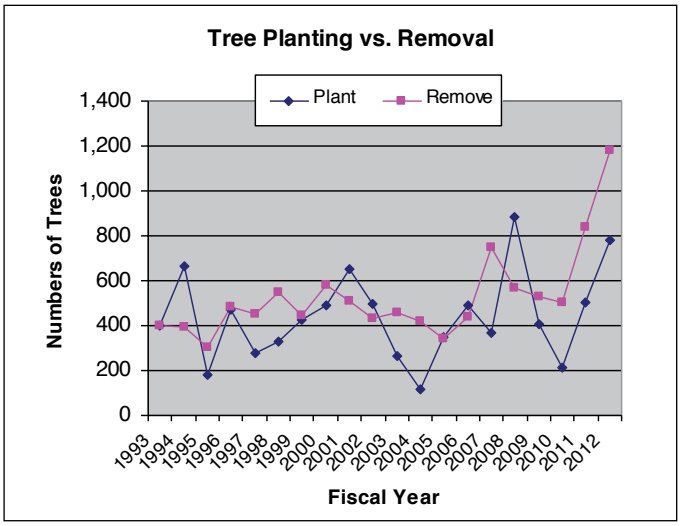


Figure 3D-2. Parkway tree planting versus removal 1993 – 2012.

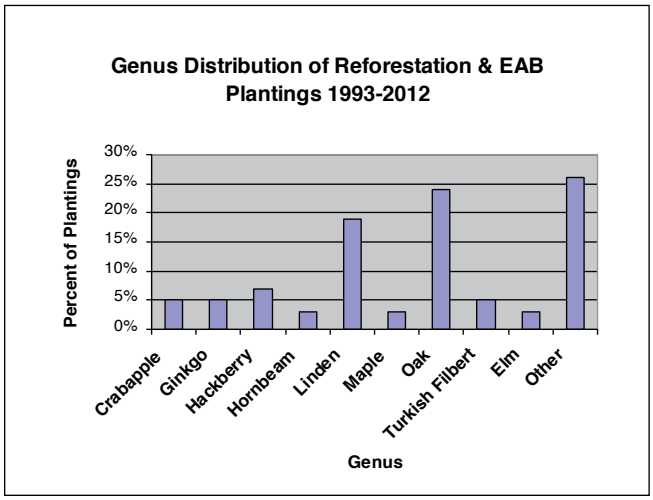
Significant progress was made on the Reforestation Program from 1993 through 2012 with each Forestry Section receiving multiple plantings over these years (Table 3D-4).

Table 3D-4. Reforestation program planting by Forestry Section for 1993-2012.

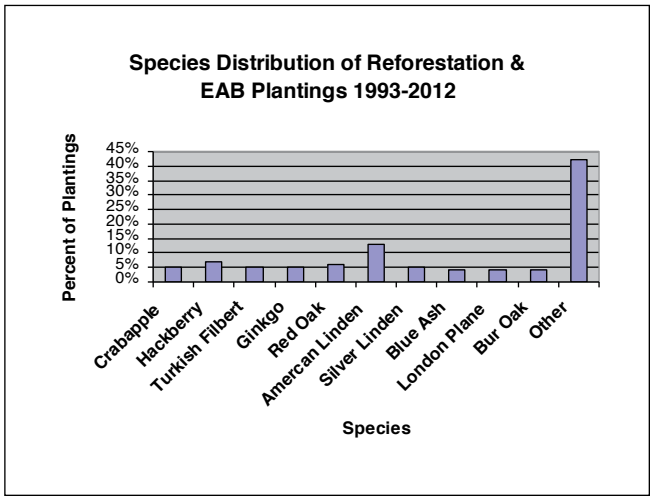
Reforestation Program Plantings 1994 - 2012							
Section	**Plantings F - Fall S - Spring**						
1	*S 1994*	*S 1995*	*S & F2005*	*S 2006*			
2	*S 1994*	*S 2006*					
3	*S 1994*	*S 1999 (partial)*	*S 2006*	*F 2006*			
4.1	*S 1995*	*S2007*					
4.2	*S 1995*	*S 2006*	*F 2006*				
5.1	*S 1999*						
5.2	*S 1996*	*S 2002*					
5.3	*F 1995*	*S 1999(started)*	*S 2000*	*F2009*			
5.4	*F 1995*	*S 1997*	*S 1999 (partial)*	*S 2000 (partial)*	*F2009**		
6	*S 1999*	*F2008*					
7.1	*S 1995*	*S2007*					
7.2(KCB)	*F1997 (partial)*	*S 1998*	*F 1998*	*F 1999*	*S 2000*	*F2001*	*F 2002*
7.3	*S 1995*	*S2008*					
8	*S 1995*	*S 2005*					
9	*S 1995*	*S2008 (partial)*	*F2008*				
10	*F 1995*	*F2008*					
11	*F 1995*	*S 1996*	*F2009*				
12	*S 1995*	*S 1996*	*F2008*				
13	*S 1996*	*S 2002 (partial)*					
14	*S 1995*	*S 2005*	*F2012***				
15.1	*S 1995*	*S2007*					
15.2	*S 1995*	*F2007*					
16.1	*S 1994*	*S 2000*	*S 2001*	*F2011*			
16.2	*S 1994*	*S 2000*	*S 2001*	*F2011*			
16.3	*S 1994*	*S 2000*	*S 2001*	*F2011*			
17	*S 1995*	*S2008*					

*** Finished section 5.4 except MacArthur subdivision**
**** Used EAB Restoration Grant and CDBG funds to plant all available sites in section**

There were over 3,600 plantings and 56 different species of trees installed as part of the Reforestation and EAB replacement programs that were in place from 1993 through 2012 (Appendix 3D-2). Oaks represented the highest percentage of genera planted as a part of these programs, followed by linden and hackberry (Figure 3D-3a). American linden represented the highest percentage of species planted followed by common hackberry and red oak (Figure 3D-3b).



Figures 3D-3a. Genera of trees planted as part of the Reforestation and EAB programs from 1993 through 2012.



Figures 3D-3b. Tree species in the Reforestation and EAB programs from 1993 through 2012.

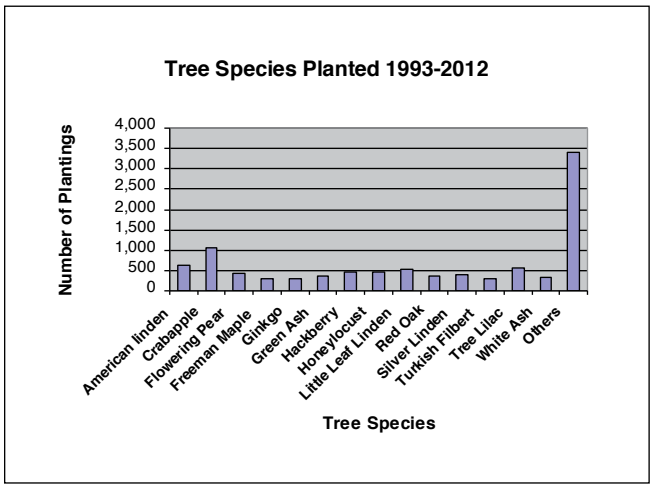


Figure 3D-4. Species of trees planted from 1993-2012 that exceeded 2.5% of the total plantings.

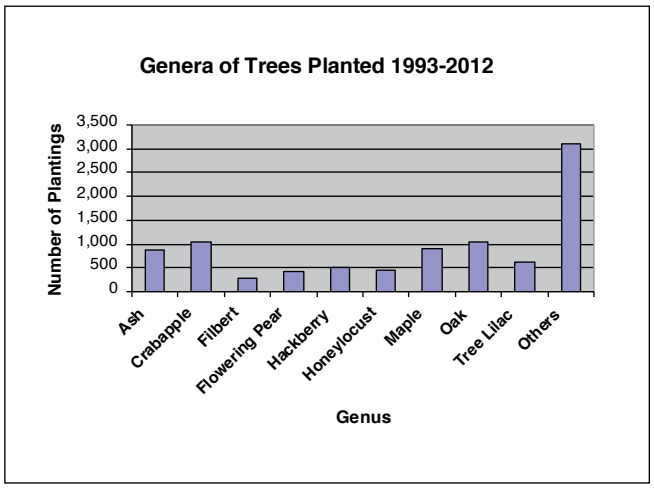


Figure 3D-5. Genera of all trees planted 1993-2012 that exceeded 2.5% of the plantings.

Among all tree plantings from 1993 through 2012, 91 different species of trees were planted. Crabapples were the most populous followed by American linden, Japanese tree lilac, littleleaf linden, hackberry and honeylocust (Figure 3D-4).

Among the genera of trees planted, crabapple numbered most followed by oak, maple, ash and then tree lilac (Figure 3D-5).

Several new policies and programs were introduced since 1993 related to tree planting. Chapter 9, Article VII of the Village ordinance was updated in 2002 and 2010 (Appendix 3A). The Village Arboricultural Standards Manual was introduced and formally adopted in April of 1997. As noted in Table 3D-2, this Manual details the standards and specifications related to tree planting.

In March of 2009, the Village adopted an EAB Management Plan to respond to the threat and impact of the emerald ash borer. The plan included reforestation goals and objectives (Photograph 3D-3). In 2009 the Village Board began appropriating funds to plant EAB replacement trees and in 2013 appropriated approximately $83,000. The program will continue as funding allows, however, the objective is to achieve a 1 to 1 tree planting to removal ratio. Species diversification was also outlined as a Plan objective and specific language was included promoting private property owners to do the same.

Photograph 3D-3. New tree planting after the removal of ash as a result of emerald ash borer. The Village is using the planting to increase the diversity of species present as a means to decrease the potential for future losses due to other pests or problems.

Discussion

The Village has done a good job of balancing the needs of maintaining its existing trees and tree planting. It is sound urban forest management practice to dedicate what resources a community has to maintaining its existing trees before planting new trees. In spite of the loss of significant numbers of trees to severe storm events, DED, elm yellows and EAB, the Village's stocking rose from 86% to 88% from 1993 to 2012.

The Village could improve on its selection of tree species for planting to improve the urban forest diversity. As is detailed later in Section 4B, several genera and individual tree species have exceeded generally accepted diversification guidelines for many years. The Village should suspend planting these genera and tree species which include Norway maple, honeylocust and littleleaf linden, until their percentages drop below acceptable diversity guidelines.

On the positive side, there are tree species that would perform well in Mount Prospect's environment and site conditions. London planetree and oaks are examples of trees that will perform well in the Village and have very low representation in the population. The Village has an exceptionally high number of large planting areas allowing for the use of these large tree species. Given the ample planting space available, limiting the use of small tree species to sites with space restrictions and selecting the largest tree species possible for planting will return more long-term benefits as well as longer lived trees (Photograph 3D-4).

Photograph 3D-4. Japanese tree lilac is a small ornamental tree Mount Prospect uses in sites under power distribution lines, narrow parkway lawns and limited spaces.

Recommendations

- Suspend the planting of tree genera and species that do not meet general population diversification guidelines.
- Take greater advantage of the opportunity to use tree species that are appropriate for planting in Mount Prospect and low representation in the population.
- Plant larger (at maturity) tree species where site conditions permit.
- Reintroduce the cost/share tree planting program.

3E. Dutch Elm Disease and Elm Yellows

Introduction

Since the introduction of Dutch elm disease (DED) (caused by the fungi *Ophiostoma ulmi* and *O. novo-ulmi*, and spread by elm bark beetles that breed in dead or dying elms) into the United States in the 1930's, the disease has virtually eliminated the American elm as a reliable street and urban forest tree. Prior to the disease introduction, American elms were a dominant component of many street tree populations because of their tolerance of urban conditions and desirable ability to cover streets with over arching branches and abundant shade.

Study of the epidemiology of DED showed that successful management of elm populations requires prompt sanitation or removal of diseased trees. Some success has also been reached by treating individual, high value elms with fungicide injections, although this approach is generally too expensive for most municipalities. Early treatment attempts used spraying of insecticides to kill feeding elm bark beetles, although this approach is seldom used today (Photograph 3E-1).

Photograph 3E-1. Spraying of insecticides was used in the Village in early attempts to kill elm bark beetles that spread the Dutch elm disease fungus.

A second fatal elm disease, elm yellows (Photograph 3E-2), has been killing elms in the Midwest and other regions where elms had been preserved by sanitation or fungicide injections. Elm yellows is said to "complement" the destruction caused by DED, by killing any elms remaining after DED epidemics subside. Elm yellows is spread by a different insect, leafhoppers, and there are no effective treatments other than sanitation to protect healthy trees, and to use resistant elm species.

Photograph 3E-2. An American elm infected with elm yellows, a disease caused by a phytoplasma and spread by leafhoppers (diseased tree on left, healthy on right; photo courtesy Wayne Sinclair, Cornell University). The disease has escalated the loss of elms in the Village in recent years. DED often masks elm yellows on doubly infected trees.

Current Management

The Village of Mount Prospect currently has 319 American elms remaining of its original population estimate of 5200 elms. These elms are mostly mature specimens that are being protected by the following measures:

- Monthly survey for newly infected trees on both public and private property during the growing season for DED and elm yellows symptoms.
- Prompt sanitation (removal within 10 days of identification from May through August or 30 days if an infected tree is identified September through April).
- Restriction of pruning American elms during the growing season to limit attraction of elm bark beetles to pruned trees.
- Five-year rotational pruning that keeps elms relatively free of dying branches and deadwood.
- Support of the sanitation program by a Village ordinance requiring the same sanitation requirements on private trees as in the street tree program, and prohibiting the storage of elm wood with bark intact.
- Provision of a loan program for income eligible citizens to aid prompt removal on private property
- Distribution of informational materials on DED and elm yellows to citizens

The current population of elms is mature with an average diameter of 30.5 inches (See Section 4B for American elm diameter distribution). Losses due to structural defects are also contributing to reduction of the existing elm population.

A small number of American elms and hybrids with Asian or European heritage (some with American elm parentage) with resistance to DED are now being planted in the Village. Pure American elm cultivars do not appear to be resistant to elm yellows, although hybrids with Asian or European heritage seem to be resistant to the disease. Research is still needed to determine the full resistance of these hybrids to elm yellows.

Historical Summary

Parkway DED losses in Mount Prospect since 1977 are presented in Figure 3E-1. Annual DED losses since 1993 have averaged 0.9% of the remaining population and 1.2% in the last five years. The greatest losses due to DED occurred before implementation of the sanitation program by the Village; losses were greatly reduced from 1978 through 1999 (Figure 3E-2). Development of elm yellows in the elm population has increased the loss of elms since 1999 (Figure 3E-1) (Photograph 3E-2).

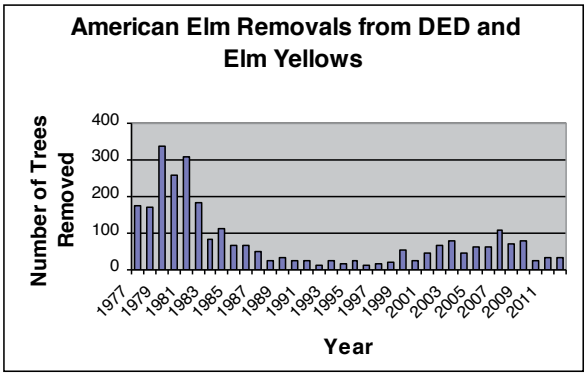


Figure 3E-1. Number of American elms removed as a result of infection of Dutch elm disease or elm yellows disease. Elm yellows infections started in 1999.

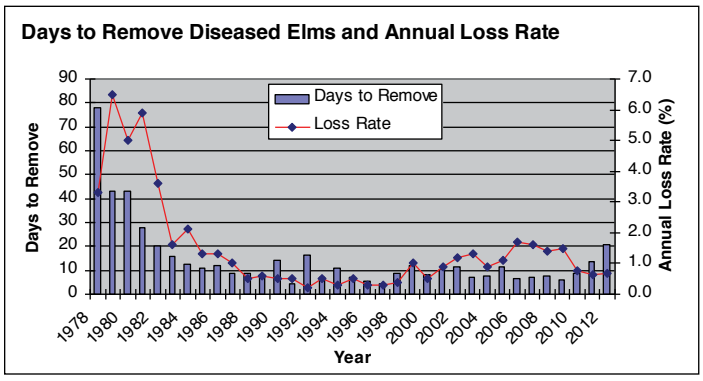


Figure 3E-2. The number of days before removal of elms diseased with DED or elm yellows and the resulting annual loss rate from the diseases.

The prompt sanitation program has been extremely effective in stemming loss of the Village's entire elm population. ACRT (1993) projected that 85 percent of the original population (799 trees remaining) would be lost by 2003; the sanitation program slowed losses more than this projection as 1003 trees were remaining in 2003, thus reducing the projected loss rate by three years.

Discussion

The prompt sanitation program has effectively preserved the American elm population in the Village for an extended period. However, the recent development of elm yellows in the Village's elm population means further attrition and increased losses in the American elm population can be expected. Sanitation will also slow spread of elm yellows, but the presence of both diseases in the elm population has already resulted in increased losses and an elevated loss rate in recent years. In most epidemics, the loss rate decreases after the majority of the population has been killed.

Recommendations

- Continue investment in prompt sanitation and management of the elm population with existing practices.
- Add Dutch elm disease management practices to the proposed Technical and Administrative Procedures manual (See Section 3A).

3F. Emerald Ash Borer

Introduction

Emerald ash borer (Agrilus planipennis), a lethal insect attacking all ash (Fraxinus) species, was first identified in Michigan in 2002, in Illinois in 2006, and in Mount Prospect in 2010. This destructive insect has killed tens of millions of ash in the United States and Canada, and has wiped out entire street and private ash tree populations where it has been left unchecked (Photograph 3F-1a and 1b). Being an able flier, the pest spreads quickly once established in local ash populations, and continues to spread regionally and nationally primarily by being moved in infested firewood and nursery stock.

EAB symptoms are initially slow to develop in infested trees, but individual trees die quickly (one to two years) once symptoms become evident as thinning crowns and dying branches. Adults are small and attractive metallic green beetles (Photograph 3F-2) that only cause minimal damage as they feed on foliage. Damage to ash trees is inflicted by small, cream colored larvae that feed in the nutrient and water conducting tissues of the tree just beneath the bark (Photograph 3F-1b). The insect usually takes a year to compete its life cycle.

Photograph 3F-1a and 3F-1b. Left: Ash trees infested with EAB. Right: The insect larvae tunnel beneath the bark and slowly girdle the tree resulting in progressive thinning, dieback, and eventual death of ash.

Several insecticides have proven effective in EAB management. However, long-term management of EAB requires effective planning, particularly for communities with large ash tree populations. Strategic planning usually considers a variety of management options including removal of poor condition trees and less desirable ash species, insecticide treatment of trees in good condition and growing in desirable locations, and prompt sanitation of infested trees. EAB management requires integration of these practices on public and private properties.

Photograph 3F-2. An adult EAB. The adult is an able flier that emerges from infested trees in late spring. It does minimal harm to ash as it feeds on foliage to gain energy to lay eggs.

Current Management

The Village currently has a population of 2779 ash trees, or 11.8% of the total street tree population. A comparably sized population of ash is believed to be growing on private property in the Village.

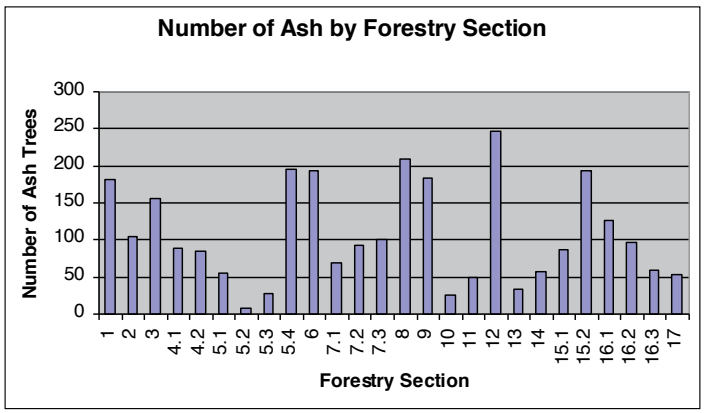


Figure 3F-1. Number of ash trees by Forestry Section as of January 2013.

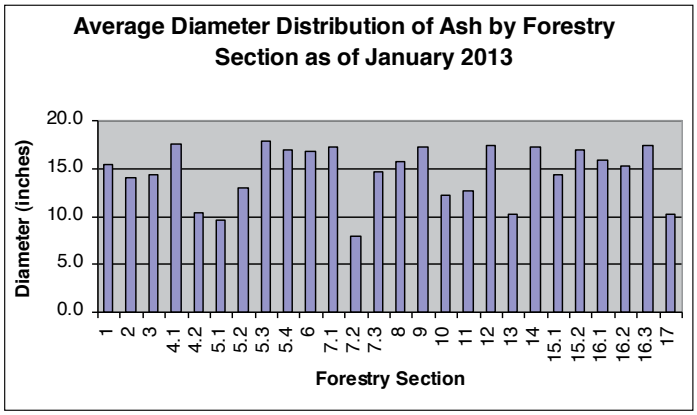


Figure 3F-2. Average diameter of ash by Forestry Section as of January 2013.

Ash tree populations are widely distributed in the Village, but higher populations are present in some Forestry Sections and on individual streets (Figure 3F-1) (Photograph 3F-3). The number of ash in each Forestry Section as of January 2013 is presented in Figure 3F-1. Several sections have notably high ash populations (e.g. 5.4, 6, 8 and 12) and some Sections have very low populations (5.2, 5.3, 10, 11 and 13) (Figure 3F-3).

The parkway ash species distribution is comprised of blue, European, green, Manchurian, pumpkin and white ash tree species (Section 4B). Average ash diameter is 15.3 inches and diameter distribution by Forestry Section is presented in Figure 3F-2.

Photograph 3F-3. Parkway in the Village where ash have been removed as a result of emerald ash borer infestation. Note that the few trees remaining on the street are also ash species.

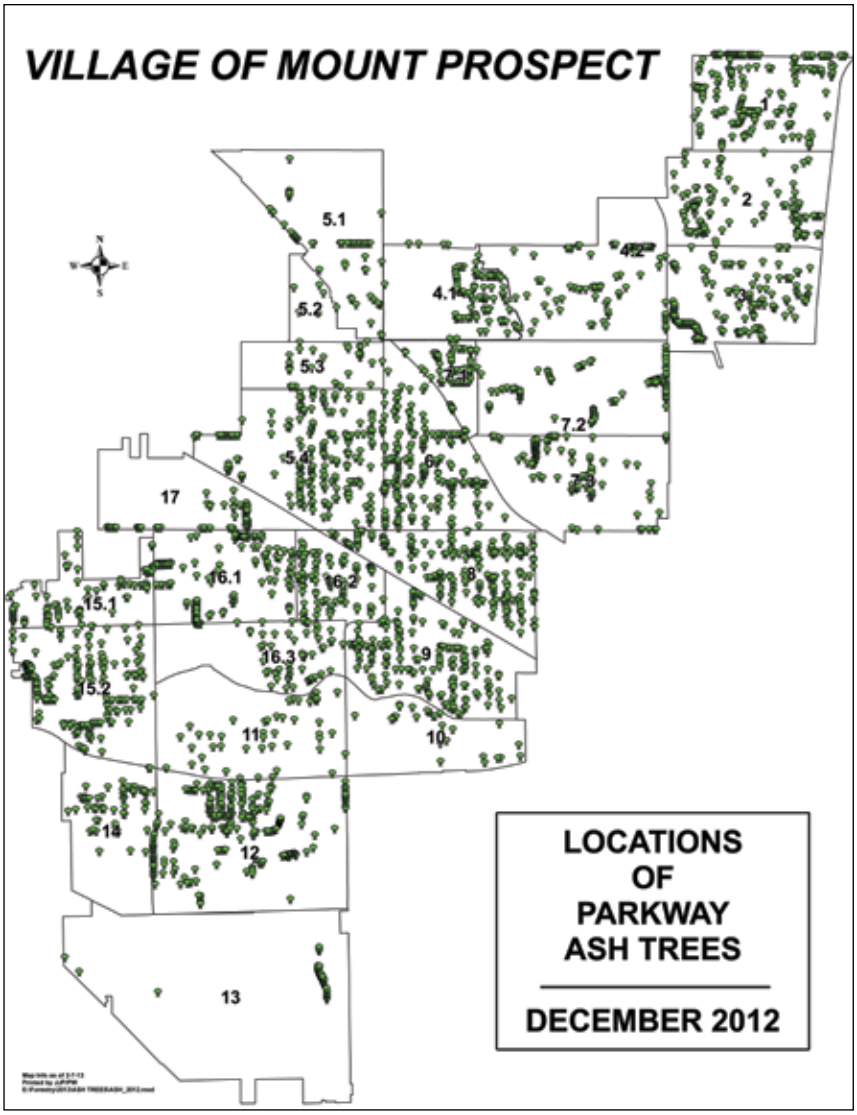


Figure 3F-3. Number of ash trees by Forestry Section as of December 2012.

The Village has chosen to protect a select portion (800 trees) of the ash population with insecticide treatments. In 2013, only trunk injection with emamectin benzoate will be used at a cost of $4.87 per diameter inch. In 2012, soil injection with imidacloprid was used on trees less than 15 inches in diameter. Cost for emamectin benzoate trunk injection in 2012 was $3.90 per diameter inch and for the imidacloprid soil injection cost was $1.29 per diameter inch.

The Village of Mount Prospect implemented proactive, aggressive EAB management activities that began in 2007 prior to the insect's discovery in the Village. A full written EAB management plan was published in 2009. The EAB plan currently being implemented is based on the following comprehensive management approach:

- Preemptive removal of poor condition and less desirable ash species; 359 ash were removed from 2008 to 2010 because of the pending EAB infestation.
- Insecticide treatment of selected white and other ash species starting in 2007 (green ash are not treated as they are inherently a less desirable species), greater than 6.5 inches in diameter, in good condition and growing locations

- Survey of public and private trees for symptoms of EAB (including bark scraping of suspect trees) on public property using a bucket truck where needed (Photograph 3F-4a and 4b). Surveys are conducted in conjunction with the five year pruning rotation inspection of parkway trees.

- Prompt removal of ash on public and private property within 10 days of identification from May to September, and 30 days at other times.

- Replacement of ash removals with other non-host tree species through several programs and funding sources

- Support of the requirement to remove EAB infested ash on private property with appropriate changes to the Village ordinance

- Processing of wood and debris from ash removals to comply with State regulations, and participation in wood utilization programs

- Significant public outreach via multiple media including providing management updates on the Village website, educational fliers and mailings to residents, public presentations on impact and treatment of EAB, and television and radio programs to support the management effort

- Annual reporting to the Village Board and Manager on the status and impact of the management effort

- Spearheading and participating in Statewide survey, and educational outreach efforts

- Participation in cooperative insecticide research trials with the Morton Arboretum

Photograph 3F-4a and 3F-4b. Left: Village crews survey parkway trees for evidence of larval damage from EAB as part of their management program for the pest. Right: A serpentine gallery caused by EAB revealed by bark scraping during a survey for infested ash trees by the Village.

Historical Summary

In 2006, ash species comprised 17% of the street tree population or nearly 4414 trees. A summary of ash species and size distribution, and condition ratings were presented in the Village's EAB management plan published in 2009. Locations of parkway ash as of 2010 are presented in Figure 3F-4.

Removal of EAB infested trees commenced in 2010. Twenty-three infested trees were removed in 2010, 171 in 2011, and 717 trees in 2012, for a total of 911 trees. EAB tree removals by Forestry Section are presented in Figure 3F-5. The cost of EAB removals since 2010 has totaled $337,534.61 ($229,582.40 for trees and $107,952.212 for stumps) for an average of $370.51 per tree.

Insecticide treatments for EAB began in 2007 when 200 ash were soil drench treated with imidacloprid. The same number of ash were treated in 2008 using soil injection with imidacloprid. In 2009, 800 trees were soil injection treated with imidacloprid and the injection treatment continued through 2011. In 2012, trunk injection treatments using emamectin benzoate began.

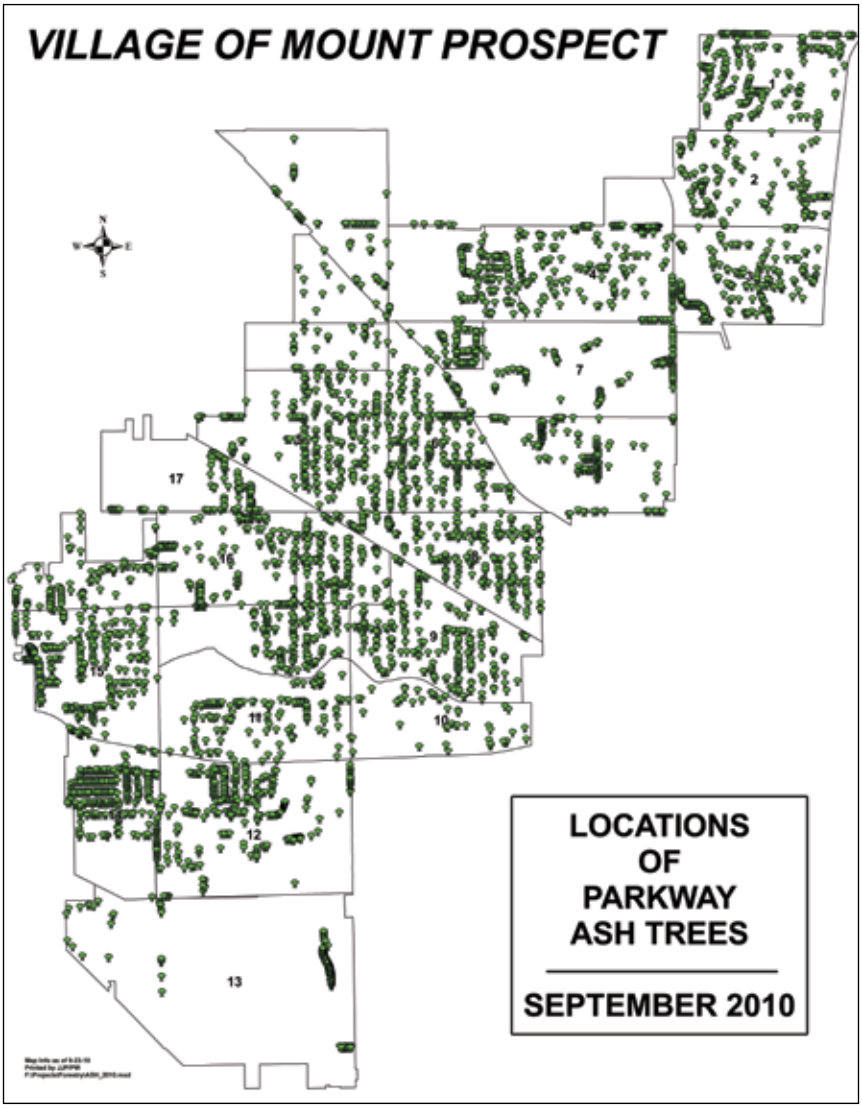


Figure 3F-4. Location and density of ash tree species on parkways by Forestry Section as of September 2010.

Discussion

The Village has a sound EAB management program. Thoughtful planning and execution were demonstrated by the use of the less expensive but effective soil treatment method when the infestation was first starting in the State, and limiting the use of insecticidal treatments to trees worthy of preservation. The program also included the preemptive removal of undesirable ash before the pest arrived. It presently focuses on the sanitation of infested trees on both public and private property to support the treatment program, and extensive public outreach and education (Photograph 3F-5a and 5b). Given that ash is a valuable and well adapted species to local conditions, this approach is fully warranted. In addition, the program has helped manage removals so budgeting for removals can be managed reasonably over a longer time period.

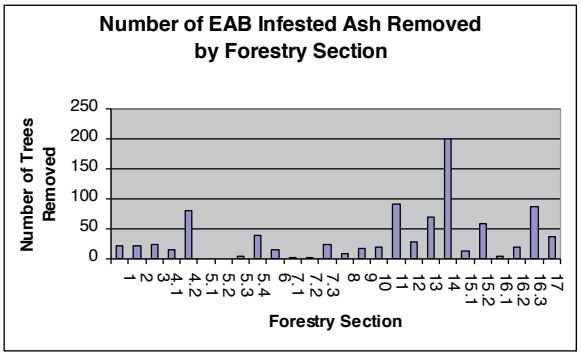
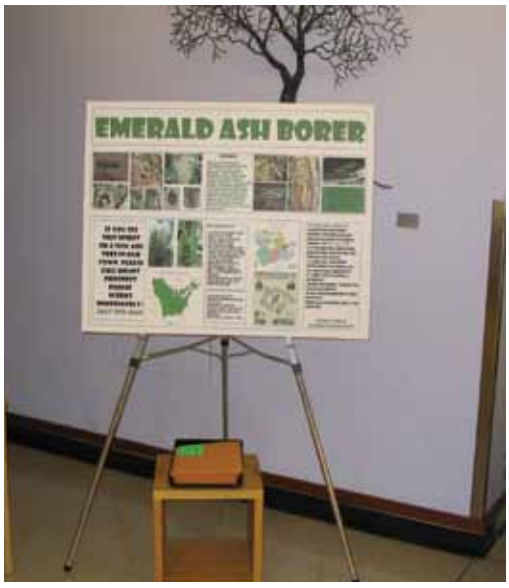


Figure 3F-5. Number of EAB infested ash removed by Forestry Section since 2010 (current as of January 1, 2013).

The Forestry/Grounds Superintendent notes that the summer of 2013 is proving to be a challenge in terms of keeping up with planned removal rates for infested ash trees. The number of ashes showing extensive dieback has escalated rapidly. As of July, staff had not even completed their first round of scouting of parkway ashes for advanced EAB symptoms. Scouting for private infested ashes has been suspended until the parkway trees have all been evaluated.

Even with the current program, the Village will remove at least 1979 more ash trees over the coming years. It is likely that a large number of these removals will occur over the next five years as the infestation continues gaining momentum. These losses, and replacement of these trees, will require planning and budgeting in the short-term for the Village. The loss of ash will shift the diameter distribution of parkway trees to an increased proportion of smaller trees as larger diameter ash are replaced with much smaller replacement trees. The need for insecticide treatments and the associated costs will be extended into the future. However, there is speculation that once populations of EAB decrease with time, reduced dependence on insecticides may be possible.



Photograph 3F-5a and 5b. The Village has done extensive outreach and education on EAB to inform Village residents of the impact and management of the pest.

Recommendations

- Continue the EAB sanitation and treatment program as developed, including removals in creeks and drainages.
- Continue to coordinate infested ash removal program with park districts.
- Add EAB management program to the proposed Technical and Administrative Procedures Manual.

3G. Tree Removal History

Introduction

Trees are an important part of the urban infrastructure, providing many environmental and social benefits to a community. Tree removal is a necessary management task to reduce tree-related risks to public safety, the impact and spread of tree diseases and insect pests, as well as to initiate the renewal of the resource (Photograph 3G-1). Trees may also present an obstacle to the maintenance and improvement of other elements of urban infrastructure such as hardscapes and utilities. The decision to remove a tree should be well defined and balanced among the competing benefits and needs of a community.

Current Management

In the year 2012, the Village removed a total of 1,154 trees; 715 trees were infested with emerald ash borer and 342 trees were removed due to poor health or structural problems with the trees (Table 3G-1). The percentage of the tree population removed (removal rate) in 2012 was 4.8%.

For purposes of identifying current tree removal trends, data was summarized for the last five years. From 2008 through 2012, an average of 719 trees was removed each year, and the removal rate averaged 2.9%. There were two significant events during this period that inflated this removal rate; the implementation of the EAB Management Plan and a significant wind storm in 2011.

Photograph 3G-1. Removal of an ash tree due to emerald ash borer on See Gwun Avenue.

Green ash trees represented the highest percentage of tree removals from 2008 through 2012 (Figure 3G-1). Norway maple represented second highest percentage of the removals followed by American elm, silver maple and crabapple for the five year period.

The diameter distribution of the tree removals reveals that 46% of the removals are in the 13 to 24 inch diameter range followed by trees in the 1-6 inch diameter class (Figure 3G-2). Fifty-six percent of the removals in the 13-24 inch diameter range were ash species.

Among the removals in the 1-6 inch diameter class, linden represented the highest percentage of this group followed closely by crabapple and Japanese tree lilac (Figure 3G-3).

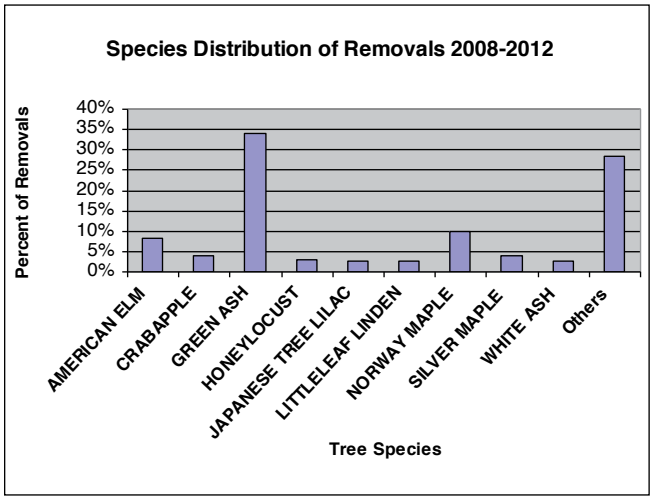


Figure 3G-1. Species distribution of trees removed from 2008 through 2012.

Table 3G-1. Tree removals in 2012 and the reason they were removed.

Reason	# of Trees	% of Removals
EAB	715	62.0%
Health & Structure	342	29.6%
DED	34	2.9%
Other	29	2.5%
Storms	15	1.3%
Utility Repairs	10	0.9%
Damage Loss	8	0.7%
Stand Improvement	1	0.1%
Total	1154	100.0%

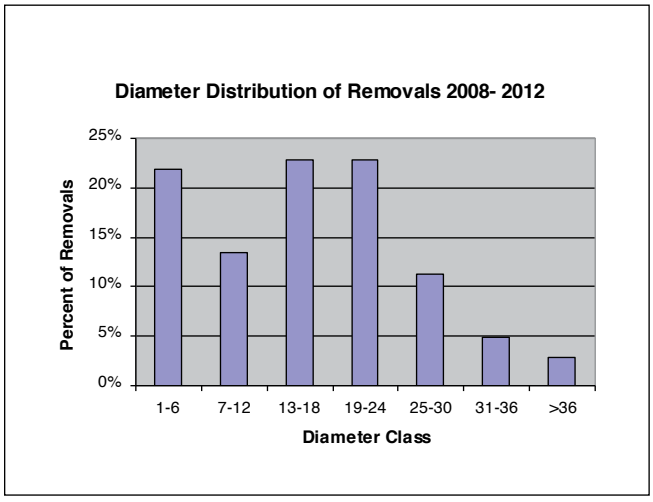


Figure 3G-2. Diameter distribution of tree removals 2008 through 2012.

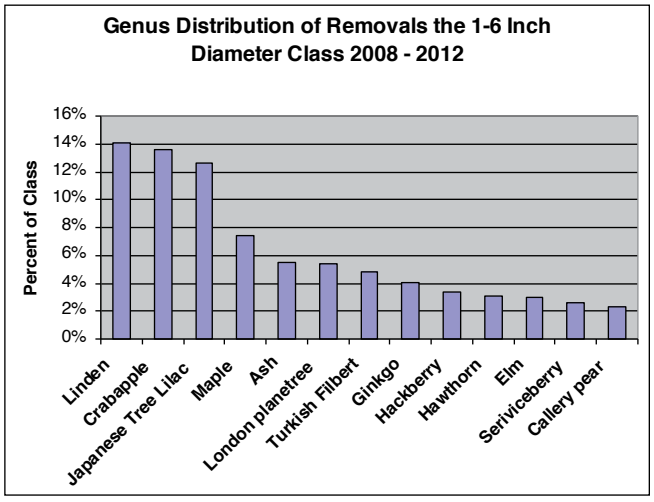


Figure 3G-3. Genus distribution of tree removals in the 1-6 inch diameter class for the period from 2008 through 2012.

The Village's present public tree removal policies are defined in the Village Arboricultural Standards Manual and Chapter 9 of the Village code. The Arboricultural Standards Manual states that it is the Village's policy to "maintain public trees as long as they remain assets to the community, and to remove public trees when they become a liability" (Table 3G-2). It further details very specific conditions that must be present to remove a tree and also conditions under which a tree will not be removed. The Village code (9.711) outlines the permitting process to request the removal of a tree that would not be removed as a result of the Village's normal tree removal policies and operations (Table 3G-3).

Table 3G-2. Summary of Arboricultural Standards Manual language related to public tree removal.

Village Arboricultural Standards Manual - Tree Removal	
Section	**Summary of Language Related to Tree Removal**
Removal Policy	Details policy and specific conditions in which a tree may or may not be removed.
Removal Policy – A	Conditions which automatically warrant tree removal.
Removal Policy – B	Conditions which, by themselves, do not warrant removal.
Removal Policy – C	Conditions where a tree may or may not warrant removal.

Table 3G-3. Summary of the Village code language related to public tree removal.

Village Ordinance - Tree Removal	
Chapter	**Summary of Language Related to Tree Removal**
9.703. G	Defines a goal to "Facilitate the Resolution of Tree Related Conflicts" which includes tree removal.
9.707	The Village is responsible for management of trees on public property. This section details the Village's policy to assume responsibility for boundary trees and by extension the removal of these trees if it is necessary.
9.711	Details it is unlawful to remove any public tree without a permit and the requirements for obtaining a permit.
9.712	Details provisions for the Village to require and remove hazardous trees on private property.
9.713	Details provisions for the Village to require the removal of DED or EAB infested trees on private property.
9.716	Details the requirement for obtaining a permit to work in proximity to a public tree and if work activities result in the removal of a Village tree.

The Village implemented its first tree risk management plan in 1995. The reduction of tree related risk may require the removal of a tree, and in fact this is generally the primary reason for removing a living public tree in the urban environment. Specific details regarding the tree risk management plan are found in Section 3H. The risk plan details the inspection process used to evaluate a tree and details conditions that may be present that lead to a tree removal decision (Photograph 3G-2).

Photograph 3G-2. Defective Norway maple that was identified as part of the tree risk management program. The maple was scheduled for removal due to trunk decay and other defects.

Tree removal policies specific to the management of Dutch elm disease and emerald ash borer are detailed in the Village code. Tree removal polices regarding these management programs will not be presented here; details about these programs are presented in Sections 3E and 3F.

Historical Summary

The 1970s were dominated by the removal of Dutch elm diseased American elms. The tree removal rate for period between 1972 and 1993 was between 1 and 2 percent annually (ACRT 1993). The policies governing the removal of trees were detailed in the Village ordinance.The 1993 management plan recommended the adoption of more specific removal policies to address the many competing requests from the public to remove public trees.

From 1993 to 2012, the Village removed an average of 421 trees per year, excluding DED and EAB removals, with a high of 663 in 2007 and a low of 280 in 2005 (Figure 3G-4).

The Village groups the reasons trees are removed into 12 categories describing the primary factor in the removal decision. A table summarizing numbers of trees removed and reasons for the period from 1993 to 2012 can be found in Appendix 3G-1. For the purposes of presentation and analysis, the removal reasons were further collapsed into seven categories (Figure 3G-5).

Health and tree structure problems (Figure 3G-5) were the primarily reason for tree removal from 1993 to 2012, followed by Dutch elm disease and emerald ash borer. The arrival of emerald ash borer and the implementation of the Village's EAB Management Plan in 2008 marked the beginning of the removal of ash trees in the Village. Storm damage was the second most frequent reason. There were significant storm events in 1998, 2000, 2007 and 2011 (Photograph 3G-3). A high wind event in 2007 and a tornado in 2011 claimed over 300 trees in each of these events.

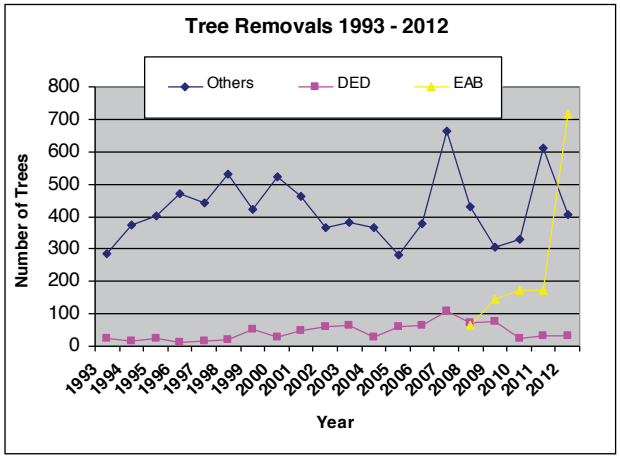


Figure 3G-4. Tree removals 1993 to 2012.

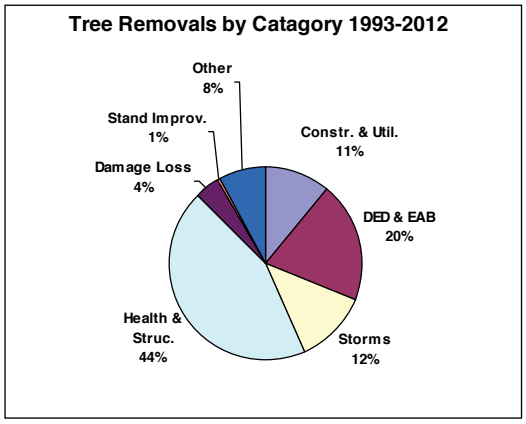


Figure 3G-5. The primary reasons trees were removed from 1993 through 2012.

Photograph 3G-3. Damage caused by a wind storm in August of 2007.

Conflicts with construction activities and repairs to utilities represented the third most frequent reason for removing a tree (Photograph 3G-4). Trees damaged by automobile accidents and vandals, and trees removed to improve spacing between trees represented 4% and 1% of the reasons trees were removed.

Green ash, American elm and Norway maple represented the highest percentage of tree removals from 1993 through 2012 (Figure 3G-6).

Trees in the 13-24 inch diameter range represented 46% of the tree removals over the last 20 years (Figure 3G-7), and this figure is approximately 7% over the population distribution of trees in this diameter range (Section 4A). The percentage of the tree removals 31 inches or larger in diameter is approximately 4% above the representation of these trees in the population.These figures indicate that trees in these diameter ranges are being removed at a higher rate than their respective representation in the population.

Photograph 3G-4. Tree root damage as a result of construction activities on Pine St.

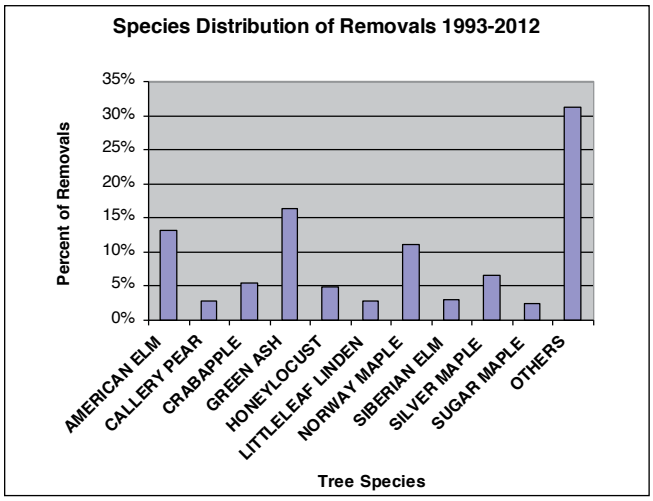


Figure 3G-6. Tree species distribution of tree removals from 1998 through 2012.

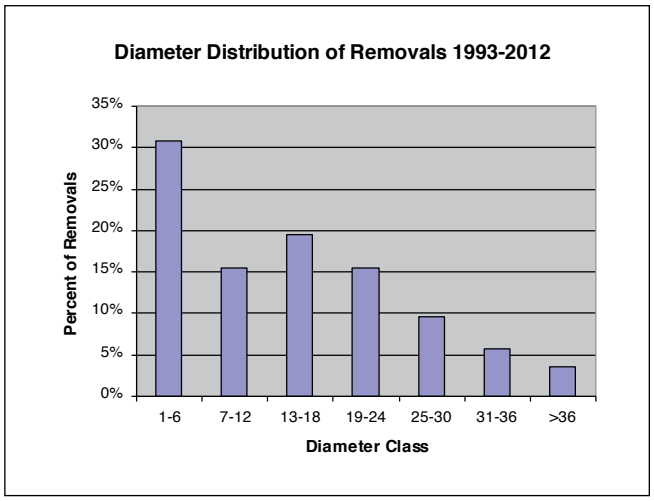


Figure 3G-7. Diameter distribution of tree removals from 1993 through 2012.

There were significant updates in the years 1993 through 2012 in the policies that guide tree removal decisions. In 1995, the Tree Risk Assessment Report prepared by Natural Path Urban Forestry Consultants offered numerous recommendations regarding tree risk assessment and removal that were implemented as part of the Village's practices and policies regarding tree removal decision making. In 1997, the Village adopted the Arboricultural Standards Manual, and in 2002 and 2010 the Village tree code was revised and both these included tree removal policy updates based on the recommendations in the 1993 Management Plan. In 2002, a second study was completed to review the Village's tree risk management program and make recommendations for the improvement of the program (Natural Path Urban Forestry Consultants 2002). The study produced numerous findings including the recommendation of 12 tree risk management goals and action steps, the details of which can be found in Section 3H.

Discussion

The annual tree removal rate prior to 1993 was 1 to 2% (ACRT 1993). The removal rates of 4.9% in 2012 and 2.9% for the 5 year period of 2008 through 2012 are higher than the 1 to 2% previously recorded in the Village. A closer examination of the tree removals completed in 2012 does provide some insight into trends in tree removal. Losses due to DED, EAB and significant storm events have clearly inflated the removal rates, a trend that is likely to continue in the short term until the impacts of EAB and DED subside as host tree populations are removed. Storm damage impacts will continue to occur sporadically and result in periodic losses to Village trees. These losses are for the most part unavoidable, except that regular maintenance can reduce the impact of storms.

The diameter distribution of the tree removals reveals a high loss of young trees. Recent droughts most certainly have contributed to these losses, suggesting a more aggressive post planting and young tree watering program should be explored to reduce mortality of recently planted trees.

The removal of a public tree, although a necessary management practice, does mark the loss of a valuable community asset. Therefore, the policies and procedures that guide the tree removal decision process should be clearly defined, easily referenced in public and Forestry procedures publications and monitored closely by Village Forestry staff. This has generally been accomplished by Forestry/Grounds staff.

The removal of trees due to construction activities or utility improvements is claiming significant numbers of trees each year (11% in 2012). Work should continue to reduce the removal of mature and healthy trees through balancing the needs of the infrastructure improvements and the benefits these trees provide to the community. Of equal importance is continuing to work to reduce damages to trees caused by these activities.

Increasing the longevity of the parkway tree population has many benefits (Section 4D and 4H). The Village collects a wealth of management information through periodic inspections, the tree inventory program, as well as categorizing the reasons trees are removed. A closer examination of these data may provide more useful information to identify and act on trends or issues that are driving the tree removal rates. For example, the tree removal category “Other” represents 8% of the trees removed from 1993 through 2012 and does not provide any information regarding the removal decision; we recommend it be eliminated. “Health and Structure” represents 44% of the removal reasons, however, 89% of the parkway trees are identified in the inventory as in Very Good or Excellent condition and only 29 trees are identified as in Fair condition (Section 4C), suggesting closer scrutiny of tree condition ratings is needed.

Increasing tree longevity is one of the most challenging aspects of urban forest management, but without further analysis of specific factors contributing to removals, reducing removal rates and increasing tree longevity in the Village will be difficult.

Recommendations

- Tree removal specifications should be added to the Arboricultural Standards Manual.
- Tree removal evaluation methodologies should be detailed in a Technical and Administrative Procedures Manual.
- Tree removal operational and administrative procedures should be detailed in a Technical and Administrative Procedures Manual.
- Explore a more aggressive post planting and young tree watering and maintenance program.
- Eliminate the use of “Other” removal category and examine all the management data the Village collects regarding tree removal decisions, tree condition, problems, and evaluate the relationship among these data to develop management strategies to reduce the removal rate.
- Continue efforts to eliminate damage/removal of healthy trees due to construction activities.

3H. Tree Risk Management

Introduction

Trees, despite the numerous benefits they provide to our communities, pose a certain degree of risk to people and property. Branches falling from a tree or the failure of an entire tree can cause property damage, injure or even kill people. Fortunately, such incidents are rare, particularly when trees are well maintained through regular inspection and pruning. In fact, the risk of death from a tree-related failure is less than 1 in 30 million (Schmidlin 2009).

Tree risk management is the application of policies, procedures, and practices to identify, evaluate, mitigate, monitor, and communicate tree risk (Smiley et al. 2011). Tree risk is the result of the combination of the likelihood of an event (usually failure of a tree or tree part striking or impacting a target such as people or property) and the severity of consequences. The management of risk for trees in urban areas has been the topic of considerable interest and research recently, culminating in the publication of two guiding documents, a new standard for Tree Risk Assessment (ANSI 2011), and Best Management Practices for Tree Risk Assessment by the International Society of Arboriculture (Smiley et al. 2011).

Tree risk management has its foundation based in legal duties of municipalities to provide reasonable protection to citizens from foreseeable harm from trees. In addition to the regular maintenance and inspection of their urban forest resource, many communities in Illinois, including Mount Prospect, have programs specifically dedicated to tree risk management (Natural Path Urban Forestry Consultants, Inc. 2002). These programs provide an important function in addition to risk management because they carefully weigh the risk of the urban resource against the numerous benefits provided to citizens by the same trees.

All trees pose some risk, as many tree failures cannot be predicted and tree failures under storm conditions are unavoidable. Despite this, it is generally accepted that the benefits greatly outweigh the risks, and the level of risk that is acceptable is determined by the local officials and the people of a community.

Current Management

The Village maintains a dedicated, detailed tree risk management program. The program is guided by a tree risk management task list and calendar supported by annual inspection, training, mitigation of known risk trees, a risk management plan, and necessary administrative policies and ordinances. The program uses the methods, and a form to document contractor field observations and recommendations as provided in “The Photographic Guide to the Evaluation of Hazard Trees in Urban Areas” (Matheny and Clark 1994). Key elements of the risk management program are:

- Annual inspection of trees meeting defined criteria on a 5-year rotation in conjunction with the pruning rotation for Village (Photograph 3H-1a and 1b).
    - Initial inventory inspection of trees by a trained intern with follow-up detailed inspection by contractual consultants and Forestry staff
    - Additional inspection using an aerial lift and decay detecting drill as deemed necessary by the contractor conducting risk assessments
- Annual in-house tree risk training of forestry staff and interns through documented meetings and a dedicated, documented tree task list (Photograph 3H-1a and 1b).
- Clear identification and tracking of public and private tree boundary trees as defined in policy documents
- Evaluation and mitigation of identified risks through annual pruning and removal contracts
- Annual inspection and maintenance of trees with support cables installed in them.

Photograph 3H-1a and 1b. Left: The Village has done extensive training on tree risk evaluation for Forestry staff and crews. Right: Close evaluation and testing of potential risk trees is conducted annually by the Village.The tree is being tested for decay using a Resistograph™

Trees included in the annual risk inspections are selected based on tree species known to frequently pose increased risk of failure, size, presence of multiple trunks, and condition (condition rating of 5 or less). Tree risk assessments are also conducted when service requests from citizens or visual assessments by Forestry staff indicate their need.

The Village does not prioritize maintenance (removals, pruning, or cabling) identified in the annual risk assessments; all risk trees identified in the program are considered a priority. Risk mitigation work is completed 1-3 months after trees are identified in the program. Citizens are notified of the need for removal of trees identified in the risk assessment program by a letter from the Village.

Cables are installed in some parkway trees as a means to increase support for weak branch unions or other defects. Currently there are 199 trees with an average diameter of 29.5 inches that have cables. These trees are inspected annually and cables are upgraded as needed.

Historical Summary

Annual tree risk assessments have been conducted by the Village since 1994 when a grant from the State was received to develop a risk assessment program. A tree risk management plan was completed in 1995 by Natural Path Urban Forestry Consultants, Inc. The plan included training of Forestry staff and assessment of 286 large parkway trees. As a result of that assessment, 20 trees were recommended for pruning, 76 trees for cabling or cabling inspection, and 20 trees for removal. An additional 108 trees were identified for annual inspection. From 1994 through 2000, annual risk assessments were conducted on approximately 300 “high risk” trees over 24 inches in diameter. This portion of the tree risk management program was deemed Phase 1 and 2124 trees were inspected in the 6 year period it was operative.

In 2002, the Village commissioned a second, detailed "Tree Risk Assessment and Management Plan" from Natural Path Urban Forestry Consultants, Inc. The plan initiated "Phase II" of the risk management program and defined a list of 12 goals that were subsequently acted on and implemented by January 2003. The goals included:

- Develop and approve a Tree Risk Management Policy statement
- Establish an in-house tree risk working group
- Establish a tree risk manual
- Scale back current assessment and integrate into current inventory software program
- Maintain current policy of private property trees
- Refine current policy on boundary trees
- Annual staff training
- Define a diameter measurement policy on multi-stemmed trees
- Expand cable inspection policy
- Refine condition assessment
- Expand parkway tree protection efforts

As part of those goals, the Village has completed a documented "Risk Management Task Calendar" from 2003 to the present (Appendix Section 3H-1). From 2002-2006, 726 trees were inspected in the program. From 2006 to present, the tree risk inspection has followed the five year pruning rotation program where trees are inspected prior to commencement of pruning. Annually, approximately 80 trees are included in the updated Phase II program.

The Village has installed cables in some trees to provide structural support to weak stem attachments or other defects. Figure 3H-1 presents the number of trees where support cables were installed or upgraded.

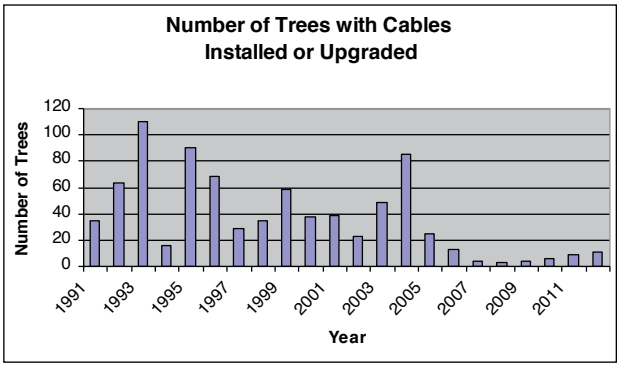


Figure 3H-1. Number of trees with cables installed or upgraded by year since 1991.

Discussion

The risk management plan is exemplary, particularly when compared to other communities in the area. However, the publication of new risk management standards indicates the Village should consider adopting the new standards and practices to their current program. Because the current program is well developed and documented, most of the update will be for terminology rather than approach. Use of the new "Tree Risk Form" (Dunster et al. 2013) and requirement of consultants to be trained or versed in its use may be required.

The risk management program is conducted based on five-year inspections during the annual inventory update process, requests from the public, and observation of trees by Forestry staff. The Village may consider annual driving or windshield inspection of the remaining trees in the Village to identify any obvious changes in tree condition or structure. This would insure that trees impacted by storms, or drought that are not in the current risk inspection rotation were evaluated in the interim.

Recommendations

- Integrate the new ANSI Tree Risk standard and ISA Best Management practices into the current risk program.
- Once the TRAQ program (managed by ISA) is fully running and widely available, require consultants conducting risk assessments to be Tree Risk Assessment Qualified (TRAQ), or demonstrate proficiency in use of the new tree risk form from previous projects.
- Add an annual or biannual windshield inspection of all trees in the Village for obvious health or structural conditions that would prompt inspection under the current risk program.
- Add the risk management program to the proposed Technical and Administrative Procedures Manual
- Resume annual tree risk meetings.

3I. Public Outreach and Program Accomplishments

Introduction

This document is a study of trees, the urban forest, and its management in Mount Prospect. However, managing the urban forest has an equally or perhaps more important human element. The primary goal of an urban forestry program is to make a community a more attractive and healthy place for people to visit, live, and work.

Photograph 3I-1. Arbor Day 2013 ceremony at Lions Park School. An Arbor Day ceremony is one public outreach program the Village hosts to educate the public about the benefits of trees and Mount Prospect's urban forestry program.

It is common to take for granted the services our municipalities perform and the benefits they provide in our daily lives. It is a requisite responsibility of government to inform its constituents on the quality and level of services they receive for their tax dollars. In addition, through public outreach and involving the residents of a community in the delivery of these services, the public is more likely to support the municipality's efforts on a long term basis. Robert W. Miller (1988), author of Urban Forestry, wrote; "Communities where forestry continued to do well were those communities where good management was supported by a long-term program of maintaining public support through information and education programs".

Parkway trees are literally in the front yard of Village residents. As a result, any forestry work activities performed on parkway trees may disrupt the daily activities of pedestrians, motorists, and other residents of the street. These activities can lead to a source of complaints even if the activity is performed properly. A proactive public notification program will help keep these complaints to a minimum.

Public outreach is accomplished through a number of venues including public education and notification as well as the use of volunteer programs (Photograph 3I-1).

Current Management

The Village's public outreach program can be divided into two objectives: public notification and public education. These objectives are accomplished using various media including documents and publications, press and electronic media, and public events. A summary of the public outreach efforts completed by the Forestry/Grounds Division and the media used is provided in Table 3I-1.

Table 3I-1. Village Forestry public outreach efforts and type of media used.

Media	Description
Annual Arbor Day Ceremony	Annual public tree planting ceremony celebrating the benefits and value trees add to the community.
Annual Public Works Open House	Meet & Greet forestry staff and learn about Forestry/Grounds services and activities.
Brochures	Trees of Mount Prospect, Dutch Elm Disease, Emerald Ash Borer
Cable TV MPTV 17	Informational and educational shows on current urban forest management events.
Direct Mailings	Post Planting Tree Care, Tree Watering Request Postcard, EAB/Woodpecker Damage
Door Hangers/Information Cards	EAB Ash Inspection, Post Planting Tree Care, Service Request Inspection, Tree Trimming Request Inspection, Neighborhood Tree Trimming Announcement
Information Booths	Informational and educational displays at public events on current urban forest management events.
Presentations	Forestry staff will provide presentations on current events at the request of community groups.
Press Releases	Periodic press releases on current urban forest management events and forestry work activities.
Seminars	Educational seminars for the public on timely arboricultural practices.
Village Newsletter	Periodic articles on current urban forest management events and forestry work activities.
Village Website	Forestry/Grounds service information as well as announcements of planned Forestry activities.

Public notification includes notification of the public of ongoing forestry work activities as well as informing them of the quality and level of service they can expect. The Village details the level and quality of services they can expect through policy documents such as the Village code and the Arboricultural Standards Manual (Section 3A).

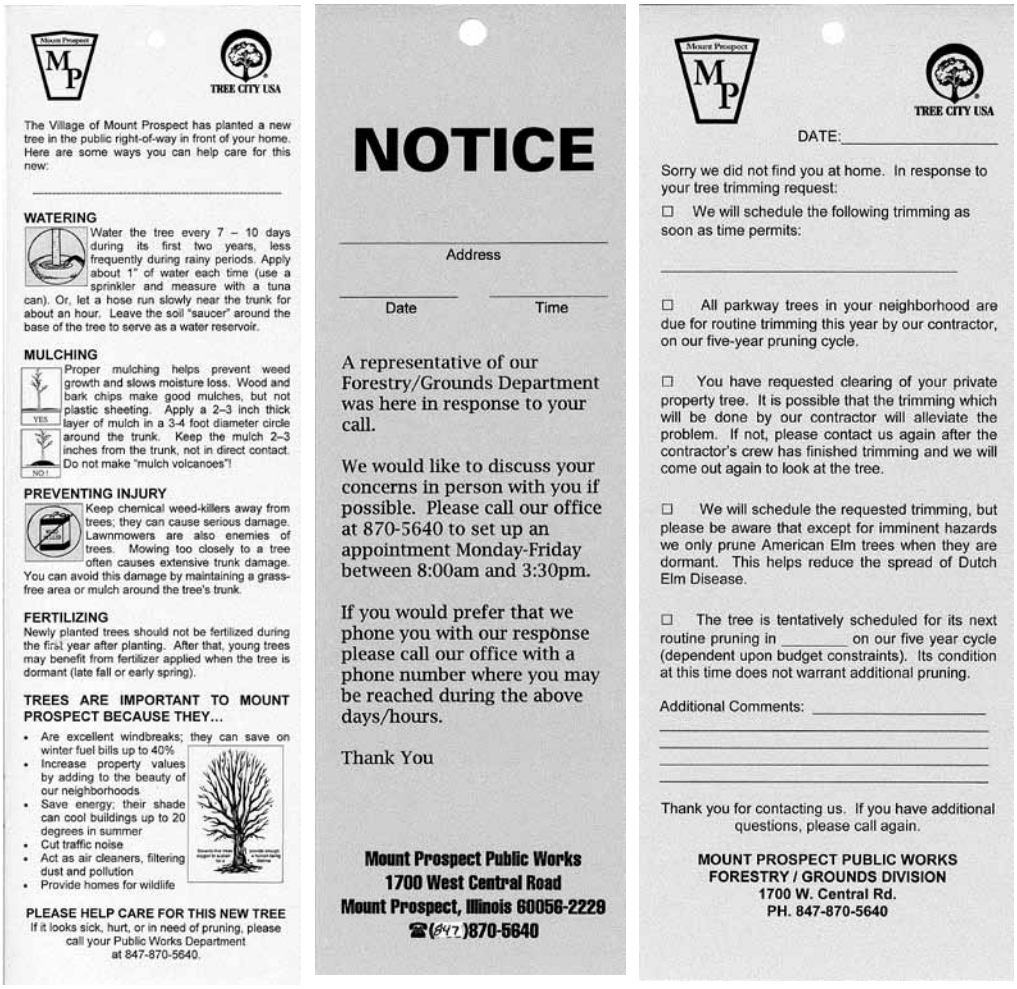
Forestry notifies residents and the public in general of scheduled and unscheduled forestry activities through a variety of media (Table 3I-1).These include press releases, various publications, informational flyers, direct mailings as well as informational and educational displays at public events. For example, forestry has numerous informational cards that are left at a resident's home after a visit informing them that they were there (Figure 3I-1). Many of them provide educational information as well.

Public education is the primary component of the Village's public outreach program. The Village offers numerous publications, presentations, public information displays, and seminars regarding timely arboricultural and urban forest management issues, as well as tree care in general (Photograph 3I-2). For example, in April of 2013 Forestry hosted a seminar to educate property owners about treatment options for emerald ash borer and tree planting which was posted on the Village website (Figure 3I-2).

The Village has received numerous awards and recognitions for its urban forest management program and public outreach including the Tree City USA designation each year since 1985 as well as 11 Growth Awards from the National

Table 3I-1. Public notification of forestry activities.

Public Notification	**Work Activity Notification**	**Service Delivery Policy**
Publications & Documents	Informational cards, Direct mailings including letters and postcards	Brochures, Village Code & the Arboricultural Standards Manual
Press & Electronic Media	Press Releases, Village Newsletter & Website	Village Website & Newsletter, MP TV 17
Public Events	Informational Booths, Presentations, Seminars	Informational Booths, Presentations, Seminars



TREE CITY USA

The Village of Mount Prospect has planted a new tree in the public right-of-way in front of your home. Here are some ways you can help care for this new:

WATERING

Water the tree every 7 – 10 days during its first two years, less frequently during rainy periods. Apply about 1" of water each time (use a sprinkler and measure with a tuna can). Or, let a hose run slowly near the trunk for about an hour. Leave the soil "saucer" around the base of the tree to serve as a water reservoir.

MULCHING

Proper mulching helps prevent weed growth and slows moisture loss. Wood and bark chips make good mulches, but not plastic sheeting. Apply a 2–3 inch thick layer of mulch in a 3-4 foot diameter circle around the trunk. Keep the mulch 2–3 inches from the trunk, not in direct contact. Do not make "mulch volcanoes"!

YES

NO!

PREVENTING INJURY

Keep chemical weed-killers away from trees; they can cause serious damage. Lawnmowers are also enemies of trees. Mowing too closely to a tree often causes extensive trunk damage. You can avoid this damage by maintaining a grass-free area or mulch around the tree's trunk.

FERTILIZING

Newly planted trees should not be fertilized during the first year after planting. After that, young trees may benefit from fertilizer applied when the tree is dormant (late fall or early spring).

TREES ARE IMPORTANT TO MOUNT PROSPECT BECAUSE THEY...

- Are excellent windbreaks; they can save on winter fuel bills up to 40%
- Increase property values by adding to the beauty of our neighborhoods
- Save energy; their shade can cool buildings up to 20 degrees in summer
- Cut traffic noise
- Act as air cleaners, filtering dust and pollution
- Provide homes for wildlife

PLEASE HELP CARE FOR THIS NEW TREE

If it looks sick, hurt, or in need of pruning, please call your Public Works Department at 847-870-5640.

NOTICE

Address

Date Time

A representative of our Forestry/Grounds Department was here in response to your call.

We would like to discuss your concerns in person with you if possible. Please call our office at 870-5640 to set up an appointment Monday-Friday between 8:00am and 3:30pm.

If you would prefer that we phone you with our response please call our office with a phone number where you may be reached during the above days/hours.

Thank You

Mount Prospect Public Works
1700 West Central Road
Mount Prospect, Illinois 60056-2229
☎(847)870-5640

TREE CITY USA

DATE:_____

Sorry we did not find you at home. In response to your tree trimming request:

☐ We will schedule the following trimming as soon as time permits:

_____

☐ All parkway trees in your neighborhood are due for routine trimming this year by our contractor, on our five-year pruning cycle.

☐ You have requested clearing of your private property tree. It is possible that the trimming which will be done by our contractor will alleviate the problem. If not, please contact us again after the contractor's crew has finished trimming and we will come out again to look at the tree.

☐ We will schedule the requested trimming, but please be aware that except for imminent hazards we only prune American Elm trees when they are dormant. This helps reduce the spread of Dutch Elm Disease.

☐ The tree is tentatively scheduled for its next routine pruning in _____ on our five year cycle (dependent upon budget constraints). Its condition at this time does not warrant additional pruning.

Additional Comments: _____

Thank you for contacting us. If you have additional questions, please call again.

MOUNT PROSPECT PUBLIC WORKS
FORESTRY / GROUNDS DIVISION
1700 W. Central Rd.
PH. 847-870-5640

Figure 3I-1. Examples of public notification materials. Left: Young tree care instruction card. Center: Representative has here today. Right: Trimming request card

Figure 3I-2. Forestry education seminar posted on the Village website.

Photograph 3I-2. Rachel Toeppen of the Garden Club of Mount Prospect and Forestry/Grounds Staff Laura Fowle distribute planting recommendations at community event.

Arbor Day Foundation (Visit: http://www.arborday.org/programs/treeCityUSA/index-become.cfm). In addition, the Village urban forestry program has received the following awards and recognitions:

- 1989 – Lady Bird Johnson Award from National Arbor Day Foundation for railroad right-of-way beautification efforts.
- 1992- Award of Merit from Illinois Chapter of ASLA for railroad right of way beautification
- 1993 - Award for “Top Local Government in Northern Illinois” from Governor Jim Edgar's Conference on Urban Forestry.
- 1995-2009 - Society of Municipal Arborists Accreditation - The urban forestry professional arm of the International Society of Arboriculture certified that the Village of Mount Prospect met the minimum requirements of a good urban forestry program.
- 1998 – “Exceptional Performance in Journalism” Award from the Chicago Metropolitan Chapter of the American Public Works Association for the "Trees of Mount Prospect" booklet.
- 2000 - Urban Forestry Public Education Award from the Illinois Department of Natural Resources for educational displays at the Tree City USA awards ceremony.
- 2003 – “Beautify Mount Prospect” Shining Star Award from Mount Prospect Special Events Commission jointly presented to Village staff and Garden Club of Mount Prospect for Moehling Park development.
- 2007-2009 - Staff participated extensively in the effort to educate the public, influence state/federal funding and regulations, inspect declining ash trees and develop regional Best Practices regarding the Emerald Ash Borer.

Discussion

As was presented, there are two objectives of an outreach program; public notification and education. The Village has all of the elements required to fulfill these objectives and has proven its competence in achieving these objectives as evidenced by the numerous awards and recognitions the urban forestry program has received.

Photograph 3I-3. Forestry/Grounds staff David Hull providing information on the 2012 drought as part of an open house display.

There are steps that can be taken to improve these efforts. A visitor to the Village website will find it difficult to find the Forestry/Grounds activity page and information on the services the Division provides. There is a wealth of informative publications, both informational and educational, on the website. In addition, there are specific well defined education programs such as the Arbor Day ceremony, educational seminars and the annual Public Works open house (Photograph 3I-3 and 3I-4). However, it appears these efforts are developed as needed in reaction to a current event or challenge and we believe the Village could enhance their efforts by developing a comprehensive public outreach plan. This plan simply would require compiling all various media the Village uses as well as those that are underutilized, defining objectives, and confirming efforts are being coordinated to reach their full potential.

Recommendations

- Develop a comprehensive public outreach plan that organizes the work notification and educational needs of the program and publish the plan as an operational document.
- Explore existing electronic media as well as social media for use as a tool to enhance public notification and public education.
- Review various public notification publications the Villages uses, consolidate and publish new pieces to fulfill the needs identified in the public outreach plan.
- Revise the Village website to make it easier for a visitor to find the Forestry/Grounds page and present all of the Forestry services and policies.
- Update and distribute widely the revised "Trees of Mount Prospect" working with the Garden Club of Mount Prospect, the Village's citizen advisory group.

Photograph 3I-4. Public Works Department 2012 open house. Forestry/Grounds created several displays for the event.

- Determine ways to make recognition of the Village's tree heritage an important part of the village's 100th anniversary in 2017.
- Plan additional public presentations about Forestry/Grounds programs.

3J. Service Requests

Introduction

Village government provides many services for the residents and visitors of Mount Prospect. Snow plowing, street maintenance, refuse collection and the delivery of potable water are relied upon for the daily and smooth functioning of life in the Village. The management of parkway trees is another activity that can affect the daily lives of residents because these trees are located adjacent to a resident's property within the Village right-of-way.

Periodically, a resident may have a concern or problem with a Village parkway tree that requires an inspection by the Village forestry staff. This service request may result in nothing more than an inspection and discussion with the caller or it may require tree pruning, removal or planting a tree to resolve the request.

Responding to and resolving service requests is one of the more costly services the Village provides. It requires Village staff to travel to the site for an inspection and to provide resolution of the request. It may also require a forestry crew and equipment to travel to the site to perform work to resolve the request. Preventative scheduled tree maintenance and inspections help to keep requests for service to a minimum. However, requests for service are a required and predictable forestry activity. A study of the impact of a rotational preventative pruning program on the number of service requests received per year revealed that a preventative pruning program resulted in 7.8 fewer requests per 1,000 trees per year (Luley et al. 2002).

Periodic storm events, such as summer thunder storms and winter ice storms, can cause significant tree damage and a high demand for services over a very short period of time. Service requests during storm events require different methods and approaches to record and resolve under emergency situations (Section 3J). Resolution of service requests from the public, no matter what their source, is often used by citizens as a primary judgment of their satisfaction with local government.

Current Management

In 2012, Forestry responded to 2,081 service requests, and projects an estimated 2,500 for 2013 (FY 2013 Budget). Forestry/Grounds Division requests for service are assigned by office staff into one of 24 different request codes based on the nature of the caller's request (Table 3J-1). The most common request types recorded in 2012 were "Tree Planting" (355 requests) followed by "Tree Branch Pickup" (275 requests).

Table 3J-1. Forestry service requests by year and request code from 2003 through 2012.

Request Type	2003	2004	2005	2006	2007	2008	2009*	2010	2011	2012	10 Year Total
F300 (Hanger)	787	859	627	727	726	254	118	191	500	157	4,946
F301 (Parkway Damage)	142	178	173	270	215	225	10	111	128	216	1,668
F302 (Tree Trimming Request)	437	319	310	365	403	282	169	220	166	212	2,883
F303 (Tree Planting)	137	96	183	268	263	499	210	63	277	355	2,351
F304 (Tree Removal)	328	331	284	350	664	423	397	141	94	56	3,068
F305 (Sight/ Physical Obst.)	64	45	63	81	33	38	60	75	27	34	520
F306 (Root/ Stump Removal)	67	43	37	37	48	56	36	29	31	44	428
F307 (Sick/ Damaged Tree)	407	386	310	374	340	310	286	264	288	267	3,232
F308 (Mowing/ Weed Control Public Property)	8	18	7	2	2	10	19	13	8	6	93
F309 (Tree Leaning)	55	35	16	13	27	32	36	5	12	17	248
F310 (Debris Pickup)	51	16	9	9	8	6	3	5	4	7	118
F311 (Tree Branch Pickup)	385	196	147	326	687	350	209	466	378	275	3,419
F312 (Shopping Carts)	7	2	2	4	3	5	4	2	1	1	31
F313 (Tree Trimming Complaint)	21	26	28	5	7	11	21	20	9	29	177
F314 (Tree Root Inspection)	78	128	210	127	137	120	94	118	78	69	1,159
F315 (Info Public Program)	83	12	8	8	1	1	0	0	0	0	113
F316 (Info Private Tree/Lawn Care)	78	61	44	60	59	92	49	41	22	30	536
F317 (Other)	393	307	280	357	293	191	228	157	148	133	2,487
F318 (Private DED Tree)	57	47	70	82	84	89	85	49	18	38	619
F319 (Creek Vegetation)	18	12	11	10	16	13	9	4	8	4	105
F320 (Emerald Ash Borer Not Private Property Infestation)	0	0	0	132	58	139	105	43	83	102	662
F321 (Gypsy Moth)	0	0	0	0	0	1	99	116	17	9	242
F322 (Emerald Ash Borer Private Property Infestation)	0	0	0	0	0	0	0	0	0	20	20
Totals:	3,603	3,117	2,819	3,607	4,074	3,147	2,247	2,133	2,297	2,081	29,125

The Village's Service Request policy and procedures are found in the Forestry Service Request Procedures Manual. The manual details the procedures on how staff should respond to the request and requester, as well as the administrative processes to record the request and the Village's response.

Historical Summary

From 1979 through 1993, Forestry responded to over 2,000 tree-related service requests per year (ACRT 1993). Requests from the public were typically responded to within a week either through direct contact with Forestry staff, a letter, or via phone call. During this period, service requests related to storms could number as many as 300 in several days.

In 2009, Public Works changed from using Tree Manager® to Hansen® to manage their tree inventory as well as log requests for service. With that change, the policy regarding how service requests were recorded was also changed. Prior to 2009, the service request records included work that may have been identified by Village staff in addition to those received from the public. Starting in 2010, work identified by Village staff was recorded in the Village's work order system and not logged as a service request.

In light of this accounting and policy change, publishing service request data for the period from 1993 to 2012 and comparing it to the period from 1979 thru 1993 was not possible. However, the period from 2010 thru 2012 can be evaluated to provide a benchmark for future analysis, and to provide a summary of data from the last 10 years.

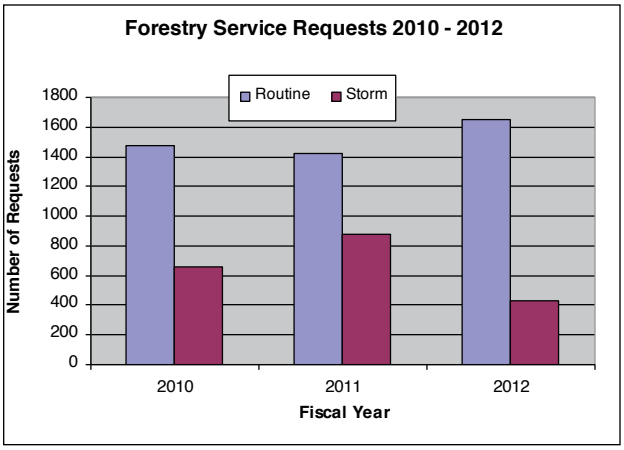


Figure 3J-1. Routine versus storm related service requests 2010-2012.

Service requests related to storm events have resulted in a significant demand for services over the last 3 years (Figure 3J-1). Forestry has responded to an average of 656 storm related calls per year with a high of 878 in 2011.

For the 10 year period from 2003 through 2012, Forestry/Grounds averaged 2,915 service requests per year (Table 3J-1). The most common service request code is F300 (Hanger) numbering nearly 5,000 and exceeding all other categories by over 1,500 requests. The next highest group of requests (3,000 to 4,000 range for the 10 year period) includes F311 (Branch Pickup), F307 (Sick/Damaged Tree) and F304 (Tree Removal). Three request codes fall in the 2,000 to 3,000 range including; F302 (Tree Trimming), F317 (Other) and F303 (Tree Planting) from high to low. Requests numbering 1,000 to 2,000 include F301 (Parkway Damage) and F314 (Tree Root Inspection). The next grouping of request codes numbering between 500 and 1,000 includes F320 (Emerald Ash Borer not Private Property Infestation), F318 (Private DED), F316 (Info Private Tree and Lawn Care) and F305 (Sight/Physical Obstruction). The 10 remaining request codes numbered less than 500 beginning with F306 (Stump/Root Removal) numbering 428 and ending with the least frequent request code F322 (Emerald Ash Borer Private Property).

Discussion

The Forestry/Grounds Division is handling a large number of service requests per year from the public, although the number of requests decreased when the new service request policy was implemented in 2009. Mount Prospect's service request demand is high (10 year average; 125 requests per 1000 trees) when compared to a published study of street tree service requests in Rochester, NY (Luley et al. 2002) where the service requests averaged 32 requests per 1000 trees.

The use of 24 service request codes is very numerous as compared with other communities. The Village is using these codes to learn information about what callers are requesting or what work needs to be performed. The use of service request code called "other" does not provide any useful information and should be eliminated. It was the 6th most frequent code used and accounted for 8.5% of the documented service requests.

The Service Request Manual is very detailed itemizing all of the possible outcomes of a service request. It also details administrative and policy information that is maintained in other documents. Citing this information in this document will require updating if these policies change. The manual could be stream-lined by addressing procedures specifically related to resolving a request for service. In addition, there are no guidelines for response timelines to provide service or complete service request work to the public. Prioritizing requests that will require work is a method to help with scheduling and therefore develop response times.

Recommendations

- Eliminate or greatly reduce the use of the Service Code "Other".
- Develop response time policies for inspecting and completing work relative to a service request including prioritizing service requests if it is necessary.
- Revise the Service Request Manual to focus on policies and procedures specifically related to responding and resolving a service request.

3K. Storm Mitigation

Introduction

Planning and implementing storm damage mitigation is an essential part of urban forest management, as storm damage to trees is a major cause of disruption to electrical, communication, travel, and emergency services. Even well maintained and healthy urban trees will be damaged when forces imposed by winds, flowing water, ice or snow loads exceed the strength of branches, trunks or roots and soil. Therefore, urban forest management programs must be prepared to respond to catastrophic weather events that inflict damage to the urban tree resource.

Photograph 3K-1. Storm damage to parkway trees in the Village. Storm damage has become more frequent in the Village and surrounding area in the last decade.

Storm events may be localized, such as microbursts from high winds, or regional or larger scale. In any storm event, pre-storm preparation, in-storm and post storm response, and post storm cleanup requires coordination of multiple village departments and agencies. It may also require assistance from other local communities, or state and federal agencies such as the Federal Emergency Management Agency (FEMA). Reimbursement of storm related damages may be provided if the event is declared a Federal Emergency. Reimbursement, however, requires accurate and documented accounting of storm damage costs. FEMA reimbursements typically do not support replacement planting or pruning to industry standards, and these costs are usually borne by the managing municipality.

Considerable progress has been made in helping urban forestry programs (Burban and Andressen 1994: i-Tree Storm (i-tree.com)), and municipalities (FEMA 2007a; FEMA 2007b) plan and implement storm damage response programs. The need for comprehensive storm damage planning has been highlighted recently by several large-scale devastating wind storm events recently in the Midwest and Northeast (Photograph 3K-1). The massive impact of these events, both financially and to urban trees and infrastructure, and the apparent increased potential for more frequent storms of similar magnitude as a result of climate change, place storm management at the forefront of urban forest management needs.

Current Management

In the past, Forestry staff has responded to several major storms, with one as recently as July 2013, using a series of written procedures to handle storm damage assessment and cleanup. The procedures are identified in a number of critical storm mitigation documents that can roughly be divided by pre-storm planning and post storm planning implementation.

Currently, the Forestry/Grounds Division Superintendent is working to compile this information into a single storm damage planning and management document for the Village. An outline for this document, which is critical to planning for storm events and efficient response after major storms, is provided below (developed by Sandy Clark, Forestry/Grounds Superintendent):

I. Introduction
- A. Four Elements of Emergency Management
- B. Relationship to Village of Mount Prospect Emergency Response Plan
- C. Annual Plan Review

II. Mitigation
- A. Tree Planting Considerations
- B. Tree Risk Management
- C. Tree Removal Program
- D. Tree Trimming Program
- E. Protection of Trees from Construction Injury

III. Pre-Storm Planning
- A. Training
  1. Forestry/Grounds Staff
  2. All Public Works
  3. Office Staff/Engineers (Call-Takers Checklist)
- B. Mutual Aid Agreements
  1. NWMC (Northwest Municipal Conference)
  2. IPWMAN (Illinois Public Works Mutual Aid Network)
- C. Weather Warning Systems
  1. Everbridge (alerts via superintendents cell phones/PC's)
  2. DTN (Meteorological Consulting Firm)
  3. Murray and Trettel (Meteorological Consulting Firm)
  4. NOAA Website
- D. Equipment Readiness
  1. Vehicles
  2. Chainsaws
  3. Personal Protective Equipment
  4. Office Supplies
  5. Equipment Rental Companies
- E. Contractual Resources
  1. Current Trimming Contractor
  2. Current Removal Contractor
  3. Tree Care Contractors (Local with Previous Village Contracts)
  4. Tree Care Contractors (National with Storm Crews)
  5. Tub Grinder Owners

F. Debris Staging- Potential Sites
G. Communication- Internal
    1. Employee Contact Info
    2. Two-Way Radioes
    3. Cell Phones
H. Communication- Public
    1. General News Releases
    2. Website Links
    3. Press Contacts
I. Commonwealth Edison Information
    1. Contacts
    2. Policies
J. FEMA/IEMA Considerations
    1. Overview
    2. Debris Removal
    3. Tree Removal Guidelines
    4. Documentation
K. Other Equipment/Labor Resources
    1. Mount Prospect Park District
    2. River Trails Park District
L. Readiness Checklist (Use as storm approaches)

IV. Emergency Response

A. Establish Forestry Command Center
B. Assemble Personnel (if not already assigned)
    1. Assign Crews
    2. Call in personnel if necessary
    3. Safety Reminders (especially downed wires)
C. Assemble Call-Takers
    1. Use Call-Taker Checklist
    2. Use Non-Forestry/Grounds Staff if possible
    3. All calls must be made into Hansen Service Requests immediately
D. Prioritize Road Clearing Work
    1. Clear State/Country Roads
    2. Clear Collector Streets
    3. Clear Residential Streets
E. Prioritize Forestry Aerial Truck Assignments
    1. Tree/Branches Down- People injured or trapped
    2. Tree/Branches Down- Blocked state/county highway
    3. Split/Uprooted Trees or Large Hangers- Likely to fall and cause injury/property damage
    4. Tree/Branches Down- Blocked Collector streets
    5. Tree/Branches Down- Blocked residential streets
    6. Tree/ Branches Down- Blocked exits from homes
    7. Tree/ Branches Down- Blocked driveways
    8. Tree/ Branches Down- Fallen and at rest on buildings
    9. Tree/ Branches Down- Fallen and at rest on cars
    10. Tree/ Branches Down- Blocked routes to schools
    11. Tree/ Branches Down- Blocked sidewalks

F. Begin Damage Assessments
   1. Scouting by Foremen
   2. Scouting by Forestry/Grounds Scouts
G. Seek/Communicate Private Brush Pickup Decision (by Village Manager)
H. Activate Emergency Storm Contracts
I. Activate Mutual Aid Agreements
J. Secure Equipment Rentals
K. Secure Debris Staging Site
L. Secure Tub Grinder
M. Communication- with Public
   1. Through Public Information Officer
N. Communication- Internal
   1. With Supervisors
   2. With Crews
   3. With Director
   4. With EOC
   5. With Call-Takers
O. Documentation

V. Post-Storm Recovery

A. Post-Storm Windshield Survey
B. Wound/Stub Repair Contract
C. Follow Up Reporting
D. Post-Storm Critique
E. Thank-You's
F. Budget Requests
G. Replanting Campaign
H. Publicity about Storm Damage Prevention

VI. Appendices

Historical Summary

Since 1992, 21 recorded storms, or an average of one storm per year, have been caused extensive damage to the tree resource in the Village. Of these storms, 18 were from high winds, 1 from snow, 1 from ice, and a single event was recorded as a tornado in June of 2011 (Table 3K-1).

Several of the storms stand out as a result of their extensive damage to parkway trees, including:

- A wind storm on May 18, 2000 with winds of 46 mph,
- A wind storm on August 23, 2007 with winds of 58 mph,
- A tornado on June 21, 2011 with winds of 70 mph and localized winds reported in excess of 90 mph, and
- A wind storm on July 11, 2011 with winds of 63 mph,
- A wind storm on July 19, 2013 with winds of 55 mph.

Table 3K-1. Major storm events in the Village of Mount Prospect since 1992.

Date	Type of Storm	Tree Damage		Village-wide Brush Pickup?	Max Wind Speeds at O'Hare
		Trees Pruned	Tree Removals		
6/17/1992	Wind	554	95	Yes	58
7/2/1992	Wind	512	14	Yes	39
8/30/1993	Wind	112	11	Yes	37
1/27/1994	Ice	116	6	Yes	22
12/6/1994	Snow	135	7	Yes	16
10/29/1996	Wind	99	24	Yes	48
9/29/1997	Wind	62	8	Yes	50
5/28/1998	Wind	531	39	Yes	54
8/24/1998	Wind	57	7	NA	48
11/10/1998	Wind	259	46	Yes	65
4/10/2000	Wind	201	6	Sect 8 only	25
5/18/2000	Wind	1238	163	Yes	46
8/6/2000	Wind	243	23	No	59
6/12/2001	Wind	220	20	No	38
5/11/2003	Wind	204	17	No	53
7/21/2003	Wind	102	1	No	28
8/1/2003	Wind	97	2	No	44
8/23/2007	Wind	2051	300	Yes	58
6/21/2011	Tornado	2836	304	Yes	70
7/11/2011	Wind	656	53	Yes	63
7/19/2013	Wind	557	35	Yes	55

A major impact of storms is the large amounts of debris that is generated from removal and chipping of trees and branches (Photograph 3K-2). Two recent storms demonstrate the magnitude of the debris produced and the costs associated with major storm events. The storms also demonstrate the importance of establishing working relationships with local tree care companies and neighboring municipalities that can assist in storm damage cleanup efforts.

Photograph 3K-2. A major impact of storms is the large amount of debris and wood chips that are generated from damaged trees. Planning for storage and disposal of brush and chips is a significant part of storm management.

Wind event of August 23, 2007

The storm resulted in 300 tree and stump removals, 2,051 trees damaged (trees requiring pruning to remove hangers or repair wounds), and 8,384 cubic yards of chips and a total cost of cleanup of $528,360. The storm resulted in the Village being included in a Federal Disaster declaration, and relief for eligible cleanup costs were therefore partially covered (75% reimbursed rate by FEMA). Post recovery pruning of damaged trees to industry standards and replacement of trees is not included in these costs.

Wind Event of June 24, 2011 and July 11, 2011

Two closely-spaced summer storms in 2011 caused considerable damage to parkway trees. A Federally declared disaster was not issued for these events because of their localized nature. The two storms resulted in 357 tree removals and 3,492 trees damaged (that required pruning or hanger removal), and more than 7,020 cubic yards of chips. Total cost of the cleanup exceeded $380,926, not including tree replanting.

Discussion

The Village has performed well in preparing for, responding to, and cleaning up from major storms. Most elements of storm planning and response are in place and a formal plan for storm response for Forestry Division is being developed. Given the apparent increased frequency of severe storms, completing the storm plan should be a priority for the near future.

Recommendations

- Finalize the Storm Mitigation plan currently in development
- Review and update the Storm Mitigation plan annually each winter as needed.
- Add storm mitigation procedures to the proposed Technical and Administrative Procedures Manual

3L. Wood Utilization

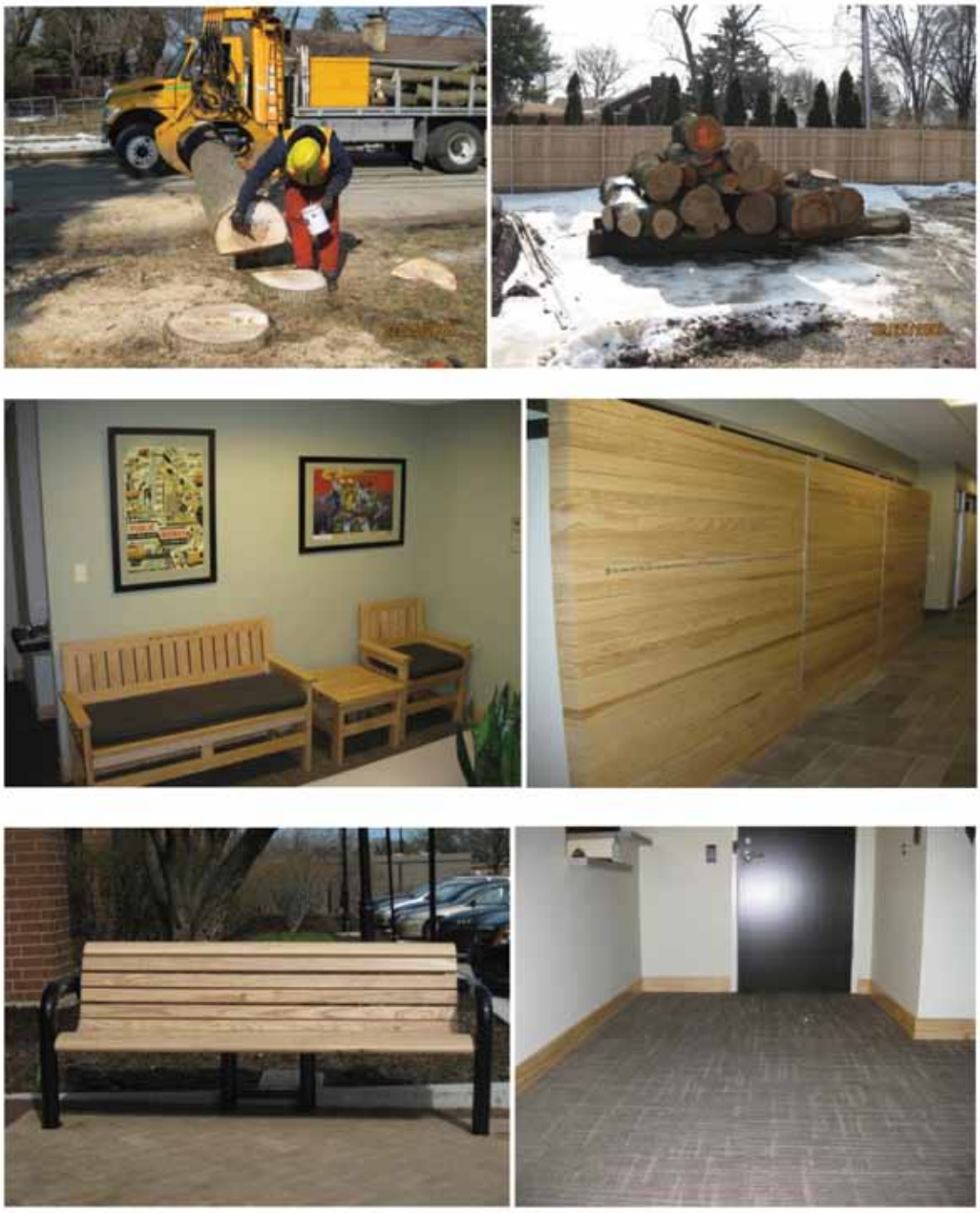
Introduction

Use of urban trees as a forest commodity after their removal was generally considered of minor importance in the past because of their overall lower quality and inconsistent availability. However, widespread and large-scale losses from emerald ash borer have raised interest in production of traditional forest products from urban trees. The USDA Forest Products Laboratory published recently a guide on the use of wood from urban trees infested with invasive pest species (Brashaw et al. 2012).

Locally, the State Emerald Ash Borer committee formed a Wood Utilization Team to investigate developing markets for high end forestry products from EAB removals. Despite the known constraints of utilization of urban trees, efforts to produce quality forest products appear warranted given the large quantity of ash species that will continue to enter the waste stream as EAB losses gains momentum in Illinois. Further, the threat of similar losses and potential availability of other tree species from invasive pests such as Asian longhorned beetle suggests this could become a long term issue with relevance to municipal forestry programs.

Current Management

The Mount Prospect Forestry staff has been actively involved in the Illinois Emerald Ash Borer Team and the State's Wood Utilization team. The Village participated in the installation of several high quality exhibits using wood from ash trees killed in the Village, including a decorative wall in the Emergency Operations Center that is adjacent to the Public Works building, and several community oriented projects using ash lumber to demonstrate the flexibility of ash wood in woodworking (Photographs 3L-1).



Photographs 3L-1. The Village has actively investigated the use of ash from parkway trees for use in the production of wood products. All photographs are of ash products used in the Village's Public Works building.

The Village has also been committed to ensuring that ash removals are being recycled for traditional wood waste products such as mulch (made available to citizens). In addition, the public has been made aware of the potential to recycle ash trees as forestry products through information made available by Forestry staff.

Historical Summary

The discovery of EAB in IL in 2006 and in Mount Prospect in 2010 initiated the wood utilization effort in the Village. Up until recently, the Village recycled wood waste through traditional urban forestry practices.

Discussion

Larger-scale use of wood from urban sources has increased, and in some locations local, sustainable markets have developed (Bratkovich 2001). The technology and resources exist to increasingly produce forest products from urban trees. However, launching of business for this purpose requires investment from private sources. The Village should be ready to cooperate if opportunities arise to process trees from urban sources.

Recommendations

- Maintain participation in State Wood Utilization Team.
- Avoid allowing ash removals to be disposed of in landfills or other non-sustainable methods.
- Be prepared to cooperate with private sources willing to process wood from removal of Village trees.

3M. Staff Training & Accomplishments

Introduction

An organization's staff is the face of the organization (Photograph 3M-1). Their interaction with customers is a direct reflection of the quality of service and expertise the organization will provide. Working in an environment that is labor intensive and utilizes heavy equipment exposes employees to a higher risk of injury. The level of expertise of the staff will also dictate the level of management the organization can achieve. Regular staff training on safety, customer service and in their areas of expertise will enhance competency and productivity.

Photograph 3M-1. The face of the Forestry/Grounds Division management team, from left to right: Laura Fowle (Seasonal Assistant); Sandy Clark (Superintendent of Forestry/Grounds); Bill Kroll (Forestry Foreman); Dave Hull (Forestry Assistant); and Victor Pierce (Grounds Foreman).

The taxpayer is the customer of the services the Village government provides and it is the staff's responsibility to deliver those services in a courteous and objective manner. This is not always an easy task; however it is a skill that can be learned with proper training and fostered in an organizational environment that stresses the importance of customer service.

Lost productivity due to on the job injuries as well as the costs for the treatment of injuries is a drain on resources and morale. Unfortunately the opportunity for on the job injuries is high in the fields of public works and arboriculture. Regular safety awareness training and a work environment that stresses work safety can help keep these incidents to a minimum.

An employee comes to the Village with a particular skill set. The job description details the minimum qualifications and skill set they bring to the job. However, knowledge and expertise are also learned and there are numerous and frequent opportunities offered by professional organizations to help employees learn and grow. Staff training in their areas of expertise will provide a ladder for position advancement within the organization.

Current Management

Each year the Public Works Department designates funding for staff training and education. Budget line items for training and education include Travel & Meeting, Training and Training Supplies in the Public Works Administration, and divisional budgets. These funds are allocated upon request from the Division heads at the discretion of the Director of Public Works. All staff also attends mandatory safety and work place training that is provided to all Village employees as well as programs specific to the Public Works Department.

Historical Summary

The 1993 management plan characterized training and educational opportunities as adequate for employees to improve their job skills and personal development. Forestry staff regularly participated in Illinois Arborist Association and International Society of Arboriculture (ISA) programs and workshops. In addition, Forestry was a contributor in research completed by Morton Arboretum on tree related problems and solutions.

Over the last 20 years, Forestry/Grounds staff has received regular training on work safety and professional development at periodic staff meetings as well as training workshops offered by professional organizations (Photograph 3M-2).

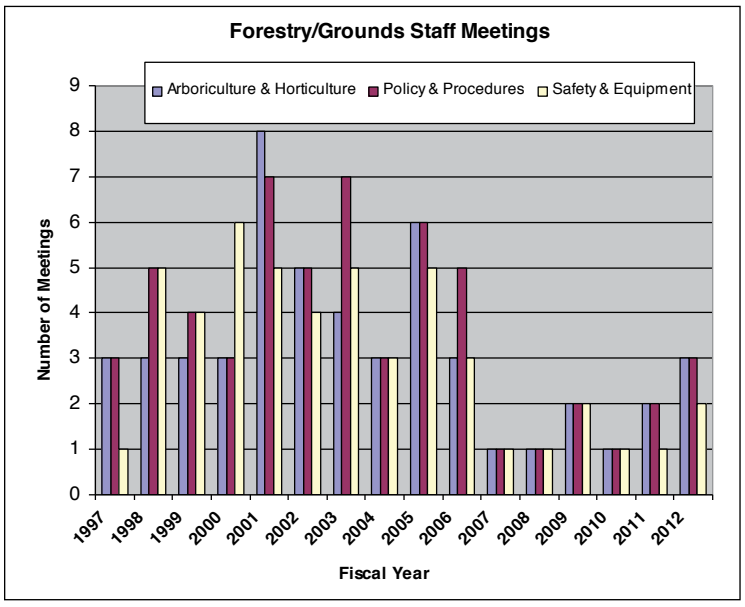


Figure 3M-1. Periodic Forestry/Grounds meetings 1997 – 2012 and topics presented.

Forestry/Grounds hold regular staff meetings that typically include presentations and discussion on subjects such as arboriculture, Village policy, and procedures and safety. Since 1997 Forestry/Grounds has conducted 73 meetings and included specific training and discussion on these subjects (Figure 3M-1).

Since 1993 Forestry/Grounds staff have attended 114 seminars and workshops offered by professional organizations including the Illinois Arborist Association, International Society of Arboriculture and the Public Works Academy, to name a few. Fifty-seven percent of the events were on arboriculture or urban forestry subjects (Figure 3M-2).

Figure 3M-2. Workshops and seminars attended by staff 1993 -2012.

Photograph 3M-2. Chainsaw safety training March 2013.

The professional organizations in the fields of arboriculture, landscape management and urban forestry offer many educational opportunities as well as professional certifications. Each of these programs provides numerous educational opportunities on work safety and professional development.

The International Society of Arboriculture (ISA) (www.isa-arbor.com) offers certification programs for certified tree worker, certified arborist and most recently a tree risk assessment qualification (TRAQ). Each of these certifications has additional accreditations in more specialized sub-disciplines.The Professional Landscape Network (www.landcarenetwork.org) offers seven different certification programs in landscape management disciplines. The Society of Municipal Arborists (www.urban-forestry.com/) offers a Municipal Forestry Institute program as well as an accreditation program for municipalities. The majority of these programs require the individual to maintain a minimum number of re-certification credits to maintain their certification and offer numerous training and educational opportunities through publications, webinars, online training programs, workshops, seminars and conferences to earn these credits.

The Forestry/Grounds staff holds numerous accreditations and has been honored with awards for their service and expertise in their respective fields. Almost all Forestry/Grounds staff presently holds a valid professional certification including 13 ISA Certified Arborists and 2 Certified Landscape Technicians. Sandy Clark, and Dave Hull (Forestry Assistant), both presently hold certifications as ISA Certified Arborist and Municipal Specialist, and have received the following recognitions and accomplishments.

Sandy Clark

- 1986 Gold Leaf Award from International Society of Arboriculture
- 1989 Honorary Life Membership from Illinois Arborist Association
- 1994 “Shining Light” Shining Star Award from Mount Prospect Special Events Commission
- 2009 ISA “True Professionals of Arboriculture” award
- 2009 Illinois Arborist Association Award of Merit
- 2010 to Present Unofficial Program Chair of Northeast Municipal Foresters Meeting

- 2013 Tree Care Industry Association Advancing Arboriculture Award
- Spoke at numerous local and regional meetings about Mount Prospect's forestry program and the need to plant and care for trees
- Helped establish the first Illinois chapter of the ISA; served as past Board Member, past Vice President and on numerous committees
- ISA Certified Arborist since 1990, Municipal Specialist since 2008

Dave Hull

- Illinois Wood Utilization Team
- 2013 IAA Municipal Director
- ISA Certified Arborist since 1997, Municipal Specialist since 2007

The Village received Society of Municipal Arborist accreditation for its forestry program in 1995. This accreditation was maintained until 2009, when the decision was made to let it expire. The Forestry/Grounds Superintendent objected at that time to new SMA guidelines regarding the use of contractors, which she felt would not benefit the Village. These guidelines have since been modified and she intends to reapply for SMA accreditation in 2013.

Mount Prospect also has a record of cooperating with various researchers over the years in order to help advance the art and science of arboriculture. The Superintendent indicated she feels this is an important part of the Forestry/Grounds Division's mission, and notes that the end result is improved knowledge that eventually benefits all urban foresters. A summary of these cooperative projects can be seen in the Appendix 3M-1.

Discussion

The Village provides exemplary training and education opportunities for its staff and fosters an environment of professional development. The number of staff with professional accreditations, accomplishments and honors received by staff members are clear examples of the professionalism and competency of the Forestry/Grounds staff.

There have been less frequent staff meetings in recent years and these meetings have not appeared to be on a regular set schedule. Annual certification training in electrical hazard awareness and aerial rescue would be a good addition to the training. Formalizing the training and meeting schedules to occur on specific days each quarter and each month is a simple way to improve scheduling issues and also reinforces the importance of these issues with staff. The Village should also consider allocating funding to secure training for an appropriate Forestry staff member in the ISA Tree Risk Assessment Qualification (TRAQ) program.

The Forestry/Grounds Superintendent also identified several staffing and program recognition objectives for the Division including the following;

- Re-apply for Society of Municipal Arborist accreditation,
- Track staff training and advise front office annually,
- Plan for a seamless transition when Forestry/Grounds Superintendent retires by documenting procedures and past history, as well as educating current staff and helping them expand their capabilities,
- Formalize two-tier certification program for staff, if Director approves,

- Update job descriptions to reflect current responsibilities,
- Investigate possibility of pursuing ILCA awards for maintenance of selected grounds areas,
- Assist Public Works in obtaining APWA accreditation.

Recommendations

- Formalize an annual training and meeting schedule.
- Provide funding for an appropriate forestry staff member to enroll in the ISA Tree Risk Assessment Qualification training program.
- Continue to provide opportunities for staff to attend safety and professional development workshops, training, seminars and conferences.

3N. Inventory Management and Procedures

Introduction

A tree inventory is an invaluable tool for the effective and efficient management of the urban forest resource. Whether managing facilities or trees, knowing the numbers, their condition and needs helps develop work plans and budgets to respond to problems and effect positive change. An inventory though, is only useful if the information is current and accurate.Therefore the maintenance of an inventory should be completed and updated by qualified professionals and include the following:

- Clearly defined tree inventorying specifications and procedures,
- Regularly scheduled updates of the inventory,
- An easily accessible system for maintaining, protecting and reporting on the inventory data.

The management value of a tree inventory is directly proportional to the age of the information. Inventories provide valuable information for planning purposes and benchmarking urban forest conditions, but they require updating periodically as the inventory information quickly becomes dated. The Village uses its tree inventory to manage daily work activities and therefore the inventory data must be as current as possible to ensure the efficient use of resources.

The value of an inventory is also directly proportional to the accuracy of the data. Clear inventory specifications for completing and maintaining, and quality control of the inventory help ensure consistency and accuracy of the data. The level of expertise and experience of the persons completing the tree inventory work is also a key factor in the accuracy of the tree inventory information. The International Society of Arboriculture has a published best management practices (BMPs) guide for the completion of tree inventories as well as the evaluation and collection of management information for individual trees (Bond 2006).

The evolution of information technology over the last 30 years, like many disciplines, has provided tools that have improved urban forest management. This evolution in urban forest management resulted in the development of software applications that will summarize useful tree inventory management information for planning purposes as well as provide tools to assist in the management of daily work activities. A tree inventory management application should provide all of the tools necessary to efficiently manage and maintain the inventory.

Current Management

The Village presently maintains an inventory of parkway trees and utilizes this inventory for planning purposes and the management of daily work activities.The inventory is updated on a regular 5-year schedule and is maintained in the Village's computerized asset inventory management application.

The tree inventory is updated in two ways. First, on a daily basis, work activities are logged and the status of a tree in the inventory is updated (Photograph 3N-1). Trees that are removed and planted are updated in the active list of trees in the inventory. Second, one-fifth of the Village parkway trees are re-inventoried each year as part of the inventory update and tree pruning schedule. The schedule is defined by Forestry Management Section (Table 3N-1).

Photograph 3N-1. Arborist Steve Brown inventorying a new parkway tree at planting time.

Table 3N-1. Tree inventory schedule by Forestry section.

Year	Forestry Sections
2013	4.2, 5.4, 12, 16.1
2014	1.8, 2, 7.1, 15.1
2015	3, 4.1, 5.2, 5.3, 7.3, 15.2, 16.2
2016	5.1, 6, 7.2, 7.3, 9
2017	10. 11, 13, 14, 16.3, 17

The re-inventory work is completed in the summer months by a Forestry/Grounds intern. The intern is required to have 1-2 years college level of training in arboriculture or a related field, excellent tree identification skills and some computer course work.

There are several standards and procedures that guide the tree inventory update process. These can be found in the Arboricultural Standards Manual and other individual documents and are summarized in Table 3N-2.

The Village utilizes Hansen® asset management application to maintain and manage the Village's parkway tree inventory (Appendix 3N-1). The application is designed to maintain the asset inventories, manage daily work activities and generate reports on all of the Village's assets including trees. Hansen® is not specifically for urban forest management, and Village staff has worked to recreate some of the functions that a tree inventory management application would provide. Forestry/Grounds is also working to add to Hansen® all the other assets the Forestry Division is responsible for managing, and also to enter daily work records and costs.

Historical Summary

In 1972, Village staff conducted and completed an inventory of all parkway trees in the Village. The inventory was not computerized and revealed 17,310 parkway trees. In 1989, the Village initiated a tree inventory program to inventory all parkway trees over a five year schedule utilizing Tree Manager™ tree inventory management software.This application was designed specifically to manage municipal tree inventories including daily work activities, log work histories and generate reports for reporting and planning purposes. The tree inventory work was completed by forestry student interns in the summer months and Village staff in the winter. The inventory revealed approximately 23,677 trees, 3855 planting sites, and more than 1400 sites with brush.

Table 3N-2. Summary of Village tree inventory standards and procedures.

Document	Standard or Procedure
Arboricultural Standards Manual	Planting - 4. Planting Locations - details the tree spacing requirements
Arboricultural Standards Manual	Removal Policy - details the conditions that will and will not warrant a tree removal
Intern Procedures Document, 02/11/2013	Tree inventory update procedures using ArcPad 10 and Hansen
Procedures - Inventory Update, 02/11/2013	Tree inventory update procedures using ArcPad 10 without Hansen - when wireless connection to Hansen fails.
Procedures for Removal Field Checks, 02/11/2013	Hansen® Procedures for Field Checking Removals and GPSing Planting Sites
Process for QAQC and Removing Trees from GIS layer, 02/2013	Process for Eliminating Removed Trees from GIS Layer
Hansen® Tree Inventory Data Collection Procedures, Revised March 2013	The purpose of the document is to provide tree inventory data collection guidelines including; Forestry Section Schedule, Tree Cell definition, DBH measurement, tree condition, parkway widths, problems, recording progress and updating Hansen and tree species codes definitions.

The 1993 management plan lists as an appendix; "Tree Manager™ Public Tree Inventory Data Collection Procedures" as the procedures that were used to guide the tree inventory work. The document was issued in April of 1989 and underwent numerous revisions ending in February of 1993. The document Table of Contents is all that is provided in the Plan, however, it lists all the standard data collection procedures a professional urban forester would need and expect to find in such a document.

Upon completion of the tree inventory program in 1993, the Village continued a regular tree inventory update schedule. The Village continued to utilize the "Tree Manager™ Public Tree Inventory Data Collection Procedures" document to guide tree inventorying efforts. In 2009, the Village transitioned from the use of Tree Manager™ to the Hansen® asset management application. The procedures detailed in Table 3N-2 resulted from that transition.

Discussion

Tree inventories are only useful if they are accurate and up to date. Forestry has consistently maintained its 5-year rotational re-inventorying schedule and established the proper quality control procedures. This is an exceptional accomplishment. Accuracy of the data also relies on collection of useful information and clear definitions for the collection of the information. The expertise of the personnel collecting the data can also limit the quality of the data collected. Finally, the information must be stored in a database that protects the data, is easily accessible, and provides the necessary reports for planning and management of daily work activities.

In our view, the Village is collecting too many data variables and in some cases too many data codes for some of the data variables. This complicates the data collection, maintenance and increases the opportunity for data error. In spite of that, we do recommend the Village add a data variable for "work need" for each tree. This would simplify querying to specific trees for scheduling and completing work as well as planning. In addition, the Village's inventory data collection procedures are presently found in numerous documents and need to be compiled into a single reference document.

The Forestry/Grounds Superintendent reported some difficulty in utilizing Hansen to track and report upon Forestry activities. She acknowledged that efforts have been made to streamline the processes Forestry uses to access information and generate reports.

Recommendations

- Consider/evaluate reducing the number of tree inventory data variables and data variable codes.
- Add a “work need” data variable to the tree inventory data variables.
- Compile the tree inventory data collection and data entry procedures into one document (proposed Technical & Administrative Procedures Manual).
- Work with Public Works Administrative Superintendent to make modifications to the Hansen® application that simplify work processes and provide the necessary information for the efficient and effective management of the Village’s tree inventory.
- Utilize Hansen for additional record keeping/planning including costing and scheduling all work done in Forestry/Grounds Maintenance.

3O. Drought Management

Introduction

Prior to settlement by man, Mount Prospect was primarily long-grass prairie; trees in the local area were drought tolerant oak species or were low land species concentrated near defined water sources (Bowles and McBride 2002). A significant factor limiting the invasion of trees prior to settlement was drought and to a lesser degree fire (Bowles and McBride 2002). Historically, drought would therefore be expected as a reoccurring component of the local environment.

Climate change may be a significant influence on drought and water availability in the future. Most climate change modeling indicates that increased frequency, severity and duration of drought can be expected in the future for the Midwest USGCRP (2009). To compound this, increased heat loading from elevated temperatures will increase the intensity of drought effects; future climate change models predict that average summer temperatures will increase by 3°F over the next few decades, and could increase by over 10°F by the end of this century. Finally, incoming rainfall is projected to come increasingly as heavy downpours, where much of the available precipitation is lost as runoff, leaving little to remain and recharge surface and groundwater reserves.

These predictions carry a certain level of uncertainty. However, recent weather events have trended towards drought and short periods of intense rainfall, and seemingly support these predictions. These trends suggest drought management could become an increasingly important factor in Mount Prospect’s urban forest management (Photograph 3O-1).

Photograph 3O-1. Drought impacts on young parkway trees. Droughts have become more frequent and intense in recent years. The Village waters recently planted trees on a prioritized basis.

Current Management

Current management practices for reducing drought impacts were determined from narratives outlining Forestry response to the recent 2012 drought, and the drought of 2005. Forestry identified the following areas of focus for their drought management program including:

- Watering Resources and Priorities
- Productivity
- Public Education
- Planning

However, a formal drought management plan has not been developed or adopted.

Watering Resources and Priorities

Because Grounds Maintenance is also managed by Forestry, watering for vegetation other than trees is included in the management approach. Trees are prioritized for watering based on the following:

- Spring installed shrub planting
- New parkway plantings at sites not adjacent to homes/business, plus any trees where watering is required by grant commitments
- Annual flower beds in the downtown
- Recently planted sod areas at public buildings where additional irrigation is needed
- Trees growing in downtown streetscapes
- Trees growing in restricted spaces along highways

Watering is provided using a variety of equipment including two dump trucks with 900-gallon water tanks, and a tree sprayer for watering; when possible, Forestry also borrows flusher trucks from the Street and Water Divisions. Gator bags have been used in the Village on ash replacement trees to help improve watering efficiency. In 2005, a 2000 gallon tanker truck was rented to supplement Village equipment.

Watering is labor intensive, because it requires significant hands-on time and extensive use of normal working and overtime for Forestry Division workers and staff. Watering also reduces time usually allotted for other on-going work tasks and priorities. In 2005, labor for watering amounted to over $18,000 in regular and overtime costs.

Productivity

To offset the time involved in watering individual trees, Forestry modified equipment to improve efficiency such as installation of water wands and hoses on some trucks, and implementing water truck fill ups from fire hydrants.

Public Education

All recipients of new parkway plantings receive information cards requesting routine proper watering. For grant trees planted in 2011 and 2012, the Village provided watering for the first summer, then sent watering request cards the following year asking recipients to take over the watering of those trees. Watering informational materials were made available to the public advising residents on how to effectively water parkway trees. News releases were also utilized to advise residents of the need to water their parkway trees. For the spring of 2013, Forestry Division created a new display for the 2013 Public Works Open House, advising property owners about how and why proper watering is critical for trees.

Historical Summary

Two recent droughts have impacted parkway trees: one in 2005 and one in 2012.

2005 Drought

Drought in the summer of 2005 was severe enough for the Chicago metro area to be declared a severe drought area on June 28, 2005. The month of June was the third driest on record since 1871. Total rainfall earlier in the year totaled only 3.75 inches as recorded locally at the Public Works office. Drought management procedures were developed and implemented as a result of this severe drought.

2012 Drought

The National Weather Service declared severe to extreme drought in Illinois as of July 17, 2012. Precipitation at Chicago-O'Hare for the summer of 2012 was 6.63"; average is 12.05" (per the National Oceanic and Atmospheric Administration). Though the effects of this drought may linger for several years, rainfall returned to normal in spring 2013.

Discussion

Predictions of increased drought as a result of climate change influences seem to be substantiated to some degree in near term weather patterns. Historically, drought was clearly a significant factor mediating tree survival. Drought influences the resistance of established trees to most pests; however, in the short-term drought is most significant to recently planted trees. Providing supplemental water to recent transplants as allowed by budgetary and labor constraints seems reasonable given the cost of planting material. Public outreach to influence watering of trees on parkways is also an important part of the drought management plan.

Recommendations

- Add drought management and watering procedures to the proposed Technical and Administrative Procedures Manual.

3P. Tree Protection

Introduction

The infrastructure of the urban environment works to provide specific functions to facilitate living, doing business, and recreating in our communities. The streets, sewers, water and power distribution systems to name a few, as well as the trees in the urban forest are elements of this infrastructure. The majority of public funds are expended to install and maintain these facilities. The daily activities of the urban environment expose this infrastructure to possible loss and damages, either incidental or malicious, and therefore must be protected through legislation, administrative processes as well as technical specifications. Trees are slowly becoming considered as essential elements of the urban infrastructure, and as such require protection afforded other community assets.

The urban forest includes both trees on public property and private property. Each of these groups of trees provides functional benefits for the community and each community must decide what level of protection is sufficient for public and private trees to fulfill their wishes and objectives. Successful tree protection requires legislation, standards and specifications, and administrative processes to facilitate and implement the protection of this asset (Photograph 3P-1a and 1b).

Photographs 3P-1a and 3P-1b. Left: Tree protection fencing installed to protect trees during construction activities on a Village street. Right: A parkway tree with roots severed during construction activities on Wilshire Drive in 2007.

Construction activities are a common cause of damage to trees in the urban environment. Cutting the roots of a tree can increase the likelihood of windfall and therefore present a risk to people and property (Photograph 3P-1b). Damage to tree roots is the most significant threat to tree health and stability, and usually causes irreversible decline in health. The importance of protecting urban trees from construction damage has been recognized by the arboricultural industry with the publication of standards (ANSI 2008) and best management practices for guidance on this topic (Fite and Smiley 2008).

Current Management

The Village code provides specific legislation for the protection of public as well as private trees. Chapters 9 and 16 specify measures for the protection of public trees during excavation and construction activities, other types of injury to trees, and damages that can be assessed for the restitution (Appendix 3A-1). In summary, any activity in proximity to a public tree may require a permit and may specify tree protection measures to be taken at the judgment and discretion of the Director of Public Works. Chapter 23 (Offenses and Miscellaneous Regulations) provides fines for malicious damages to public trees.

Chapters 14 and 15 are enforced by the Community Development Director and provide legislation for the protection of trees on private property. The majority of the language in these ordinances is designed to provide protection of private trees as part of development projects. However, Chapter 14.2302 also suggests that the removal of three or more trees on private property is restricted irrelevant of any development activity.

Technical specifications for the protection of trees are found in both the Village code and the Village's Arboricultural Standards Manual. Chapter 9.817 specifies tree protection measures to be followed during utility work on public rights-of-way. The Arboricultural Standards Manual has a chapter called Tree Protection that provides definitions and detailed specifications for the protection of trees during construction, for example tunneling and trenching requirements in proximity to trees (Table 3P-1). The manual includes sections and specifications as summarized in Table 3P-2.

In addition to the tree protection measures provided in the Village ordinance and the Arboricultural Standards Manual there are administrative procedures that facilitate fulfilling the Village's tree protection goals. Forestry staff reviews all construction projects that take place on the Village parkways. The plans are reviewed to identify the potential impact of proposed activities on trees, and recommendations, requirements and specifications are offered to minimize and potential impacts. Forestry staff also reviews and provides guidance on building permits, and permits for utility and infrastructure maintenance and repair (Table 3P-3).

Table 3P-1. Trenching and tunneling standards taken from the Arboricultural Standards Manual.

Tree Diameter (DBH)	Distance of Tunnel from Center of Tree Trunk
Less than 3”	1 foot
3” to 4”	2 feet
5” to 9”	5 feet
10” to 14”	10 feet
15” to 19”	12 feet
greater than 19”	15 feet

Table 3P-2. Parkway tree protection specifications taken from the Arboricultural Standards Manual.

Section	Description
Critical Root Zone (CRZ)	Restricts activities within the CRZ defined as within the dripline of a tree.
Root Pruning	Specifications for pruning tree roots if approved by the Director of Public Works
Tree Protection in Construction Areas	Specifications for tree protection fencing as directed by the Director of Public Works
Curb Installation	Specifications for the installation or replacement of curbs located within the CRZ of a tree.
Sidewalk, Carriage Walk and Driveway Installation and Replacement	Specifications for the installation or replacement of walks and driveways located within the CRZ of a tree.
Changes to Existing Grades	Restricts grade changes within a tree CRZ
Installation or Repair of Underground Pipes and Cables	Restrictions and specifications for the protection of tree roots during an underground utility excavation within the CRZ.

Table 3P-3. Construction projects and permit applications reviewed by Forestry 2008 – 2012.

PROJECTS	2008	2009	2010	2011	2012	TOTALS
DEMOLITIONS	7	4	0	4	1	16
NEW SINGLE FAMILY HOME	8	3	1	3	1	16
REMODEL/ ADDITION	28	10	14	14	4	70
GARAGE	7	0	0	1	2	10
BASEMENT	0	0	1	0	0	1
NEW DRIVE/ WIDENING	39	16	9	33	33	130
COMMERCIAL PROPERTY. DEVELOP./ REDEVELOP	5	3	1	7	3	19
IRRIGATION IN ROW	8	5	4	8	3	28
BACKYARD DRAINAGE	2	1	1	5	1	10
VILLAGE STREETS / ENG. PROJECTS	0	0	0	2	2	4
WATER SERVICE/ SEWER	14	6	11	8	18	57
CARRIAGE/ SIDEWALK	5	4	2	1	3	15
UTILITY	31	28	29	33	36	157
TOTAL # OF PROJECTS	154	80	73	119	107	533

There are standardized documents the Village uses to specify requirements and provide guidance on these activities including the Public Tree Protection Plan (Appendix 3P-1) and boilerplate language to be included in construction documents (Appendix 3P-2). The Public Tree Protection Plan document is the primary methodology for Forestry to document the review of a project and convey tree protection requirements and specifications for work completed in proximity to public trees.

Historical Summary

The 1993 management plan summarizes the tree protection measures that were in place prior to 1993. The Village ordinance provided some provisions for the protection of trees during construction and the collection of monetary damages for damage to public trees. The Plan considered the tree protection measures provided by the Village as inadequate and recommended updating the Village ordinance, review of construction activities by Forestry, and the development of specifications to improve tree protection measures in the Village (ACRT 1993).

The Village made significant improvements in tree protection from 1993 through 2012. All of the recommendations made in the 1993 management plan were completed and implemented. Specifically, the Arboricultural Standards Manual, including tree protection standards and specifications was completed and adopted in 1997, and the Village code was updated to include stronger tree protection measures in 2002 (Photograph 3P-2). In addition, Forestry staff now meets with Building Department and Public Works engineering staff on a regular basis to discuss ongoing projects and current policies. In the years 2008 through 2012, Forestry reviewed and commented on 390 projects and permit applications (Table 3P-3).

Photograph 3P-2. The Village Arboricultural Standards Manual and the Village ordinance provide specifications for the protection of trees such as the installation of tree protection fencing during construction activities.

In 2009, significant changes were made to the Village code Chapters 14 and 15 regarding tree protection on private property. Most of the requirements in these Chapters are administered by the Community Development Department. These changes included requirements to protect trees during development projects as well as restrict the removal of trees on private property. These recent amendments have resulted in some management challenges regarding the interpretation and implementation of these provisions.

Discussion

Tree protection measures as specified in the Village code and the Arboricultural Standards Manual are adequate to protect the Village's urban forest resource. It would be helpful to compile the various specifications and administrative procedures, and consolidate the appropriate tree protection measures between the Arboricultural Standards Manual and a new Technical and Administrative Procedures manual (See Section 3A) with the goal of providing clear and readily accessible references for staff and outside organizations to consult.

Trees located on public property are a fraction of all of the trees located within the Village. The benefits trees growing on private property provide to Mount Prospect as a whole certainly surpass those of the public trees. It is an individual community's decision to determine the level of protection they will provide for trees on private property, and the measures communities employ to protect privately owned trees are as varied as there are numbers of communities. The recent changes to Chapters 14 and 15 of the Village code as it relates to tree protection on private property are progressive measures designed to achieve greater protection of the urban forest. A balanced implementation plan coordinating activities between Community Development and Forestry/Grounds is needed that addresses these issues and fulfills the desires and objectives of the Village to protect trees on private property.

Although the Village has appropriate parkway tree protection requirements in place, the Forestry/Grounds Superintendent has indicated that assuring those requirements are always followed is a time consuming and never-ending challenge. As a result, each year, many parkway trees are damaged or destroyed when construction, installation, or repair of buildings, streets, sidewalks, driveway and utilities involve excavation, grade changes and/or equipment operation around parkway trees. Of course, some of this damage is unavoidable due to the need to update/upgrade the Village's aging infrastructure. However, the Forestry/Grounds Superintendent believes that too often the effect of such activities on trees are misunderstood, or are one of the last things considered by contractors, consulting engineers, and state/county agencies.

To be sure, progress has been made in these areas in the last twenty years. Some examples include the following:

- Public Works night men/pump men are trained to conduct root inspections when utility companies excavate near a parkway tree "after hours".
- Forestry has a routine schedule for meeting with Building/Engineering staff to discuss problems.
- Forestry has conducted tree preservation training sessions with utility company staff as well as Building Inspectors and Engineering staff.
- The GIS tree layer is fairly accurate and can be shared with engineering consultants for plan development.
- "Alternate" construction methods have been used to protect trees, including Insituform pipe for sewer lining, curved sidewalks, use of structural soil in streetscape plantings, boring instead of trenching pipes, and placement of pipes in streets rather than parkways.

Nevertheless, Forestry/Grounds Superintendent believes that additional attention needs to be paid to this issue whenever such projects are being planned and conducted, so that the losses to the Village's urban forest are limited to those that are truly necessary.

Recommendations

- Compile and review all of the Village's tree protection specifications and administrative procedures and publish them as appropriate in the Arboricultural Standards Manual and the proposed Technical and Administrative Procedures Manual.
- Work with Community Development on the recent Chapter 14 and15 tree protection ordinances and develop an implementation plan that matches the capabilities and needs of each department and fulfills objectives of these provisions.
- Continue to enhance efforts to protect public trees from construction injury.

The following is a list of specific measures that the Forestry/Grounds Superintendent recommends for the improved protection of the Village's urban forest.

- Forestry/Grounds should continue to train new staff to consider the potential for future hardscape conflicts when planting new trees (avoiding conflicts with signs, and selecting properly sized species for each site to minimize conflicts with planting).
- For all utility and construction projects conducted by the Village, all plan sets should accurately show existing parkway trees, labeled with serial numbers, DBH and species code.
- Forestry/Grounds should be involved in plan review early in the process not given extensive plan sets just before projects are going out to bid.
- Project Specifications and Budgets should specify and pay for any tree removals needed, and appropriate replanting (ideally, inch for inch replacements but at least tree-for-tree, even if replacements are done outside the project limits).
- Streetscape projects should plan for parkways with tree lawns and trees whenever possible, or at least raised curb planters containing the minimum soil volumes specified in the Village's Arboricultural Standards Manual. Trees in pits/grates should be used as a last resort and only when structural soil is properly installed beneath surrounding brick pavement to meet soil volume requirements.
- The effect on existing parkway trees, especially large specimens of desirable species, should be carefully considered before the installation of new paving where trees exist (such as bike paths and sidewalk extensions.)
- Projects that require re-grading of parkways should, whenever possible, result in adequate spaces for parkway tree planting after the project is complete.
- Forestry/Grounds staff should be routinely invited to preconstruction and progress meetings for all construction projects that may impact trees, and given a place on the agenda.

3Q. Creek Maintenance

Introduction

There are several creeks and a significant drainage ditch that flow through Mount Prospect, including Weller, McDonald, Higgins Creeks and Feehanville Ditch. These waterways eventually drain to the Des Plaines River. Tree maintenance along these drainages is important to protecting the public and private property that the creeks run through. Failure of branches and trees can restrict water flow and contribute to flooding, particularly during intense precipitation events that the Village is periodically subjected to. Creek maintenance is also vital to reducing bank erosion that can impact land quality and value, and water quality.

Maintenance of trees along these waterways is also valuable to pest management efforts in the Village, since they can harbor insects or pathogens that can spread to private or public trees. In their natural habitats, both American elm and green ash prefer drainages, and pests on these species can have specific impacts on the health of Village maintained trees.

Current Management

Village has committed to maintaining these creeks to prevent flooding, using various easement agreements to allow access for maintenance. Each year, sections of the different creeks or drainages are selected for budgeting and maintenance, which is administered by the Forestry/Grounds Division. All debris in the creek and on banks, all dead trees, and large deadwood are removed as part of the maintenance contracts. Tree stumps are left intact in order to provide

a degree of bank stabilization. Part of the creek maintenance budget has been used to remove fallen or pest affected trees when these are discovered within the drainages. In 2012, approximately 360 feet of Feehanville Ditch were managed along with a section of Higgins Creek at a cost of $15,575.

Historical Summary

As part of the 1993 management plan, improved maintenance of Weller Creek was identified as a goal for the Forestry Division (Photograph 3Q-1). To this end, each year since 1997 the Village has budgeted $25,000-50,000 annually for a Creek Tree Trimming/Removal/Debris Cleanup Contract (Table 3Q-1). In addition to these contracts, the Village has completed extensive bank stabilization projects using bioengineering techniques along Weller Creek.

Photograph 3Q-1. A well maintained section of Weller creek where bank stabilization has been installed. Creek and drainage maintenance is important to keep trees and branches from blocking drainage, stabilizing creek banks and protecting property flooding and erosion, and to eliminate breeding locations for pests.

Discussion

Creeks and drainage ditches are one portion of stormwater management in the Village. The impact of trees in creek maintenance was not mentioned in a recent stormwater study in the Village, but erosion management on Weller Creek was (Burns and McDonnell 2012). Budget amounts for tree and bank management in the Village seem warranted, given the potential for flooding in some areas near creeks, and the effort to protect the parkway tree resource in the Village from emerald ash borer, Dutch elm disease and elm yellows.

Recommendations

- Continue funding and tree management along creeks and drainages in the Village.
- Consider higher level analysis documenting the importance of parkway and private trees and canopy cover on stormwater management using i-Tree Hydro modeling.

Table 3Q-1. Past maintenance location and amount spent on tree maintenance along creek drainages in the Village of Mount Prospect.

Year	Segment	Amount Spent	Cost per 50-foot Segment
1997	Weller Creek, School Street westward to 208 W. Hiawatha Tr.	$50,000	Hourly
1998	Weller Creek, 208 W. Hiawatha Tr. to Rte. 83 and Central Rd. south to 113 Weller Ln.	$50,000	Hourly
1999	Weller Creek, 113 Weller Ln. to Lincoln St.	$50,000	$1475
2000	McDonald Creek, from Wisconsin Central ROW to Kensington Rd.	$50,000	$787
2001	McDonald Creek, from the Prospect Heights border to Wolf Rd. ($19K) and Feehanville Ditch from Feehanville Drive to 1221 Business Center Drive ($31K)	$50,000	$556
2002	Feehanville Ditch from 1331 Business Center Drive to Wolf Rd. and Higgins Creek (not including stretch bordering Crystal Towers property).	$43,000	$399
2003	Higgins Creek (bordering Crystal Towers & Forest Cove property).	$9,800	$426
2003	Weller Creek (From See Gwun to Lincoln)	$42,000	$736
2004	Weller Creek (From See Gwun to Rte. 83 ($600 per seg) and from 310 Hiawatha to DP corp. limit ($130.43 per seg)	$37,000	$600
2004	Weller Creek (From Central Rd. to Westbrook bridge)	$9,100	$650
2005	Weller Creek (From Westbrook bridge to Lincoln St. bridge)	$33,000	$837
2006*	McDonald Creek, from the Prospect Heights border to Wolf Rd.	$27,940	$799
2007	McDonald Creek, from 1801 Hopi to Burning Bush Lane (no work needed on Wis. Cent. ROW)	$27,548	$1090
2008	McDonald Creek, Edison Property east of RR tracks, plus Burning Bush Lane East to 2001 Hopi	$50,250	$875.00 Edison / $1250.00 rest
2009	McDonald Crk., from 2003 Hopi to Kensington (finish) and Feehanville Ditch from 852 Feehanville to 580 Slawin	$19,663	$422 (McD) and $835 (Feehanville)
2010	Phase I - Feehanville Ditch - 580 Slawin to west property line of 1331 Business Center Dr.	$6,446	$293
2010	Phase II - Feehanville Ditch continuing from 1331 Business Center to first bridge at 1600 Feehanville (about 1/2 through property)	$13,520	$520
2011	Feehanville Ditch from 1st bridge at 1600 Feehanville to beginning of property at 350 Wolf Rd. (Stopped 350 feet west of Wolf Road).	$18,000	$880
2012	Feehanville Ditch - 350 Wolf Rd. to Wolf Rd. Approx. 350 feet (7 segments)	$7,175	$1025
2012	Higgins Creek (bordering Crystal Towers & Forest Cove property).	$8,400	$365

*Budget allocation reduced in 2006 to $25,000

3R. Greenspaces

Introduction

In addition to the Village's parkways, there are other public spaces with trees and landscapes that the Forestry/Grounds Division is responsible for managing. These include all Village facilities, several parks and numerous greenspaces in the Village including the Village's gateways and other beautification efforts such as annual flower beds and downtown hanging flower baskets (Photograph 3R-1).

There are other public spaces located within the Village that the Village does not manage. These include approximately 465 acres of park land that are owned and maintained by four regional Park Districts; Mt. Prospect Park District, River Trails Park District, Arlington Heights Park District and Des Plaines Park District. These Districts are separate and distinct governmental authorities that are not under the authority of the Village of Mount Prospect.

Photograph 3R-1. Forestry/Grounds staff manages the care of Village gateways and other greenspaces in the Village.

Current Management

The Forestry/Grounds Division is responsible for the management of approximately 40 acres of greenspace on 71 Village properties (Appendix 3R-1). These include Centennial Park, Moehling Park, Tamarack Park, Village facility grounds, Village entrance markers and other Village owned greenspaces located throughout Mount Prospect. Forestry and Grounds responsibilities include the maintenance of the turf, landscaping and hardscape features and annual flower beds as well as any trees located on these properties (Photograph 3R-2).The Division also cares for the Union Pacific Railroad right-of-way although it is property that is not owned by the Village.

Photograph 3R-2. Forestry/Grounds staff is responsible for the care of annual flower beds on public greenspaces in the Village as well as the hanging flower baskets in downtown Mount Prospect.

The trees located on these greenspaces are not included in the Village's computerized tree inventory; however, their management is integrated with the parkway tree management schedules. As with the parkway trees, trees located on these properties receive regularly scheduled management. Whenever a Forestry Section is scheduled for five-year rotational pruning, the properties that are located within that Section are included. The Grounds Foreman and his crews also routinely inspect these properties and any tree work that may be required is promptly scheduled and completed.

Historical Summary

The Village has received numerous awards for the management of its public greenspaces as well as several grants to assist in these efforts including;

- 1989 - Lady Bird Johnson Award from National Arbor Day Foundation for railroad right-of-way beautification efforts
- 1992 - Award of Merit from Illinois Chapter of ASLA for railroad right of way beautification
- 1994 - ISTEA Enhancement Funds ($4,000). 10,000 daffodils planted at Village Grounds Areas in one day; joint project between Village staff, Chamber of Commerce, and School Districts
- 2003 - "Beautify Mount Prospect" Shining Star Award from Mount Prospect Special Events Commission jointly presented to Village staff and Garden Club of Mount Prospect for Moehling Park development

Discussion

The trees located on these greenspaces clearly receive adequate management and in fact, as characterized by the Superintendent, actually receive more intensive management than the parkway trees. However, the numbers of trees, location, species composition and condition should be inventoried and included in the Village's computerized inventory for planning and management purposes.

There are significant numbers of trees located on the Park District properties located within the Village. These trees are not the management responsibility of the Village; however, their health can have an impact on the health of the urban forest. Given these trees are a part of Mount Prospect's urban forest and there is a wealth of expertise at the Forestry Division, building on cooperative efforts to date to enhance the management of Park District trees should continue.

Recommendations

- Inventory the trees located on Village owned and managed greenspaces and add them to the Village's computerized tree inventory.

3S. Sustainability

Introduction

The Environmental Protection Agency (EPA) defines sustainability as; "Everything we need for our survival and well-being depends, either directly or indirectly, on our natural environment. Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony that permit fulfilling social, economic and other requirements of present and future generations," (www.epa.gov/sustainability/). The EPA goes on to describe its efforts; "in the areas of sustainability approaches and practices as including labeling green products and promoting green chemistry and engineering, managing materials rather than creating waste, using green infrastructure to manage stormwater runoff, and supporting sustainable design of communities."

In addition to this broader definition of sustainability, Clark et al. (1997) argued that the central tenet of urban forest sustainability requires a healthy urban forest resource, community wide support, and comprehensive management. They also proposed that sustainable urban forests maximize the net environmental, ecological, social and economic benefits over time.

Sustainability is also a process, where a community can measure its success by key indicators of how well it is moving towards sustainability in both the broader context as defined by the EPA, and specific urban forest management. Clearly, sustainability of the urban forest resource applies to both public and private trees. Clark et al. (1997) provided a series of key indicators of urban forestry sustainability that could be useful to measure the Village's progress.

Current Management

The benefits analysis of Mount Prospect's parkway trees completed as part of this plan quantified (Section 4H) the value of the social, economic and environmental benefits the urban forest provides for the Village of Mount Prospect. The urban forest provided an energy usage saving of $428,343 and intercepted over 41 million gallons of storm water runoff a year. The forest captured nearly 60,000 pounds of air pollutants and over 17 million pounds of carbon dioxide. Finally, Mount Prospect realizes a return of $2.29 per tree for every dollar spent.

Historical Summary

In 2009, the Village started several green infrastructure and sustainability initiatives and programs. The Department of Energy notified the Village that it was eligible for a nearly $600,000 Energy Efficiency and Conservation Block Grant designed to meet the nation's long-term energy independence and reduction of fossil fuel emissions goals. The grant required the Village to have an Energy Efficiency and Conservation Plan and with the assistance of a consultant the Village completed and adopted an Energy Strategy Plan in April of 2010.

In 2011, the Village and the Mount Prospect Public Library entered an agreement to create the Mount Prospect Sustainability Education Program (Figure 3S-1). The program is designed to educate residents and businesses about energy efficiency, recycling and water conservation. One of the products of this effort is the formation of the program website; www.greenmountprospect.org.

Figure 3S-1. Mount Prospect's Sustainability Program logo.

Additional efforts identified as part of the program include the following projects and programs:

- The Village's Solid Waste and Recycling program http://www.mountprospect.org/index.aspx?page=87
- The Village's Forestry/Grounds Program http://www.mountprospect.org/index.aspx?page=248
- Bicycle Plan – Village of Mount Prospect's comprehensive bike plan
- Fire Station #14 Signage – Static signage located at the station that describes and illustrates the facility's Leadership in energy and Environmental Design (LEED) features
- LED Street Lights – With various grant funding sources, the Village installed 24 pedestrian and 24 street LED lighting fixtures on Prospect Avenue in 2011
- Lighting Retrofits – In 2011, the Village's Public Safety Building were upgraded with new energy saving lighting fixtures
- More information about the projects and programs can be found at http://greenmountprospect.org/programs

In 2011, the Village conducted a Storm Water Management Study that revealed the need for improvements in storm water management in several neighborhoods in the Village. However, trees and tree canopy cover management were not even mentioned in the plan, although urban trees have been well documented to help reduce and slow storm water (EPA 2013). Urban trees are considered by the EPA as part of green (versus gray or engineered options) storm water systems (EPA 2013). Clearly, increased use of trees in storm water planning and management represent an opportunity for further integrating urban forestry as a green option in the Village.

Discussion

In addition to the benefits trees provide in making Mount Prospect a more sustainable community there are other measures that can be taken to improve Mount Prospect's sustainability.

- Maintaining and increasing public and private tree canopy cover will improve air quality, reduce energy needs and reduce storm water runoff volumes.
- Any efforts taken to improve operational efficiency will reduce emissions generated from burning fossil fuels.
- Increasing motor vehicle efficiency and decreasing the use of fossil fuels will reduce emissions of greenhouse gases.
- Using as many large tree species as possible as part of tree planting efforts and prolonging the life span of Mount Prospect's trees through adequate care and maintenance will return the highest possible benefits.

Recommendations

- Consider quantifying the structure and function of both public and private tree resource using an i-Tree Eco sampling and analysis.
- Protect and increase Mount Prospect's overall canopy cover and tree longevity through adequate legislation and providing sufficient human and financial resources.
- Continue to reduce response driven work activities that require more travel time from work site to work site.
- Use the largest sized tree species at maturity as possible as part of tree planting efforts.
- Encourage tree planting on private property.

3T. Pest Management

Introduction

In addition to Dutch elm disease and emerald ash borer, parkway and public trees are potentially subject to numerous pests that threaten their health and longevity. Of most concern are introduced or exotic pests that have the potential to cause large scale damage or losses because of the lack of resistance in native tree species.

Photograph 3T-1a and 3T-1b. Left: Gypsy moth defoliation of a young red oak. Right: Larvae of gypsy moth.

Two introduced pests stand out, gypsy moth and Asian longhorned beetle. Gypsy moth, which is present within the Village, feeds primarily on oak species. Repeated defoliation by gypsy moth can stress or kill mature trees, especially if the spring defoliation is followed by drought (Photograph 3T-1a and 1b).

Gypsy moth was imported into the United States in the late 1800's and has spread slowly across the country from the east coast. Gypsy Moth has been a concern of tree managers in Mount Prospect since it was first discovered in Northeast Illinois in 2000. Lake County Illinois (directly north of Cook County) was the first county to be quarantined for Gypsy Moth in 2000 by the Illinois Department of Agriculture (IDA). Following the initial quarantine, Cook County (including Mount Prospect), McHenry County, and Dupage County were added to the Illinois quarantine area in 2007. The IDA adopted the national program of "Slow the Spread" developed by the United States Department of Agriculture. Under this program most of the IDA's resources for battling Gypsy Moth are concentrated outside of the quarantine area, leaving municipalities within the quarantined area to take control measures themselves.

Asian longhorned beetle (ALB) was first identified in 1998 in the Chicago area, and through efforts of the United States Department of Agriculture was declared eradicated in 2008. However, ALB continues to spread in other Midwest (Ohio) and Northeast states. The borer attacks a wide range of tree species, including ash, birch, maples, elm, hackberry, horsechestnut, katsura, London planetree, mountainash, mimosa, and willow. Many of these species are common parkway trees. ALB has the potential to kill mature trees, and therefore is a significant concern to urban and rural forests in all areas of the country.

One disease that is endemic to the Midwest and that is present in the Chicago area, oak wilt, (cause by the fungus Ceratocystis fagacearum) is also of concern because it can kill mature oaks. Oak wilt is unlikely to cause widespread damage in the Village because most spread occurs via root grafts that are formed in more sandy type soils and in natural stands, conditions that are not present along parkways in the Village.

Climate change which appears to be impacting the Chicago area is also likely to have an impact on pests attacking parkway trees. As noted, the area has already warmed to the point where it is a climate zone warmer than in 1993. Warmer winter temperatures will increase survival of over-wintering pests, and may contribute to increases in population development. As winter temperature extremes moderate and annual temperatures warm, pests that were more southerly distributed will expand northward. Several examples have already been noted by Forestry/Grounds staff, such as bagworms, and leafhopper species that spread elm yellows.

Current Management

Gypsy Moth

Oaks comprise 6% of the parkway tree population and the Village has a treatment program to protect this population from damage. The current treatment protocol includes setting out pheromone traps prior to the flight season, and scouting for egg masses during the winter months (Photograph 3T- 2a & 2b). Infestations that are found during the growing season are treated with an insecticide. Pheromone trapping conducted in 2012 resulted in the fewest number of male moths caught since trapping was initiated in 2008. Egg mass scouting in winter 2012-2013 resulted in a continued reduction in egg masses found.

Photograph 3T-2a and 3T-2b. Left: A contractor removing gypsy moth egg masses as a means to manage and reduce damage from pest and to minimize pesticide spraying. Right: Gypsy moth female moth and egg mass.

Asian Longhorned Beetle

No active management or scouting is being conducted for Asian longhorned beetle because the pest has not been identified in the Village, and was recently eradicated from the Chicago area. However, analysis of the current tree population shows that 54% of the tree population is potentially susceptible to this borer (Table 3T-1).

Table 3T-1. Number and percent of the Mount Prospect parkway tree population that are potential hosts for Asian long-horned beetle.

Tree Genus or Species	Number of Trees	Percent of Total Population
Maple	8220	34.6
Ash	2779	11.7
Horsechestnut	18	0.1
Birch	43	0.2
Elm	787	3.3
Hackberry	704	3.0
Planetree	192	0.8
Poplar	76	0.3
Willow	2	0.0
Mtn. Ash	1	0.0
Katsura	18	0.1
Total	**12840**	**54.1**

Oak Wilt

Oak wilt management consists primarily of avoiding pruning or wounding oaks during the early part of the growing season. Insects that spread the oak wilt fungus are attracted to these fresh wounds. Prompt sanitation of infected trees is needed when oak wilt infected trees are identified.

Historical Summary

Gypsy Moth was first discovered in Mount Prospect in summer 2008 when Gypsy Moth larvae and pupae were discovered at ten sites. The known infestations were promptly destroyed, but the pest has persisted at low levels in the Village. Since the initial discovery and current control measures were put into place, gypsy moth population dropped dramatically after peaking in 2010.

Discussion

Pest management concerns in the Village have been well managed by Forestry/Grounds Division by maintaining contact and involvement with State agencies that monitor invasive pests and through participation in regional arboricultural education programs. The current gypsy moth management program is a good example of how cooperation, education and then implementation have reduced impacts of this potentially important pest to inconsequential levels.

Pest management may be one of the greatest concerns for the Village in the future. For example, the potential of Asian longhorned beetle to infest over 50% of the species in the Village is of significant concern. Further, other pests could be introduced or native pests could become problematic in the future even if they are not fatal. For example, outbreaks of cottony maple scale in the Northeast have resulted in significant nuisance to residents from honeydew production by the pest, even though the scale is not particularly damaging to silver maple, one of its main hosts. Tar spot of Norway maple is another example of a pest that in most years is barely noticeable, but in select years causes widespread and nearly complete defoliation of Norway maple as early as July.

The impact of climate change on pest importance also cannot be overlooked, as changing climate conditions could alter host susceptibility or facilitate spread or damage caused by previously unimportant pests. Given the unpredictable nature of pests to cause significant impacts to the tree resource in the Village, remaining vigilant about pest management should be a key concern of the Forestry Division.

Recommendations

- Maintain active participation in regional and State offered pest management programs

Section 4. Existing Condition of the Tree Resource

Introduction

This section documents the current age distribution, health, species distribution, appraised value, and the quantification of the environmental benefits of the parkway tree population. It is a snapshot of the condition and benefits of Mount Prospect's tree population at the time this plan was developed. These statistics will provide benchmarks with which to compare future analysis as well as identify trends and allow projections to be made based on known parameters of the existing tree population.

4A. Age Distribution

Introduction

Age distribution is an important metric of parkway trees as it reflects past management practices and decisions, and external influences such as pest impacts or catastrophic storms. Tree diameter distribution is typically used as a proxy for age distribution and is used to help predict immediate and future maintenance needs of the urban resource. For example, a large population of young trees suggests a strong planting and replacement program exists, but also a population of trees that will require more frequent pruning to develop strong branch structure as they mature. Summary of the current age distribution is valuable in predicting future trends in tree population survival and maintenance in the Village.

Existing Conditions

The age distribution of Mount Prospect's parkway tree resource (Figure 4A-1) shows a strong population of young trees (1-6 inches in diameter; 26% of the total population), a solid core population of semi-mature trees (7-18 inches in diameter; 39% of the population) and mature trees (19-30 inches; 31% of the population), and a relatively low population of large diameter mature to over mature trees (31+ inches in diameter; 4% of the population).

Over 85% of the trees are less than 19 inches in diameter, and 45% are less than 12 inches. The age distribution curve suggests a drop off in trees that survive the transition from 18-24 inches in diameter to large diameter classes (Figure 4A-1). However, there are a greater percentage of trees in the 25+ inch diameter classes than was present in 1993.

Diameter distribution varies significantly by Forestry Section (Appendix Section 4A-1). Several sections have young tree populations that are less than a third of the total population (e.g. Sections 1, 5.3, 10, and 15.1), suggesting they may be targets for increased planting.

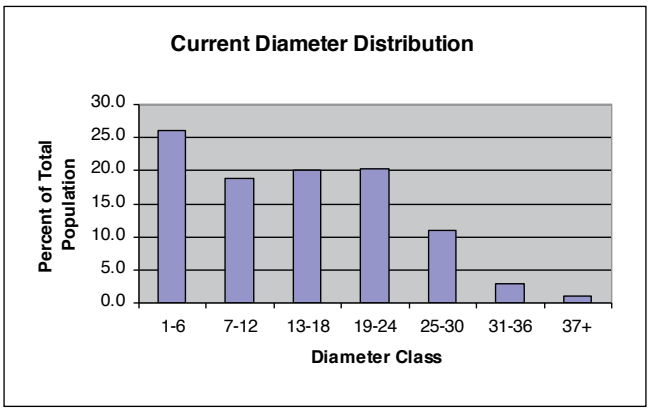


Figure 4A-1. Diameter distribution of parkway trees by six-inch size classes.

Discussion

The diameter distribution reflects a strong replacement program for trees that have been removed. Maintenance of this replacement program and increasing planting in the short run will be required to offset losses from EAB. The Forestry/Grounds Superintendent would like to reinstate the cost-share planting program to help meet the costs associated with this increased planting. The cost-share program would also allow planting of larger diameter trees (2.5 inch versus 1.5 inch trees).

The population of relatively young trees (1-19 inches in diameter) is large enough to sustain the elevated removal and losses in the larger diameter classes ahead of it. The obvious drop off of trees into the larger diameter classes (25+ inches) likely reflects losses due to Dutch elm disease, inherent site conditions in the Village that do not support large-size class trees, and losses to storms, drought and emerald ash borer (EAB) that have impacted the tree population over the past 20 years. Large diameter, mature trees are often the most susceptible to storms, pests, and other environmental influences. Except for the absence of trees moving into the largest diameter classes, the Village's population distribution is near ideal. The population distribution includes a good distribution in most age classes, adequate-sized trees to provide good canopy cover, and a high number of small trees replacing trees removed due to attrition.

In comparison to the 1993 tree population, the diameter distribution of larger trees has shifted towards the 19-24 and 25-30 inch size classes as would be expected. Interestingly, the two largest size class populations, 31-36 and 37+ inches in diameter, remain essentially the same size as in 1993 (2.8 and 1.1%, respectively). The population of trees less than 12 inches in diameter is slightly smaller than in 1993 (by 5%), but the population less than 19 inches in diameter is slightly larger (by 10%). This shows that parkway trees are moving into the larger diameter classes as expected but are not making the transition to the largest size classes.

Projections

- Losses from EAB and replacement programs for EAB lost trees (if funded), will increase the number of trees in the smallest-size class and moderate the shift of larger diameter trees into larger-size classes that has occurred in the past.
- DED, elm yellows, and environmental stresses will keep mortality rates of large-diameter trees (31+ inches) at current or higher rates in the future, keeping the largest-size classes the same size as in the past.
- Any significant drought, wind or ice storms, or new pests, will result in further shift of the parkway tree population towards higher number of smaller trees and less growth in the number of trees in mature-size classes.
- These projections indicate the likely need for increased funding for Forestry/Grounds Division to manage tree removals and replacement costs from pest losses that are likely to occur in the immediate future.

Recommendations

- Increase funding in the short term as needed to cover removals and replanting from increased impacts of EAB and DED.
- Resume cost-share tree planting program to help maintain age diversity.

4B. Tree Species Analysis

Introduction

History has proven again and again the importance of the diversification of the urban forest. Tree diseases and insect pests as well as other natural events such as catastrophic ice storms or high winds can expose a community to significant tree losses. Losses and costs to mitigate these impacts can be large and disproportionate to a particular genus or species if they are over represented and particularly vulnerable or susceptible to the damage.

Dutch elm disease (DED), gypsy moth, and more recently Asian longhorned beetle and emerald ash borer are insects and disease problems that have caused significant tree losses, expense to mitigate, and management challenges. These threats are expected to continue because global trade will likely continue to bring these pests to North America.

The severity of tree damage caused by storm events such as ice storms has also been shown to vary depending on the species of tree. Evaluation of damage to urban trees from a 1990 ice storm in Urbana, IL demonstrated a high correlation between tree species and susceptibility to ice damage. A similar study of damage from a 1991 ice storm in Rochester, NY revealed tree species such as Japanese pagoda tree and ash suffered disproportionate damage compared to other tree species in the population (Sisinni et al. 1995).

There have been numerous guidelines for species diversity offered by urban forestry professionals over the years. Raup (2006) summarized these guidelines from several sources while Baker (1995) recommended that no particular kind of tree should exceed 5% of a community's tree population. Moll (1989) recommended that a genus should not exceed 10% of the population total and a single species should not exceed 5%. Miller and Miller (1991) recommended a single species should not exceed 10% and Grey and Deneke (1986) took a more liberal view and suggested that no tree species should make up more than 10% to 15% of the total population. Santamour (1990) adopted a more comprehensive strategy and suggested that urban forests could be protected from pest outbreaks if no more than 10% of a single species, 20% of a single genus, or 30% of a single family of plants were used.

Existing Conditions

In 2012, Mount Prospect's parkway tree population consists of 55 genera and 223 different species and cultivars (Appendix 4B-1). At approximately 35%, maples represent the largest percentage of the population (Figure 4B-1). Honeylocust and ash are the only other two genera exceeding 10% of the population, each at 12%. Linden, at 9%, is the only genus approaching 10% of the population.

The most populous parkway tree species that exceed 5% of the population are silver maple, comprising 14% of the population followed by Norway maple (12.67%), honeylocust (12.14%), green ash (6.7%), crabapple (5.15%), and littleleaf linden (5.13%). In 1993, maples represented 41.8% of the population and silver and Norway maple each exceeded 15% of the population (ACRT 1993). Honeylocust and ash were reported to have exceeded 12% of the parkway tree population.

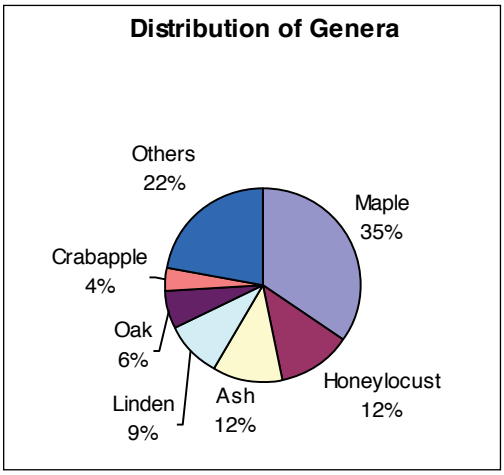


Figure 4B-1. Distribution of genera among the 2013 parkway tree population.

Maples

Maples represent 35% of the parkway tree population. Fifty-five percent of the maples are mature (Figure 4B-2). There are 14 different species of maples in the population. Silver and Norway maple are the only two species that exceed 5% of the population, followed by red and sugar maple (Table 4B-1).

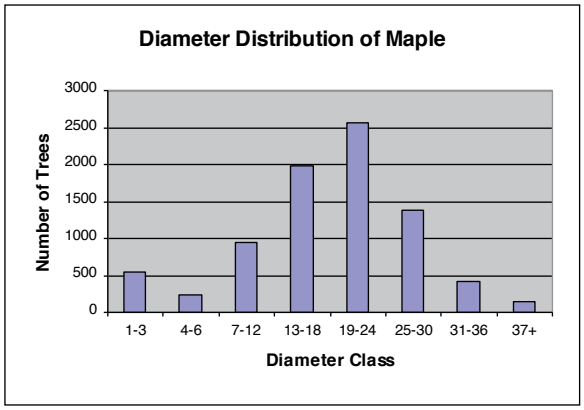


Figure 4B-2. 2013 diameter distribution of maple.

Table 4B-1. Frequency of maple species.

Species	Number of Trees	Percent of Total Tree Population
Silver	3342	14.1%
Norway	3005	12.6%
Red	724	3.0%
Sugar/Black	513	2.2%
Other Species	636	2.7%

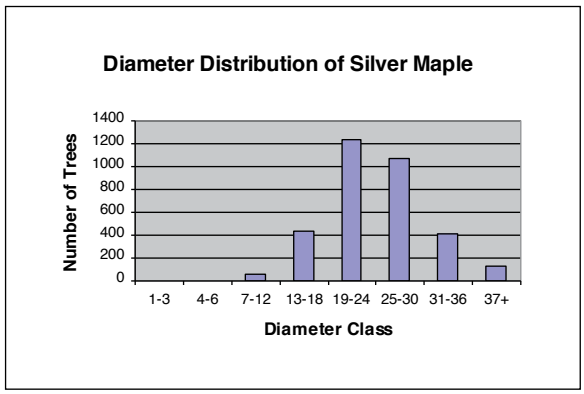


Figure 4B-3. Diameter distribution of silver maple.

Table 4B-2. Frequency of Norway maple cultivars.

Emerald Luster	61	2.03%
Emerald Queen	43	1.43%
Royal Red	23	0.77%
Columnar	14	0.47%
Cleveland	6	0.20%
Superform	1	0.03%

Silver maples comprise 43% of the maples and 14% of the total population. Approximately 85% of the silver maples are classified as mature based on the trunk diameter distribution (Figure 4B-3).

Norway maple represents 40% of the maples as well as 12.7% of the total parkway tree population. There are seven cultivars of Norway maple (Table 4B-2). Approximately 74% of the Norway maples are classified as semi-mature to mature (Figure 4B-4).

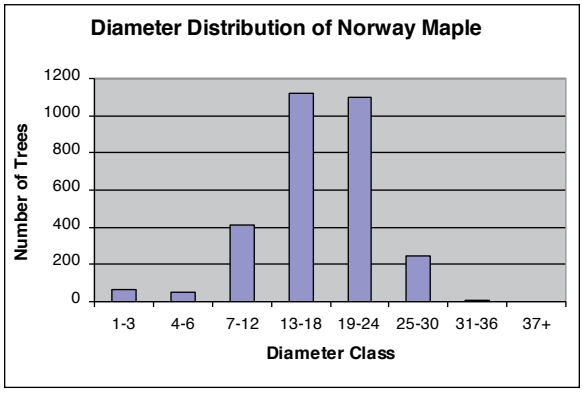


Figure 4B-4. Diameter distribution of Norway maple.

Honeylocust

Honeylocust is the second most populous genera and the third most populous species in the parkway population (Figure 4B-1). There are four different cultivars of honeylocust with the thornless variety representing 84% (Table 4B-3). Approximately 60% are classified as mature (Figure 4B-5).

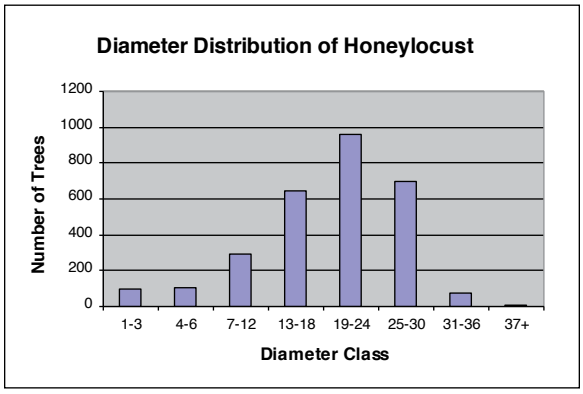


Figure 4B-5. Diameter distribution of honeylocust.

Table 4B-3. Frequency of honeylocust cultivars.

Cultivar	Number of Trees	Percent of Honeylocust
Thornless	2425	84.2%
Skyline	348	12.1%
Shademaster	77	2.7%
Native (thorned)	29	1.0%

Ash

Ash species represent 12% of the parkway population (Figure 4B-1). There are six different species of ash in the population with green ash representing the highest percentage at approximately 58% (Table 4B-4). The majority of ash trees are mature (Figure 4B-6).

Green ash represents 6.7% of the total parkway population and is the fourth most populous species in the population. There are six cultivars represented with the straight species representing 77% of all the green ash (Table 4B-5).

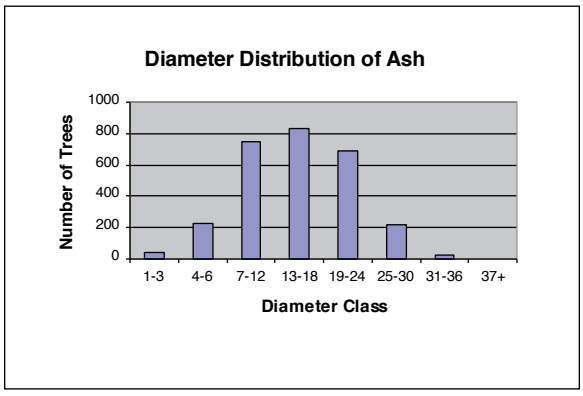


Figure 4B-6. Diameter distribution of ash.

Table 4B-4. Ash species.

Species	Number of Trees	Percent of Ash
Green	1605	58%
White	777	28%
Blue	255	9%
European	135	5%
Manchurian	6	0%
Pumpkin	1	0%

Table 4B-5. Cultivars of green ash

Cultivar	Number of Trees	Percent of Green Ash
Straight species	1241	77%
Summit	143	9%
Patmore	107	7%
Cimmaron	50	3%
Leprechaun	30	2%
Sherwood Glen	19	1%
Marshalls Seedless	15	1%

Crabapple

Crabapple species and cultivars are fifth in the population and represent 5.15% of the population. There are 28 different cultivars of crabapple represented in the crabapple population with the "unknown" and Donald Wyman topping the list (Table 4B-6). Fifty percent of the crabapple are young as represented by the trees 6 inches in diameter or less (Figure 4B-7).

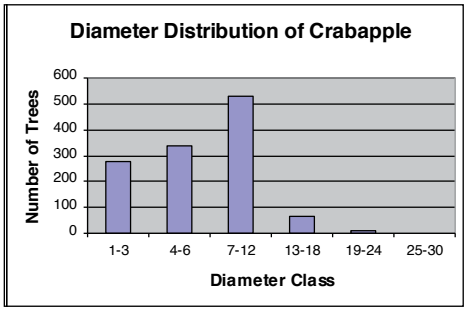


Figure 4B-7. Diameter distribution of crabapple.

Linden

Lindens, as a genus, are approaching the 10% genus diversity guideline, representing 9.7% of the total parkway population (Figure 4B-1). There are three species of linden represented in the population with littleleaf representing 54% of the linden (Table 4B-7). Forty-seven percent of the linden trees are young as represented by trees 6 inches in diameter or less (Figure 4B-8).

Littleleaf linden represents 5.13% of the total parkway tree population (Appendix 4B-1). There are five cultivars of littleleaf linden represented with the Greenspire cultivar topping the list (Table 4B-8). Sixty-one percent of the littleleaf lindens are semi-mature as represented by trees in the 7 to 18-inch diameter classes (Figure 4B-8).

Table 4B-7. Species of linden.

Species	Number of Trees	Percent of Linden
Littleleaf	1216	54.1%
American	655	29.1%
Silver	378	16.8%

Table 4B-6. Frequency of crabapple cultivars.

Cultivar	Number of Trees	Percent of Crabapple
CRABAPPLE UNKNOWN	271	22.19%
CRABAPPLE 'DONALD WYMAN'	259	21.21%
CRABAPPLE 'RED JEWEL'	141	11.55%
CRABAPPLE 'ADAMS'	125	10.24%
CRABAPPLE 'SENTINEL'	99	8.11%
CRABAPPLE 'PURPLE PRINCE'	63	5.16%
CRABAPPLE 'PRAIRIFIRE'	60	4.91%
CRABAPPLE 'ROYAL RAINDROPS'	29	2.38%
CRABAPPLE 'ZUMI'	22	1.80%
CRABAPPLE 'NARRAGANSETT'	17	1.39%
CRABAPPLE 'SNOWDRIFT'	17	1.39%
CRABAPPLE 'GOLDEN RAINDROPS'	14	1.15%
CRABAPPLE 'JACKII'	12	0.98%
CRABAPPLE DISEASE RESISTANT	10	0.82%
CRABAPPLE 'FLORIBUNDA'	10	0.82%
CRABAPPLE 'PROFUSION'	10	0.82%
CRABAPPLE 'RED BARON'	10	0.82%
CRABAPPLE 'BEVERLY'	9	0.74%
CRABAPPLE 'CARDINAL'	9	0.74%
CRABAPPLE 'WHITE ANGEL'	9	0.74%
CRABAPPLE 'ORMISTON ROY'	8	0.66%
CRABAPPLE 'ROBINSON'	5	0.41%
CRABAPPLE 'ADIRONDACK'	4	0.33%
CRABAPPLE 'SUGAR TYME'	4	0.33%
CRABAPPLE PROFESSOR SPRENGER	1	0.08%
CRABAPPLE 'RADIANT'	1	0.08%
CRABAPPLE 'SPRING SNOW'	1	0.08%
CRABAPPLE 'USDA 2'	1	0.08%
Total	1221	100.00%

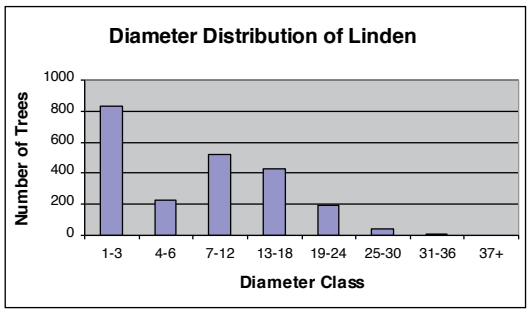


Figure 4B-8. Diameter distribution of linden.

Table 4B-8. Cultivars of littleleaf linden.

Cultivar	Number of Trees	Percent of Littleleaf Linden
Straight species	712	59%
GREENSPIRE	462	38%
GLENLEVEN	29	2%
SUMMER SPRITE	10	1%
KLEHM # 3	1	0%
SALEM	1	0%

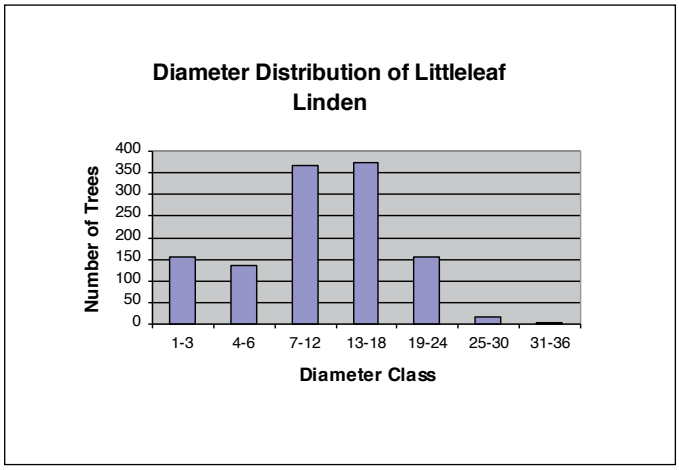


Figure 4B-9. Diameter distribution of littleleaf linden.

Species Distribution by Forestry Section

Maple

Forestry Section 2 has the highest numbers of maples and Sections 1.0, 2.0, 5.4 and 7.3 all have in excess of 500 maples (Figure 4B-10). Sections 4.1, 5.2, 7.1, 7.2, 13, and 17 have the least number of maples, each with less than 100 trees.

In four Forestry Sections the number of Norway maples exceeds 200 trees (Figure 4B-11). Four sections have in excess of 300 silver maples and in two sections the numbers exceed 400 trees. Forestry Section 7.3 has the highest population of silver maples.

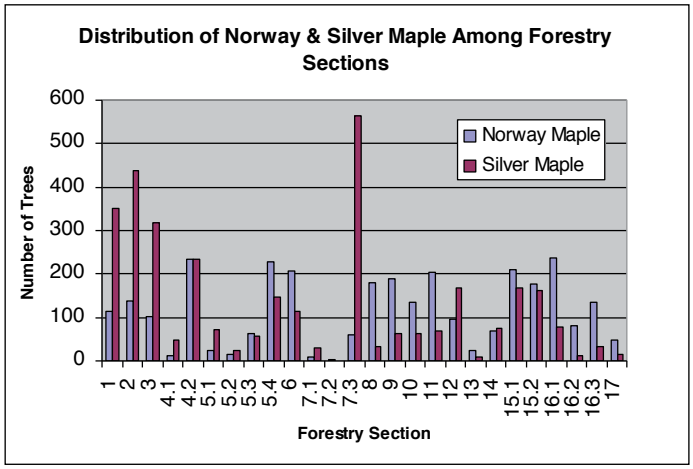


Figure 4B-11. Distribution of Norway and silver maples among Forestry Sections.

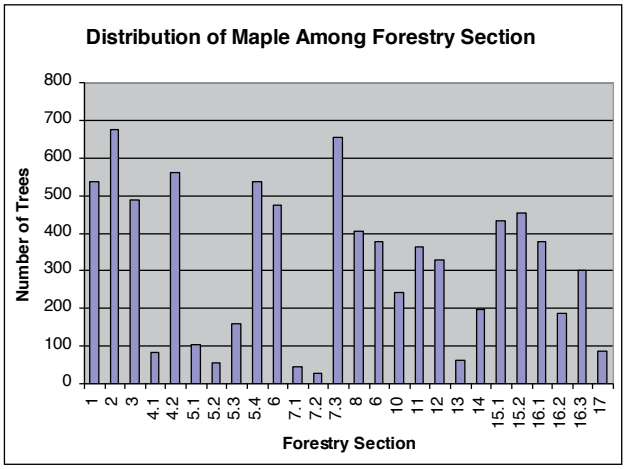


Figure 4B-10. Distribution of maples among Forestry Sections.

Other Species

The distributions of crabapple (Figure 4B-12), honeylocust (Figure 4B-13), and littleleaf linden (Figure 4B-14) vary substantially by Forestry Section. Notable highlights among these distributions are the relatively high proportion of honeylocust in Section 10 and littleleaf lindens among Sections 7.3, 8, 9 and 12.

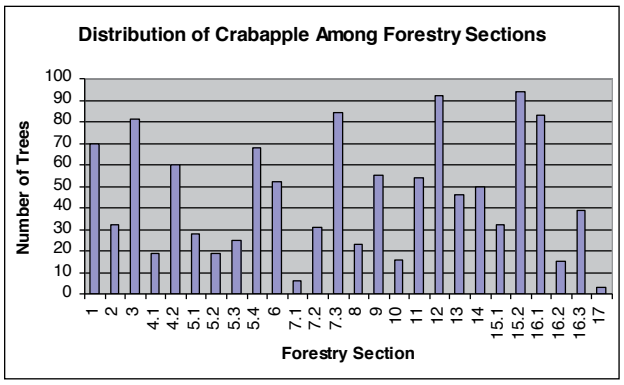


Figure 4B-12. Distribution of crabapple among Forestry Sections.

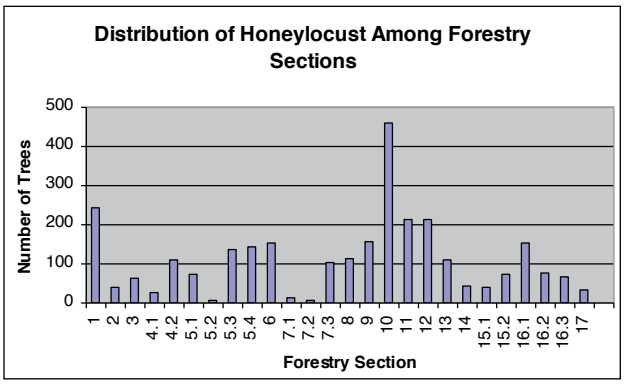


Figure 4B-13. Distribution of honeylocust among Forestry Sections.

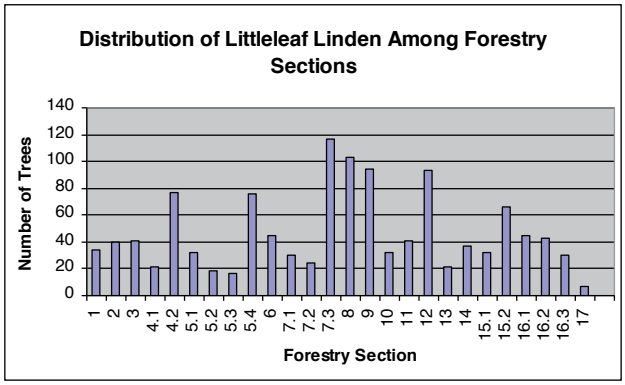


Figure 4B-14. Distribution of littleleaf linden among Forestry Sections.

Discussion

Clearly challenges remain in diversifying the parkway population. The populations of maples as a genus, silver and Norway maple and honeylocust as species, all need their representative percentages of the total population reduced. The percentages of maple as a genus and these other tree species have seen reductions in their percentages of the parkway population in spite of the fact they have continued to be planted over the last 20 years. The population of ash species is presently being reduced through the EAB management plan.

No population diversity guideline is ideal, nor will it prevent tree losses. However, it is a sound urban forest management practice to monitor genera and species diversity in the population and suspend the planting of trees in at-risk genera or species. Urban Forestry, LLC recommends the Village adopt a tree species diversification policy that provides total tree genera and species population goals for parkway trees that are consistent with current urban forest best management practices. Planting under represented genera and species such as oaks and London planetree as part of the Village's various tree planting programs, as well as increasing the numbers of trees planted of these genera are the primary means to actively affect the population species diversity.

The Forestry/Grounds Superintendent has selected the Santamour (1990) guideline as the Village's species diversification policy. Using this guidance, the Village should suspend planting the trees in the maple genus until the respective population falls below 20%. Applying the species guideline, the Village should suspend planting the following tree species until their respective populations fall below 10% of the total population.

- Norway maple
- Honeylocust

Projections

- Frequency of Norway maple, silver maple, and littleleaf linden will decrease in the future if planting is restricted because of their large diameter distribution.
- Frequency of ash and American elm will decrease to low levels in the near future due to their inherent pest problems.

Recommendations

- Adopt a tree species diversification policy that provides total tree genera and species tree population goals for parkway trees that are consistent with current urban forest management best management practices.
- Continue diversification efforts through increasing the numbers of tree plantings and the use of underrepresented tree genera and species (Photograph 4B-1).

Photograph 4B-1. These diversified plantings on Prospect Avenue were installed as part of the Beautification Planting Program.

4C. Tree Condition or Health

Introduction

Tree health or condition is an important concern of urban forestry programs. Trees in good health are better able to resist or contain pest attacks and are more resistant to environmental extremes and stressors. Tree health also impacts maintenance demands and service requests, as trees in poor condition are more likely to have dead or dying branches, which require evaluation and pruning as a result of requests from the public.

Tree health is made up of two components: the health of living parts of the tree, known as the symplastic or "biological" tree, and the health of the structural, apoplastic or "mechanical" tree. Biological health is the condition of leaves, twigs, and other organs that contain living cells in a tree. Structural health is the condition and strength of wood, branch connections, roots and the anchorage of roots in the soil. Both health types can vary independently, meaning biological health does not necessarily confer structural health and vice versa. Plainly, a tree can have a healthy canopy and be structurally unstable. Although biological and structural health is usually evaluated separately, the evaluations are often combined into a single health rating metric.

Tree health is often one of the most important concerns of the public. It is affected by many factors, such as weather, site conditions and available growing space, and presence of pests. Ultimately, tree health can be an indication of the extent and attention to maintenance provided to urban trees.

Existing Conditions

Forestry uses a 1 to 10 scale to rate the biological and mechanical health of parkway trees. The system was developed from the initial inventory methods used by ACRT, Inc. (ACRT 1993) and elucidated further in the Tree Risk Management Assessment Plan (Natural Path Urban Forestry Consultants 2002) (Table 4C-1). The rating system is based on the 32 point CTLA (2000) system.The 1 to 10 scale reflects percentages (1 = 10%, 2 = 20%, etc.) that are also used to estimate tree value.

The vast majority of trees (89%) are rated in Very Good or Excellent condition. No trees are present that were rated Poor or were Dead, and only 31 trees were rated in Fair condition. Condition rating by Forestry Section is presented in Appendix 4C-1. The condition ratings in each of the Forestry Sections reflect the overall above average ratings for the population as a whole.

Table 4C-1. Interpretation of the tree condition rating scale and number of trees in each condition class.

Condition Rating	Condition	Number of Trees
0	Dead	0
1	Poor	0
2	Poor	0
3	Fair	2
4	Fair	29
5	Good	275
6	Good	2387
7	Very Good	9973
8	Very Good	5494
9	Excellent	5490
10	Excellent	74

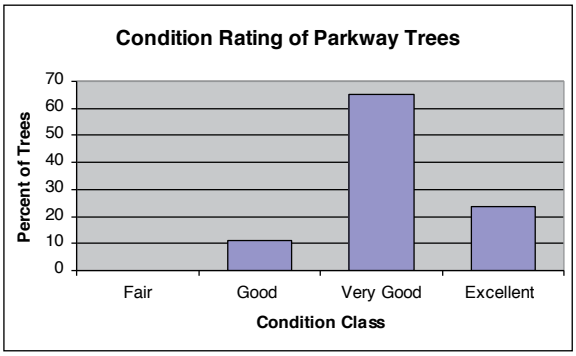


Figure 4C-1. Percent of parkway trees in various condition classes.

Discussion

By any interpretation, trees in the Village are in above average condition for urban street trees, a trend that was noted in 1993 and supported again in 2002 when the risk management plan was developed. This is likely the result of maintenance of the five-year rotational pruning since the 1970s, and wide parkways that provide adequate growing space even though the trees are alongside streets.

Parkway tree health or condition is not expected to change considerably in the near future. The impact of pests such as EAB, DED, and elm yellows on tree health results is a relatively short-term impact on overall forest health. The removal of these trees will eliminate them from the population and the health of remaining trees will not be impacted. The recent drought may have some long-term health impacts; however, the duration appears to have been short enough that most parkway trees should not suffer a long-term decline in health.

Projections

- No measurable change in tree health in the immediate future.

Recommendations

- Add the condition rating system to the Technical and Administrative Procedures Manual.
- Cross check condition rating with Forestry “Problems” code to identify trees that require closer condition evaluation when being re-inventoried.

4D. Tree Longevity

Introduction

The life span or longevity of the Village's parkway trees directly impacts Forestry operations and budgets, and maximizing longevity is important for the following reasons:

- Obtaining the maximum environmental benefit from parkway trees since large trees produce the vast majority of benefits.
- Minimizing costs associated with tree planting, maintenance, and removal as costs are spread over a longer time period and larger tree population.
- Maximizing cost to benefit ratios, by extending the period and amount of benefits while spreading costs over more trees and time.
- Reducing carbon footprints, because when trees are removed carbon expenditures used in maintenance usually contribute to a net negative carbon balance (Nowak et al. 2002).

Recent studies show that urban tree life spans are significantly shorter than forest trees, but longer than previously estimated (Roman and Scatena 2011). Estimated mean life expectancy of street trees was 19 to 28 years, based on multiple studies, urban locations, and site types (downtown, residential, etc.) (Roman and Scatena 2011). Street tree longevity is also influenced greatly by tree species and planting location, and individual trees and species will live significantly longer than average.

Existing Conditions

Estimation of parkway tree life span is challenging, as it requires intensive record keeping on planting and removal dates, or other means to estimate tree life span. Longevity of parkway trees was estimated for the Village from over 11,000 tree removals recorded since 1989. Where available, longevity was determined using planting and removal dates. If those data were not available, age was estimated by age to diameter equations for individual species developed by researchers using urban trees in the Chicago area (Dwyer and Schroeder 2013).

Based on these methods, the average parkway tree in Mount Prospect lives 36 years (standard deviation of 32 years) with a median age of 26 years (Table 4D-1). When trees that died before they reached three inches in diameter are eliminated from the data, (considered as "transplant" failures), the average parkway tree longevity is 43 years (standard deviation of 30 years), with a median age of 33 years.

Table 4D-1. Average longevity based on the estimated age at the time of removal using either the planting and removal date, or the age based on diameter from equations developed from the greater Chicago area (Dwyer and Schroeder 2013).

Forestry Section	Without Transplant Failures (Average age in years)	All Removals (Average age in years)
1	36.2	32.6
2	35.8	31.2
3	37.7	28.7
4.1	32.8	26.4
4.2	35.3	27.4
5.1	26.3	23.6
5.2	46.3	37.7
5.3	52.9	47.6
5.4	53.9	49.0
6	55.1	48.5
7.1	38.8	32.6
7.2	17.8	6.7
7.3	32.4	24.9
8	63.1	56.6
9	50.2	45.0
10	43.1	36.5
11	47.3	39.9
12	31.1	20.9
13	19.9	14.3
14	36.1	32.2
12.1	43.0	39.2
15.2	34.6	27.2
16.1	49.4	39.6
16.2	61.3	55.0
16.3	48.6	42.1
17	44.7	39.6
Average All Sections	**43.3**	**35.6**

These estimates indicate that parkway trees in Mount Prospect are living longer than average street tree life spans presented in the literature. The relatively high median age, and substantial increase in longevity when apparent transplant failures are removed from the data, and high standard deviation indicate that a significant number of individual trees are living longer than the average.

Average longevity by Forestry Section is presented in Table 4D-1. Several of the Forestry Sections stand out by displaying a higher or lower longevity versus the total population's average longevity. Sections with notably higher longevity (greater than 45 years) are 5.3, 5.4, 6, 8, 9, and 16.2. Those with lower than average longevity (less than 25 years) are Sections 5.1, 7.2, 7.3, 12 and 13.

Discussion

The average life span of Mount Prospect trees is longer than reported in the literature for the locations in the country that were studied (Roman and Scatena 2011). Clearly, individual trees will live substantially longer than average as many larger-diameter parkway elms are remnants of original plantings in the Village. A seemingly important and obvious goal for the Village would be to increase the life span of parkway trees. However, elevated losses to EAB in the near future, and a general lack of known arboricultural management practices that directly increase longevity, may make this goal difficult to achieve.

The data shows trees in Forestry Sections with higher levels of commercial and industrial development have the shortest life expectancy. This is a common occurrence in most cities and increased attention to species and site selection may help reduce this trend.

Projections

- Short term decrease in longevity due to EAB losses and increased mortality of ash tree replacement trees because of the recent drought and inherent higher mortality rates of newly planted stock.
- Weather extremes, such as flooding, drought, and high winds will place continued pressure on tree longevity.

Recommendations

- Closely monitor tree removal causes to help determine factors contributing to young and mature tree mortality.
- Utilize careful tree and site selection in Forestry Sections with lower longevity.

4E. Tree Problems

Introduction

There are several common problems and conditions with urban trees that can present management challenges and provide indicators of emerging problems with specific trees and the urban forest in general. It is also helpful for management to record trees that are conflicting with the infrastructure of the urban environment, for example, overhead power distribution lines. Recording common indicators and symptoms of these issues or problems can help managers evaluate a tree's health and structural integrity, and other management needs. Noting these issues in a specific tree data field in a computerized inventory can facilitate querying of trees that require inspection or special management.

The Village identifies the presence (Yes) or absence (No) of 13 "Problems" on each tree that is inventoried. These fields are updated if the problem is noted at the time a tree is inspected.

Existing Conditions

In 2012, the tree inventory identified Surface Roots as the most common problem followed by Girdling Roots and then the presence of overhead wires close to a tree (Table 4E-1).

In 1993, the most common problems were Surface Roots followed by Major Wounds and Girdling Roots (ACRT 1993). Since 1993 there have been changes in percentages of trees identified with these types of "Problems" (Table 4E-1).

In 2012, Surface Roots is still the most common problem followed by Girdling Roots and then Major Wound. Two problems revealed a decrease in their percentage of the population and the remaining all showed increases. Surface Roots showed the largest change, increasing by nearly 15% of the population.

A closer look at the trees that have surface root problems reveals that maples exhibit this problem most frequently, and in particular silver and Norway maple (Figure 4E-1). Honeylocust is the third most common species with surface roots.

Projections

- No substantial change in Problem frequency in the short term.
- Reduction in the number of Bolt and Cable trees in the long term as this practice is used less frequently in the future, and trees with cables are gradually removed.

Recommendations

- Develop data collection specifications for the Problems category to allow standardization of their collection.
- Cross check during re-inventory the trees with dieback, chlorosis, and badly misshapen and major wounds classifications to determine if condition ratings are commensurate with these problems.

Table 4E-1. Percentage of trees coded with each type of "Problem" from tree inventory data and change from 1993 to 2012

Problem	1993 Percent of Population	2012 Percent of Population	Change
SURFACE ROOTS	10.50%	25.27%	14.77%
GIRDLING	5.50%	13.27%	7.77%
MULTIPLE STEM	2.50%	0.58%	-1.92%
FROST CRACK(S)	2.50%	4.00%	1.50%
BADLY MISSHAPEN	4.50%	5.84%	1.34%
CAVITY	0.05%	1.32%	1.27%
WOUND(S) MAJOR	9.50%	10.71%	1.21%
CHLOROSIS	1.00%	2.15%	1.15%
DIE BACK	5.50%	6.15%	0.65%
BOLT AND CABLE	1.00%	0.84%	-0.16%
FENCE, AGAINST	0.05%	0.16%	0.11%
CLEARANCE PROB.	N/A	0.03%	N/A
WIRES IN/NEAR TREE	N/A	11.60%	N/A

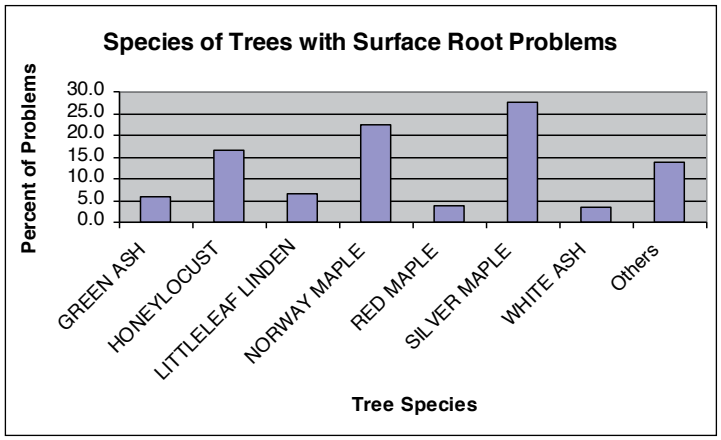


Figure 4E-1. Species distribution of Surface Root problems identified in the population.

4F. Appraised Value

Introduction

Trees provide many benefits including aesthetic, environmental as well as the many products we use in our daily lives. Quantifying the financial value of forest products is relatively simple; we need merely measure tree size and look at the current market price for the value of those products. Appraising trees in the urban environment, however, is more difficult as their worth is not based on their value as a commodity.

Urban trees do provide environmental benefits and specific functions like other elements of the urban infrastructure and these benefits are quantified in Section 4G. The aesthetic value of urban trees, their impact and effect on property values, and their importance to quality of life is reflected in the appraised value of individual trees. This value is commonly calculated using the 9th edition of the Council of Tree and Landscape Appraisers trunk formula methodology (CTLA 2000).

Existing Conditions

The 2012 CTLA total appraised value of Mount Prospect's parkway trees is $117,803,000 and the average value per tree is $4,965. The appraised value of each tree is calculated within the Hansen® software using the Trunk Formula method (CTLA 2000), using a planted tree cost of $787, a base price of $71 per square inch for all trees, and species ratings provided by the Illinois Arborist Association, the State Chapter of the International Society of Arboriculture.

In 1993, the total appraised value of Mount Prospect's parkway trees was $47,022,000 and the average value per tree was $1,775 (ACRT 1993). The appraised value of each tree was calculated using the actual replacement cost for trees less than 3.5 inches in diameter and the Trunk Formula method for trees greater than 3.5 inches. For the latter, a planted cost of $545 and $36 per square inch was used.

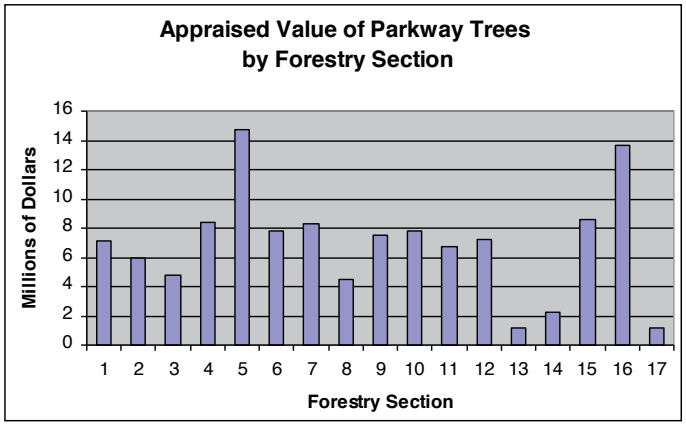


Figure 4F-1. 2012 appraised value of parkway trees by Forestry Section using CTLA (2000) methodology.

The appraised value from each Forestry Section reveals the relative distributions across these sections has remained relatively the same from 1993 to 2012 (ACRT 1993) (Figure 4F-1). Adjusting the 1993 appraisal value using an annual inflation rate of 3% for 19 years, the present value of the 1993 appraisal value is $82,453,000. This reveals an increased appraised value of Mount Prospect's trees of approximately $35.35 million or 30% in the past 20 years.

Discussion

The increase in the appraised value of Mount Prospect's parkway trees could be accounted for by the increase in the size of trees in the population since tree trunk diameter is a primary multiplier in the CTLA Trunk Formula method. Certainly the overall numbers of parkway trees in several of the larger diameter categories has increased (Section 4A), suggesting size as one source of the appraised value increase.

The differences in the calculation methodologies from 1993 and 2012 may also account for some of the increase. The CTLA valuation methodology is problematic because historically it has been shown to reveal significantly disparate valuations among evaluators appraising the same trees (Watson 2002). However, most of the variables that cause the differences (condition and location) are standardized and have not changed significantly over the last 20 years in the Village's inventory system. Given that tree condition and location have not changed significantly since 1992, it is likely that trunk diameter is the primary variable driving the increased CTLA valuation of Mount Prospect's trees.

Projections

- CTLA value may decrease slightly in the near term as larger diameter ash and American elms are removed and replaced with smaller trees. This decrease will likely be offset in the future by growth of remaining trees.

4G. i-Tree Streets Benefits Modeling

Introduction

Because of the numerous environmental benefits provided by urban trees, urban tree management has been used to improve the quality of life for urban dwellers. Urban foresters have also come to recognize that the environmental benefits of urban trees also have a significant monetary value to residents. In general, the monetary value of environmental benefits of urban trees is determined by the cost of obtaining similar benefit using engineered solutions.

Quantification or measurement of these benefits has become possible through the creation of several models that measure type, extent, and value of urban tree benefits. The most well-known of these models is i-Tree from the USDA Forest Service (i-Tree.org).

i-Tree is a state-of-the-art, peer-reviewed software program that provides several urban forestry analysis and benefits assessment tools. i-Tree Streets is one of the programs used to project the environmental benefits and value of these benefits of street trees, while also accounting for management costs and comparing the costs to benefits. This information is a valuable tool when advocating for urban forest management, and also provides scientific backed data on the magnitude and dollar value of environmental impacts stemming from urban trees.

Existing Conditions

The i-Tree Streets benefits model was run using input data from Mount Prospect including a current street tree listing, forestry management cost data (five-year average), energy cost values (from utilities providing services to Mount Prospect citizens), and regional air pollution, storm water, and carbon valuation data. The i-Tree Streets model provides measures of the size of selected environmental benefits such as air pollution removal, storm water runoff reduction, and an estimated dollar value of these benefits (Table 4G-1). The model also provides an environmental benefit dollar value to management cost ratio (benefit to cost) that helps capture the return on investment provided by the Village's parkway tree management efforts (Table 4G-2).

Based on this analysis, citizens of Mount Prospect are getting a return of $2.29 for every dollar invested in urban tree management. The top 10 tree species producing the highest dollar value of environmental benefits is presented in Table 4G-3.

Table 4G-1. Annual environmental benefits quantification by benefit type using i-Tree Streets model and the monetary value of these benefits.

	Annual Benefit					
	Total Electricity Saved (MWh)	**Total Natural Gas Saved (Therms)**	**CO2 Avoided & Stored (Lbs)**	**Storm Water Interception (Gallons)**	**Air Pollutants (ozone, nitrous oxides, particles less than 10 microns, sulfur dioxides) (Lbs)**	**Aesthetic and Other Benefits (Dollars)**
Benefit Size	4368	593,120	17,623,274	41,782,335	54,764	$1,111,768
Total $ Value	$202,957	$225,386	$132,175	$1,132,380	$153,881	$1,111,768

Table 4G-2. Total and per tree monetary value of environmental benefits provided by parkway trees as calculated by i-Tree Streets model. A benefit to cost ratio is provided based on the Forestry/Ground budgets for parkway trees for 2012.

Environmental Benefit	Total Dollar Value	Per tree ($)
Energy Savings	$482,343	$18.06
Carbon Dioxide	$132,175	$5.57
Air Quality	$153,881	$6.49
Storm Water	$1,132,380	$47.74
Aesthetic/Other	$1,111,768	$46.87
Total Benefits	**$2,958,547**	**$124.72**
Management Costs	$1,294,573	$54.56
Net Benefits	**$1,664,974**	$70.14
Benefit to Cost Ratio	**2.29**	

Table 4G-3. Total monetary value of environmental benefits as calculated by i-Tree Streets model by tree species.

Tree Species	Total Dollar Value Environmental Benefits
Honeylocust	$802,671
Silver maple	$798,522
Norway maple	$364,399
Green ash	$194,620
White ash	$109,784
Littleleaf linden	$99,409
Red maple	$79,059
American elm	$58,413
Siberian elm	$48,596
Sugar maple	$47,688
All other	$355,386
Total	**$2,958,547**

Table 4G-4. Monetary value of the environmental benefits provided by parkway trees by Forestry Section.

Zone	Benefit Dollar Value
1	$ 202,180
2	$ 159,929
3	$ 135,633
4.1	$ 53,442
4.2	$ 158,210
5.1	$ 43,292
5.2	$ 23,771
5.3	$ 88,747
5.4	$ 200,247
6	$ 176,060
7.1	$ 26,119
7.2	$ 14,153
7.3	$ 185,515
8	$ 118,825
9	$ 168,032
10	$ 213,752
11	$ 157,621
12	$ 179,115
13	$ 32,585
14	$ 53,552
15.1	$ 101,674
15.2	$ 120,798
16.1	$ 155,312
16.2	$ 67,847
16.3	$ 94,125
17	$ 28,011
Total Value	**$ 2,958,547**

Benefits provided by individual tree species are related to frequency and size. Honeylocust and silver maple are producing the greatest benefit to the Village because of their high frequency and larger size. Clearly, loss of ash species on the streets of Mount Prospect will have a significant impact in both extent and value of the benefits. They provide over $300,000 of annual benefits, which is 10% of the total for the Village.

The monetary value of environmental benefits by Forestry Section are provided in Table 4G-4.

Discussion

Based on this i-Tree Streets analysis, the Village expends $54.56 per tree annually and is returned $70.14 in benefits. Comparatively, a study of five communities by McPherson et al. (2005) showed these municipalities spent between $13-$65 per tree annually for a return of $31-$89 per tree in benefits. Benefit to cost ratio for Mount Prospect was $2.29; for the communities studied by McPherson et al. (2005) the range was $1.37 to $3.09. These data show that Mount Prospect's ratio of expense to return is in line with those from other communities.

Quantification of the environmental benefits that trees provide to the Village is only one aspect of their value. Trees also offer additional dollar value based on the services they provide that would otherwise be solved using other engineering solutions. In essence, parkway trees are part of a "green infrastructure", whose cost to maintain is outweighed by the benefits it provides to the Village. Trees are also one of the few assets that increase in value as they age, as the magnitude of benefits grows significantly as canopy size increases. Further, one of the most important benefits offered by parkway trees is their impact on psychological well-being, connection with nature, and overall quality of life.

Further quantification of the benefit of the urban forest is possible through the use of the USDA;s i-Tree Eco analysis. i-Tree Eco quantifies urban forest structure and environmental benefits on both public and private property. Therefore, it provides a more comprehensive measure of the benefits of the urban forest that can be used to advocate for increased management and protection. In addition, the i-Tree Hydro model uses i-Tree Eco data to project hydrological impact of urban vegetation, and both models could be run if an i-Tree Eco project were undertaken.

Projections

- Loss of canopy cover due to EAB and DED removals will reduce the benefits of trees in the Village in the short term.
- Benefit size and value will rebound to current levels once replanting and growth of newly planted and existing trees increases.

Recommendations

- Use i-Tree Streets result to advocate for continued funding for parkway and urban forestry management.
- Consider obtaining grants for an i-Tree Eco analysis of private and public trees in the Village to further support management efforts.

Section 5. Long-term Projections

Introduction

Projections on the growth and development of urban tree populations can be useful to help estimate future costs and alter management practices to account for foreseeable changes. These projections can also help to prepare for known changes, such as arrival of pests or to avoid management issues before they become severe.

5A. Long-Term Population Projection

Analysis of historical removal rates, planting and replacement numbers, and current pest and other influences on the parkway tree population provide the basis for making future population projections. The level of maintenance, removal, and planting of trees in the Village are driven to a large degree by budgetary considerations. As a result, the tree population stocking level and management intensities are ultimately discretionary expenditures under the control of citizens and government.

Tree size distribution is also influenced by management decisions, but to a lesser degree than tree stocking or population levels. However, a large population of mature parkway trees can only be realized through good stewardship and maintenance of urban management programs over an extended period of time. Projection of diameter or age distribution is significantly more difficult than tree population trends, but historic trends can provide insight into growth and size changes that might be expected in the future.

This section will project and discuss long-term population trends that might develop under different management scenarios. The estimation of future age distributions will be considered in general terms based on historical trends and current influences acting on the parkway tree population.

Population Trend

The arrival of EAB has increased removal rates in recent years. There are presently 1,979 ash remaining on the parkways that are unprotected from EAB. Mortality of these trees over time will keep the attrition rate elevated in the short run. Losses of American elms have also increased recently, however less than 300 elms remain so this limits any large-scale losses of this species. Barring any unforeseen catastrophic events, the historic removal of 1.8% of the population a year will likely remain the same for the long term. However, even with this relatively low removal rate, Figure 5A-1 shows the parkway tree population would be reduced to about 15,000 trees and a 50% stocking rate in only 25 years if no trees were planted to replace removals.

The recent losses due to EAB and DED recently have increased the annual removal rate over the last five years to 2.9% (Section 3G). In general, the Village has planted slightly more trees than it has removed, increasing the stocking level from 86% in 1993 to 88% in 2012 (Section 3C). Assuming that this trend will continue even with the current elevated removal rates, the parkway tree population should remain stable with little change in the coming years.

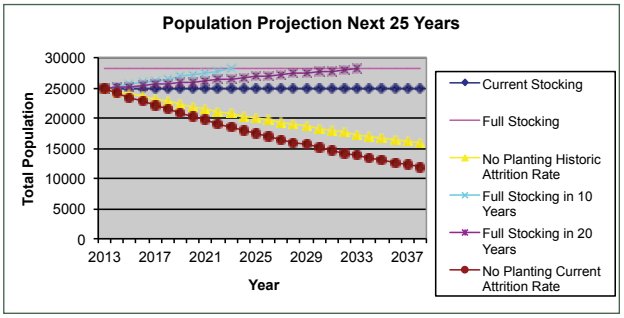


Figure 5A-1. Tree population trends under several different management scenarios. Full stocking scenarios assume all trees removed due to attrition are replaced.

Table 5A-1. Number of trees that would need to be planted annually under the different management scenarios in Figure 5A-1.

Management Scenario	Number of Trees to Plant
Replace Removals-Current Removal Rate (2.9%)	688
Replace Removals-Historic Removal Rate (1.8%)	427
Full Stocking in 10 Years	801
Full Stocking in 20 Years	637

Using these removal rates and several different planting scenarios, parkway tree populations into the future can be generally projected based on different management decisions (Figure 5A-1). Numbers of trees that would be required to be planted for each management scenario is provided in Table 5A-1.

Discussion

Given the good to excellent condition of parkway trees, known populations of trees susceptible to EAB and DED, and historic attrition rates, there should not be any significant reduction in the parkway tree population in the coming 25 years if current budgetary support of the Forestry program continues. Although losses of parkway trees will be elevated in the short term (next five to 10 years) because of DED and EAB, this should not be an ongoing or increasing trend.

Parkway tree populations should remain stable unless tree planting is stopped or significantly reduced by the Village. Given that losses due to EAB and DED have increased the removal rate to over 2% recently, reductions in the numbers of tree plantings could result in substantially reduced parkway stocking level in relatively short period of time (25 years).

The current size (age) distribution also does not support significant increases in short or long-term tree losses. Adequate size distribution is present except for the largest diameter classes.The current tree size distribution structure, therefore, does not appear to be inherently flawed or likely to result in elevated changes in the future. In addition, 85% of the population is less than 19 inches in diameter providing a sound foundation for growth into the future.

The greatest challenge the Village faces is increasing survival of newly planted trees and increasing successful transition of trees into larger diameter classes (25+ inches and greater). Survival of recently planted trees is primarily a function of watering, assuming species selection matches site conditions and the tree was properly installed. Watering young trees is time consuming and costly. However, given that periodic drought is an inherent element of the local climate and is likely to increase in the future, an enhanced small diameter tree watering program should be given consideration. Enlisting the public in such efforts is a task that has already been used by the Village. Continuing these efforts and increasing their use and intensity may be a worthwhile investment in the future.

Increasing survival of larger diameter trees may be problematic. Site conditions may be the ultimate factor limiting survival into large size classes. However, many of the species now on Village parkways are not inherently long-lived (for example, crabapple, honeylocust, silver maple, linden, Norway maple), although they are well adapted to the high clay soils present in the Village. Where possible the Village should use long-lived, large-sized tree species in sites that will accommodate these trees. This could help longevity and improve benefit to cost ratios. Better tracking of the specific reason(s) for removal could help elucidate the primary causes of mortality in larger diameter classes. This all said, the parkway tree longevity appears to be above average based on the analysis completed as part of this plan (Section 4H).

5B. Long-Term Cost Projections

Historically, forestry budgets in the Village have kept pace or exceeded the cost of inflation and the management levels needed to maintain the tree resource in the Village. Staffing needs are not projected to change for the Forestry/ Grounds Division.

Increased expenditures will be required by Forestry in the short-term to address tree removal and stump grinding due to escalating losses from EAB, and continued losses from elm yellows and DED. Removal of EAB-infested trees and the planting of replacement trees will be the primary drivers of any budgetary increases in the near term.

Funding to plant trees will need to be increased in order to mitigate the losses due to EAB as well as keeping up with normal losses due to attrition. Overall since 1993, the Village has replaced more trees than are removed, and given this approach, planting funding needs to increase in the next few years to keep up with the increase in removals. Some of these costs could be offset perhaps by state grant opportunities the Forestry Division and Village have been successful at obtaining.

Pruning costs have escalated in recent years, but there is no expectation or overt reason that this trend should continue. Loss of mature ash and American elms may help keep pruning costs stable because of the replacement of larger diameter trees with smaller ones. Alteration of the current pruning specification as recommended could reduce contractor pruning costs on mature trees and help stabilize any pruning costs in the near future.

Pest management and plant health care costs should remain relatively stable or should increase slightly as more expensive EAB treatments are used, but this is a small albeit important portion of the total Forestry budget. Need for other pest management inputs are not expected to increase in the future, but the potential of new pest outbreaks always looms on the horizon. If increased management (primarily watering) of small diameter trees is implemented to increase survival, this could be an ongoing new or increased cost item for the Forestry Division.

The most significant projected impact on the Forestry/Grounds Division and perhaps the Village budget as a whole is the potential requirement by the State to pay prevailing wage rates for contractual services that historically has not been required. The Superintendent of Forestry/Grounds estimates this change would increase the costs of contractual services between 65% and 100% for forestry and grounds services. Clearly, these increases would severely reduce the level of urban forestry services the Village presently provides.

5C. Long-Term Problems Projections

Management decisions affect the development of most problems to some degree in any urban forest system. Although many problems can't be avoided, their impact can be minimized by planning and implementation of sound management practices.

The most significant problems facing the Village's parkway tree population appears to be from the threat of significant losses from pests, increased frequency of catastrophic storms associated with climate change, and more frequent and intense drought.

Pests

Pest impacts have been discussed in detail in this plan. Losses due to EAB will eliminate the vast majority of the ash tree population and remaining ash will require treatment well into the future. The majority of the American elm population is gone due to DED, and therefore the disease no longer poses a potential threat to a large number of trees in the Village.

Threat from other introduced pests, and some native pests as climate change affects their distribution and host impact, is real but not imminent for any known insects or diseases. Clearly, Asian Longhorned Beetle poses the greatest threat to parkway trees, given that the pest was known in the Chicago area and over 50% of Mount Prospect's parkway tree population is susceptible to such an infestation.

Most other current threats to parkway trees are species or genera specific, such as Gypsy Moth (mostly limited to oaks), sudden oak death, or episodic endemic pests that could increase for short periods of time and cause unexpected damage. Winter Moth, a defoliating caterpillar affecting trees in some Northeast states, feeds on a wide range of deciduous trees, has a broader host range than most defoliators, and has the potential to damage parkway trees. There is no immediate threat to the Midwest by this pest at this time.

Storms and Drought

Climate change predictions suggest there may be an increase frequency of damage to parkway trees from catastrophic storms or drought. High winds and tornadoes, and ice storms have the greatest potential to damage parkway trees. The capacity to inflict serious damage with significant commensurate costs has been demonstrated a number of times in the past ten years. The Village is minimizing the potential impact of storm events by maintenance of its five-year pruning rotation and by diversifying the parkway tree population both in terms of age and species composition. This diversification is the greatest buffer the Village can offer to protect the urban forest from large-scale losses.

Section 6. Summary of Findings & Recommendations and Short & Long Term Objectives

Introduction

This following information is presented in this section:

- A summary of the findings and recommendations of the plan
- Short and long-term objectives developed to addresses the findings
- Additional objectives the Village has identified as important to guide the management of Mt. Prospect's urban forest resource into the future

This plan is intended to provide guidance for management of Mount Prospect's urban forest over the next 10 years. A comprehensive review should be made at five years to review progress, incorporate new challenges, and make adjustments to the objectives as may be warranted.

Summary of Findings and Recommendations

The Village's management of the urban forest resource can be characterized as progressive, highly competent, well-funded and providing a high level of services to the citizens of Mount Prospect. Although there are some issues that threaten the stability of parkway trees, the majority of the forest is healthy and has a strong population of young and mature trees. The inspection and maintenance of the forest is exemplary. Efforts to reduce the risks that trees may present to people and property are comprehensive and progressive. The Forestry/Grounds staff is well trained and competent.

The Village goes to exceptional effort to inform and educate the public regarding forestry activities and to provide current and timely information on tree care and health threats. Policy and legislation are clearly defined and adequate to provide for the protection and management of the resource. Village officials and the public recognize the functional value and beauty of the urban forest, and its importance in making Mount Prospect a healthy and attractive place to live, work and play now and into the future.

It is the role of government to allocate public resources in the most effective, efficient, and professional manner. This review of the Village's urban forest management practices is an example of how closely Village officials hold this charge. Although the Village is providing exceptional urban forest management, this management plan revealed several areas where improvement is possible. The recommendations and objectives outlined in this plan are designed to address these findings.

The Village can take several steps to improve the health and structure of the resources. Emerald ash borer is presently claiming what will ultimately be 12% of the parkway population, as well as unknown numbers of ash trees on private property. Dutch elm disease continues to kill American elms today and has reduced what was once an estimated population of 5,200 trees to less than 300 elms over the last 40 years. Asian Longhorned Beetle, although not present in Mt. Prospect, poses a significant threat to the Village's urban forest given the high percentage of maples and other preferred hosts in the Village. The growing global trade, the most common source of these introduced pests, will most certainly bring other unknown threats to forest health in the future. As a result, the Village must continue and improve on its efforts to diversify the species distribution of the urban forest by suspending the planting of at-risk tree genera and species until the populations of these trees fall below an established tree diversity policy.

Tree pruning is an established management practice the Village has effectively used to maintain and improve tree health and reduce the risks of tree failures. The science and benefits of pruning continues to evolve and recent research is reinforcing the importance of refining pruning practices. Review of the Village's pruning specifications and observations of the Village's pruning practices reveal several updates that should be made to the Village's pruning program and specifications to improve structural pruning.

The advances in urban forest management and information technology have led to improvements in the management of the urban forest. The Village presently utilizes numerous documents that detail procedures and specifications to guide the daily management of the resource. However, it is our finding that these documents need to be compiled and consolidated into fewer topic-specific documents. This will improve access and organization of management practices, and will help facilitate the implementation of the procedures and specifications they are designed to support.

In summary, the recommendations and short and long-term objectives are intended to refine an already progressive program and serve as a means to aid in further refinement of Mount Prospect's urban forest management and planning in the coming decade.

Short and Long-term Objectives

The Village has seven urban forestry goals that are defined in Chapter 9 of the Village code (Appendix Section 6-1).

The successful implementation of a plan requires clear objectives that are well organized and prioritized. To that end, the recommendations made in Sections 3 through 5 of this plan were compiled, organized, and collapsed into management objectives. This process revealed the five overriding management categories defined below:

- **Forest Health** – Objectives aimed at improving the health and forest structure of the urban forest.
- **Management** – Objectives to improve the management of personnel, work practices and information technology.
- **Funding** – Objectives to maintain acceptable funding levels.
- **Public Outreach and Education** – Objectives to improve the notification of the public regarding forestry work activities, fostering public involvement and support, and education of the public on current arboriculture practices and urban forest management issues.
- **Public Safety and Health** – Objectives to enhance public safety and health as it relates to urban forest management.

Each recommendation from Sections 3 through 5 was collapsed into objectives, assigned to the appropriate management category, and prioritized based on its importance (Table 6-1). In addition, each objective includes notations to its applicable plan section, Village urban forestry goal and if the objective will have an impact on the Forestry/ Grounds or Village budget.

Table 6-1. Management plan objectives assigned to Village forestry goals, duration (length of application), priority (importance) and budget impact (may require budget allocation).

Objective Category	Management Plan Objective	Plan Section (1-5)	Village Goal(s) (A-G)	Duration (Short, Intermediate, Long)	Priority (High Moderate, Low)	Budget Impact (Yes, No)
Forest Health	Review and modify the current pruning specification to reduce or eliminate thinning of mature trees.	3C	A	Short	High	No
Forest Health	Review and modify the current pruning specification for size class 1 trees to prioritize pruning sequence for structural pruning.	3C	A	Short	High	No
Forest Health	Reinforce through staff training the importance of proper structural pruning when trees are young.	3C	A	Short	High	No
Forest Health	Continue funding five-year rotational pruning as the most important element of the tree management program.	3C	A	Long	High	Yes
Forest Health	Suspend planting of tree genera and species that do not meet general population diversification guidelines.	3D	B	Long	High	No
Forest Health	Take greater advantage of opportunity to use tree species that are appropriate for planting in Mt. Prospect and low representation in the population.	3D	A, C	Long	High	No
Forest Health	Reintroduce cost/share tree planting program.	3D, 4A	A, B, C	Long	Moderate	Yes
Forest Health	Continue investment in prompt sanitation and management of elm population with existing practices.	3E	A	Long	Moderate	Yes
Forest Health	Continue EAB sanitation and treatment program as developed, including removals in creeks and drainages.	3F	A	Long	High	Yes
Forest Health	Continue to coordinate infested ash removal program with park districts	3F	A	Long	High	No
Forest Health	Explore a more aggressive post planting and young tree watering and maintenance program.	3G	A	Long	Low	Yes
Forest Health	Streetscape projects will plan for parkways with tree lawns and trees whenever possible, or at least raised curb planters containing the minimum soil volumes as specified in the Village's Arboricultural Standards Manual. Trees in pits/ grates will be used as a last resort and only when structural soil is properly installed beneath surrounding brick pavement to meet soil volume requirements.	3P	A, C, E,	Long	Moderate	Yes
Forest Health	The effect on existing parkway trees, especially large specimens of desirable species, will be carefully considered before installation of new paving where trees exist (such as bike paths and sidewalk extensions.)	3P	A, D, E	Long	High	No

Table 6-1 (cont.)

Objective Category	Management Plan Objective	Plan Section (1-5)	Village Goal(s) (A-G)	Duration (Short, Intermediate, Long)	Priority (High Moderate, Low)	Budget Impact (Yes, No)
Forest Health	Continue and enhance efforts to protect public trees from construction injury.	3P	A, D, E	Long	High	No
Forest Health	Adopt a tree species diversification policy that provides total tree genera and species public tree population goals that are consistent with current urban forest management best management practices.	4B	A, B	Long	High	No
Forest Health	Continue diversification efforts through increasing numbers of tree plantings and use of under-represented tree genera and species.	4B	A, B	Long	High	No
Forest Health	Utilize careful tree and site selection in Forestry Sections with lower longevity.	4D	B, C	Long	Moderate	No
Forest Health	Cross check during re-inventory trees with dieback, chlorosis, badly misshapen and major wounds classifications to determine if condition ratings are commensurate with these problems.	4E	A	Long	Low	No
Forest Health	Closely monitor tree removal causes to help determine factors contributing to young and mature tree mortality.	5A	A, B, D	Long	Moderate	No
Funding	Continue to fund Forestry at current levels and make short-term adjustments for emerald ash borer removals and replacements as projected in Section 5.	3B	A, D	Intermediate	Moderate	Yes
Funding	Provide funding for an appropriate forestry staff member to enroll in ISA Tree Risk Assessment Qualification training program.	3M	A, G	Short	Moderate	Yes
Funding	Improved Project Specifications and Budgets will specify and pay for any tree removals needed, and appropriate replanting (ideally, inch for inch replacements but at least tree-for-tree, even if replacements are done outside the project limits).	3P	A, E	Long	Moderate	Yes
Funding	Continue funding and tree management along creeks and drainages in the Village.	3Q	A, E	Long	Moderate	Yes
Funding	Protect and increase Mount Prospect's overall canopy cover through adequate legislation and provide sufficient human and financial resources.	3S	A, D	Long	Moderate	Yes
Funding	Provide sufficient human and financial resources to protect and prolong the life span of all trees within the Village.	3S	A, B, D	Long	Moderate	Yes
Funding	Increase funding in the short term as needed to cover removals and replanting from increased impacts of EAB and DED.	4A	A	Short	High	Yes

Table 6-1 (cont.)

Objective Category	Management Plan Objective	Plan Section (1-5)	Village Goal(s) (A-G)	Duration (Short, Intermediate, Long)	Priority (High Moderate, Low)	Budget Impact (Yes, No)
Management	Compile and organize all forestry standards, specifications and procedures and develop two new documents: Arboricultural Standards & Specifications Manual and a Technical and Administrative Procedures Manual.	3A	A, E, G	Long	High	No
Management	Complete regular reviews of all standards, specifications and procedures manuals and update as appropriate.	3A	A, E, G	Long	Moderate	No
Management	Increase frequency of quality assurance and quality control (QA/QC) on Hansen® service requests.	3A	A, G	Long	Moderate	No
Management	Continue transition from paper to electronic record keeping without losing important historical records.	3A	A	Intermediate	Low	No
Management	Work with Community Development on recent Chapter 14 and 15 tree protection ordinances and develop an implementation plan that matches the capabilities and needs of each department and fulfills objectives of these provisions.	3A, 3P	A, E, G	Intermediate	Moderate	No
Management	To the extent possible, work for clarification and favorable legislation regarding prevailing wage issues.	3B	A	Intermediate	High	Yes
Management	Revise annual published Forestry/ Grounds budget performance measures to include actual total tree population figure at the beginning of the fiscal year and other historical events such as Ash trees removed or treated for EAB.	3B	A	Long	Low	No
Management	Add Dutch elm disease management practices to proposed Technical and Administrative Procedures.	3E	A, E, G	Long	High	No
Management	Add EAB management program to the proposed Technical and Administrative Procedures Manual.	3F	A, E, G	Long	High	No
Management	Continue efforts to eliminate damage/removal of healthy trees due to construction activities.	3G	A, D, E	Long	High	No
Management	Add tree removal specifications to proposed Arboricultural Standards & Specifications Manual.	3G	A, E, G	Long	High	No
Management	Add tree removal evaluation methodologies to proposed Technical and Administrative Procedures Manual.	3G	A, E, G	Long	High	No
Management	Tree removal operational and administrative procedures should be detailed in a Technical and Administrative Procedures Manual.	3G	A, E, G	Long	High	No

Table 6-1 (cont.)

Objective Category	Management Plan Objective	Plan Section (1-5)	Village Goal(s) (A-G)	Duration (Short, Intermediate, Long)	Priority (High Moderate, Low)	Budget Impact (Yes, No)
Management	Reduce use of "Other" removal category and examine all management data Village collects regarding tree removal decisions, tree condition, problems, and evaluate relationship among these data to develop management strategies to reduce removal rate.	3G	A	Short	Low	No
Management	Once the TRAQ program (managed by ISA) is fully running and widely available, require consultants conducting risk assessments to be Tree Risk Assessment Qualified (TRAQ), or demonstrate proficiency in use of new tree risk form from previous projects.	3H	A	Short	Low	No
Management	Integrate new ANSI Tree Risk standard and ISA Best Management practices into current tree risk program.	3H	A	Short	Moderate	No
Management	Add tree risk management program procedures to proposed Technical and Administrative Procedures Manual.	3H	A, E, G	Long	High	No
Management	Develop response time policies for inspecting and completing work relative to a service request including prioritizing service requests if it is necessary.	3J	A, F, G	Short	Moderate	No
Management	Reduce use of the Service Request Code called "Other".	3J	A	Short	Moderate	No
Management	Revise Service Request Manual to focus on policies and procedures specifically related to responding to and resolving a service request.	3J	A, E, G	Long	High	No
Management	Finalize Storm Mitigation plan currently in development.	3K	A, E	Short	High	No
Management	Review and update Storm Mitigation plan annually each winter as needed.	3K	A, E	Short	Moderate	No
Management	Add storm mitigation procedures to the proposed Technical and Administrative Procedures Manual.	3K	A, E, G	Long	High	No
Management	Maintain participation in State Wood Utilization Team.	3L	A, F	Long	Low	No
Management	Avoid allowing ash removals to be disposed of in landfills or other non-sustainable methods.	3L	A	Long	High	Yes
Management	Be prepared to cooperate with private sources willing to process wood from removal of Village trees.	3L	A, F	Long	Low	No
Management	Formalize an annual divisional training and meeting schedule.	3M	A	Long	Moderate	No
Management	Continue to provide opportunities for staff to attend safety and professional development workshops, training, seminars and conferences.	3M	A	Long	Moderate	No

Table 6-1 (cont.)

Objective Category	Management Plan Objective	Plan Section (1-5)	Village Goal(s) (A-G)	Duration (Short, Intermediate, Long)	Priority (High Moderate, Low)	Budget Impact (Yes, No)
Management	Re-apply for Society of Municipal Arborist accreditation.	3M	F	Long	Moderate	No
Management	Track staff training and advise front office annually.	3M	A	Long	Moderate	No
Management	Plan for a seamless transition when Forestry/Grounds Superintendent retires by documenting procedures and past history, as well as educating current staff and helping them expand their capabilities.	3M	A	Short	High	No
Management	Formalize two-tier certification program for staff, if Director approves.	3M	A	Short	Moderate	No
Management	Update job descriptions to reflect current responsibilities.	3M	A	Short	Moderate	No
Management	Investigate possibility of pursuing ILCA awards for maintenance of selected grounds areas.	3M	F	Intermediate	Low	No
Management	Assist Public Works in obtaining APWA accreditation.	3M	F	Short	Moderate	No
Management	Consider/evaluate reducing number of tree inventory data variables and data variable codes.	3N	A	Intermediate	Low	No
Management	Add a “work need” data variable to tree inventory data variables.	3N	A	Short	Low	No
Management	Compile tree inventory data collection and data entry procedures into one document (proposed Technical & Administrative Procedures Manual).	3N	A, E, G	Long	High	No
Management	Work with Public Works Administrative Superintendent to make modifications to the Hansen® application that simplifies work processes and provides necessary information for efficient and effective management of Village’s tree inventory.	3N	A	Short	Moderate	No
Management	Utilize Hansen® for additional record keeping/planning including costing and scheduling all work done in Forestry/Grounds Maintenance.	3N	A	Short	Moderate	No
Management	Add drought management and watering procedures to proposed Technical and Administrative Procedures Manual.	3O	A, E, G	Long	High	No
Management	Compile and review all Village’s tree protection specifications and administrative procedures and publish them as appropriate in Arboricultural Standards Manual and proposed Technical and Administrative Procedures Manual.	3P	A, E, G	Long	High	No

Table 6-1 (cont.)

Objective Category	Management Plan Objective	Plan Section (1-5)	Village Goal(s) (A-G)	Duration (Short, Intermediate, Long)	Priority (High Moderate, Low)	Budget Impact (Yes, No)
Management	Continue to train new staff to consider potential for future hardscape conflicts when planting new trees (avoiding conflicts with signs, and selecting properly sized species for each site to minimize conflicts with planting).	3P	A, C, E	Intermediate	High	No
Management	Ensure all utility and construction projects conducted by the Village and all plan sets include accurate placement of existing parkway trees, labeled with serial numbers, DBH and species code.	3P	A, C, E	Intermediate	High	No
Management	Ensure Forestry/Grounds is involved in entire plan review process, from early planning through to bid.	3P	A, C, E	Intermediate	High	No
Management	Forestry/Grounds staff will be routinely invited to preconstruction and progress meetings for all construction projects that may impact trees, and given a place on the agenda.	3P	A, C, E	Intermediate	High	No
Management	Evaluate/consider higher level analysis documenting importance of parkway and private trees and canopy cover on stormwater management using i-Tree Hydro modeling.	3Q	A, C, E	Intermediate	Low	Yes
Management	Inventory trees located on Village owned and managed greenspaces and add them to Village's computerized tree inventory.	3R	A	Intermediate	Moderate	Yes
Management	Maintain active participation in regional and State offered pest management programs.	3T	A, E	Long	Low	No
Management	Add condition rating system to Technical and Administrative Procedures Manual.	4C	A, E, G	Long	High	No
Management	Cross check condition rating with Forestry "Problems" code to identify trees that require closer condition evaluation when being re-inventoried.	4C	A	Short	Low	No
Management	Reduce number of the data variables	3N	A	Short	Low	No
Management	Develop data collection specifications for the Problems category to allow standardization of their collection.	4E	A	Short	Low	No
Management	Use i-Tree Streets result to advocate for continued funding for parkway and urban forestry management.	4G	A, D, F	Intermediate	Low	No

Table 6-1 (cont.)

Objective Category	Management Plan Objective	Plan Section (1-5)	Village Goal(s) (A-G)	Duration (Short, Intermediate, Long)	Priority (High Moderate, Low)	Budget Impact (Yes, No)
Management	Consider obtaining grants for an i-Tree Eco analysis of private and public trees in Village to further support management efforts.	4G	A, D, F	Intermediate	Low	No
Public Health & Safety	Plant larger (at maturity) tree species where site conditions permit.	3D, 3S	A, B, C	Long	High	No
Public Health & Safety	Add an annual or biannual windshield inspection of all trees in Village for obvious health or structural conditions that would prompt inspection under current risk program.	3H	A	Long	Moderate	Yes
Public Health & Safety	Resume annual tree-risk program meetings.	3H	A	Long	Moderate	No
Public Health & Safety	Projects that require regrading of parkways will, whenever possible, result in adequate spaces for parkway tree planting after project is complete.	3P	A, C, E,	Long	Moderate	Yes
Public Health & Safety	Consider quantifying structure and function of both public and private tree resource using an i-Tree Eco sampling and analysis.	3S	A, C, E	Intermediate	Low	Yes
Public Health & Safety	Work to reduce response driven work activities that require more travel time from work site to work site.	3S	A	Intermediate	Low	No
Public Outreach & Education	Encourage tree planting on private property.	3S	A, F	Long	Low	No
Public Outreach & Education	Develop a comprehensive public outreach plan that organizes work notification and educational needs of program and publish plan as an operational document or part of Technical and Administrative Procedures Manual.	3I	A, E, F,G	Long	High	No
Public Outreach & Education	Explore existing electronic media as well as social media for use as a tool to enhance public notification and public education.	3I	A, E, F,G	Long	Moderate	No
Public Outreach & Education	Review various public notification publications Villages uses, consolidate and publish new pieces to fulfill needs identified in public outreach plan.	3I	A, E, F,G	Long	Moderate	No
Public Outreach & Education	Revise Village website to make it easier for a visitor to find Forestry & Grounds and present all Forestry services and policies.	3I	A, E, F,G	Long	Moderate	No
Public Outreach & Education	Update and widely distribute revised “Trees of Mt. Prospect” working with citizen advisory group.	3I	A, E, F,G	Long	Moderate	No

Table 6-1 (cont.)

Objective Category	Management Plan Objective	Plan Section (1-5)	Village Goal(s) (A-G)	Duration (Short, Intermediate, Long)	Priority (High Moderate, Low)	Budget Impact (Yes, No)
Public Outreach & Education	Determine ways to make recognition of Village's tree heritage an important part of the 100th anniversary in 2017.	3I	A, E, F,G	Long	Moderate	No
Public Outreach & Education	Plan additional public presentations about Forestry/Grounds programs.	3I	A, E, F,G	Long	Moderate	No

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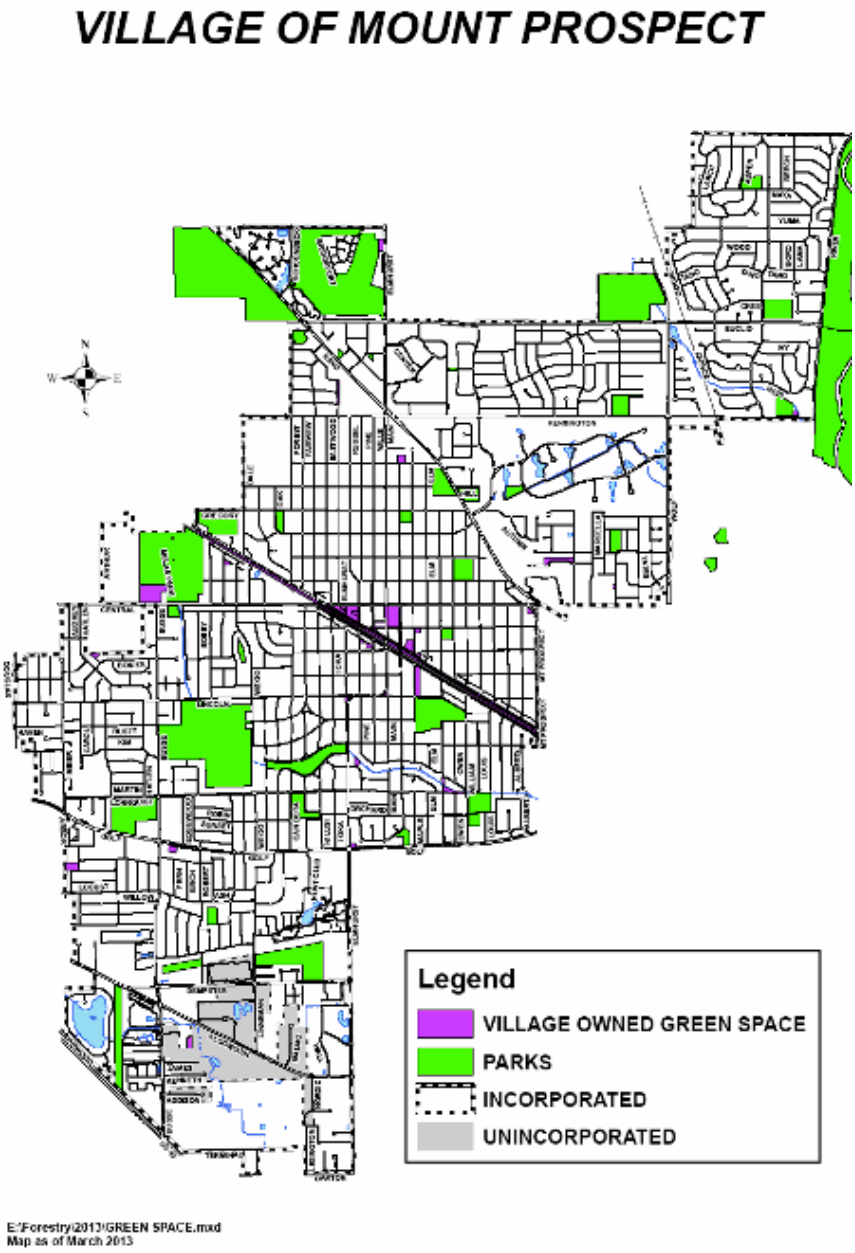
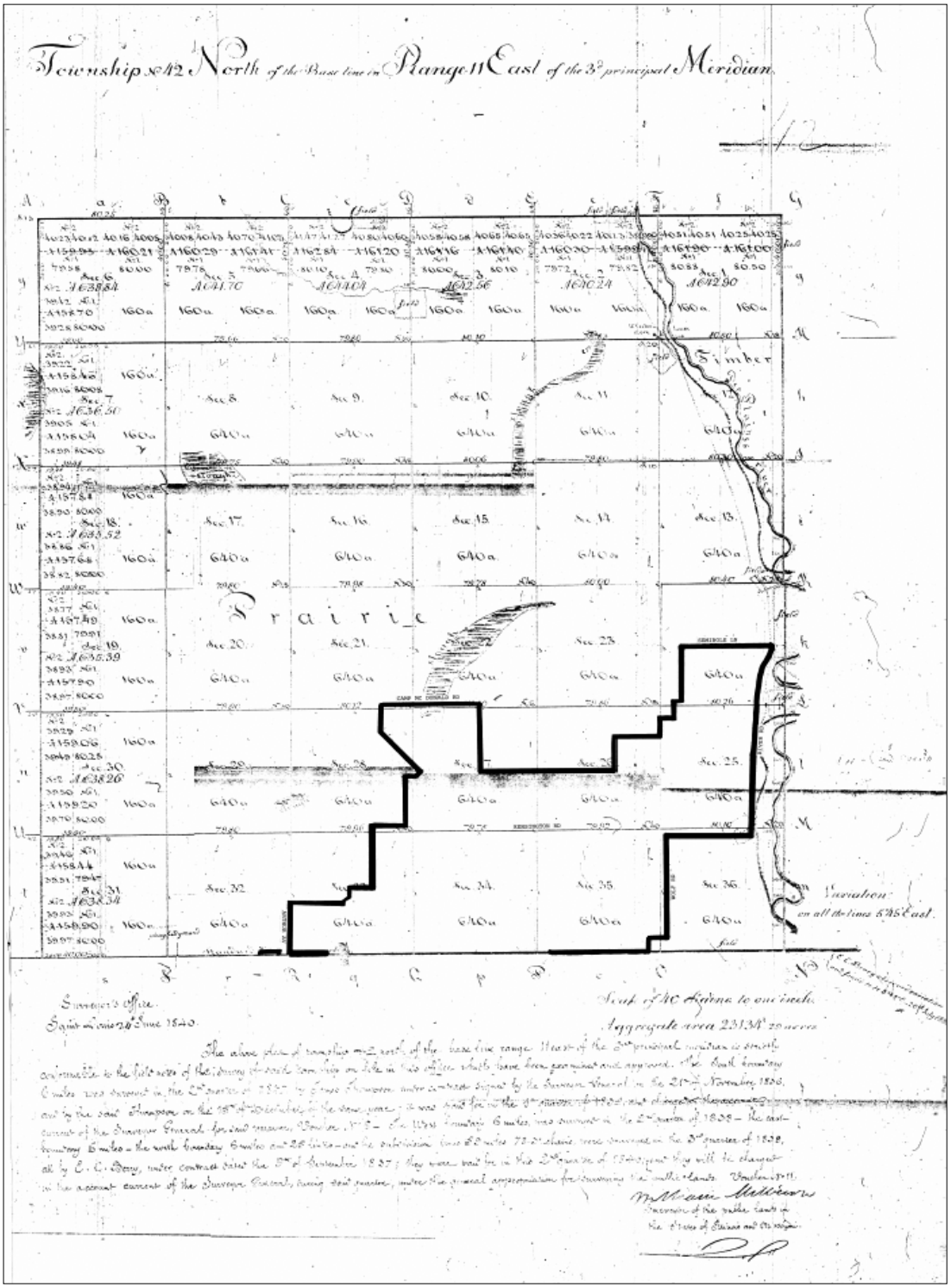
Appendices

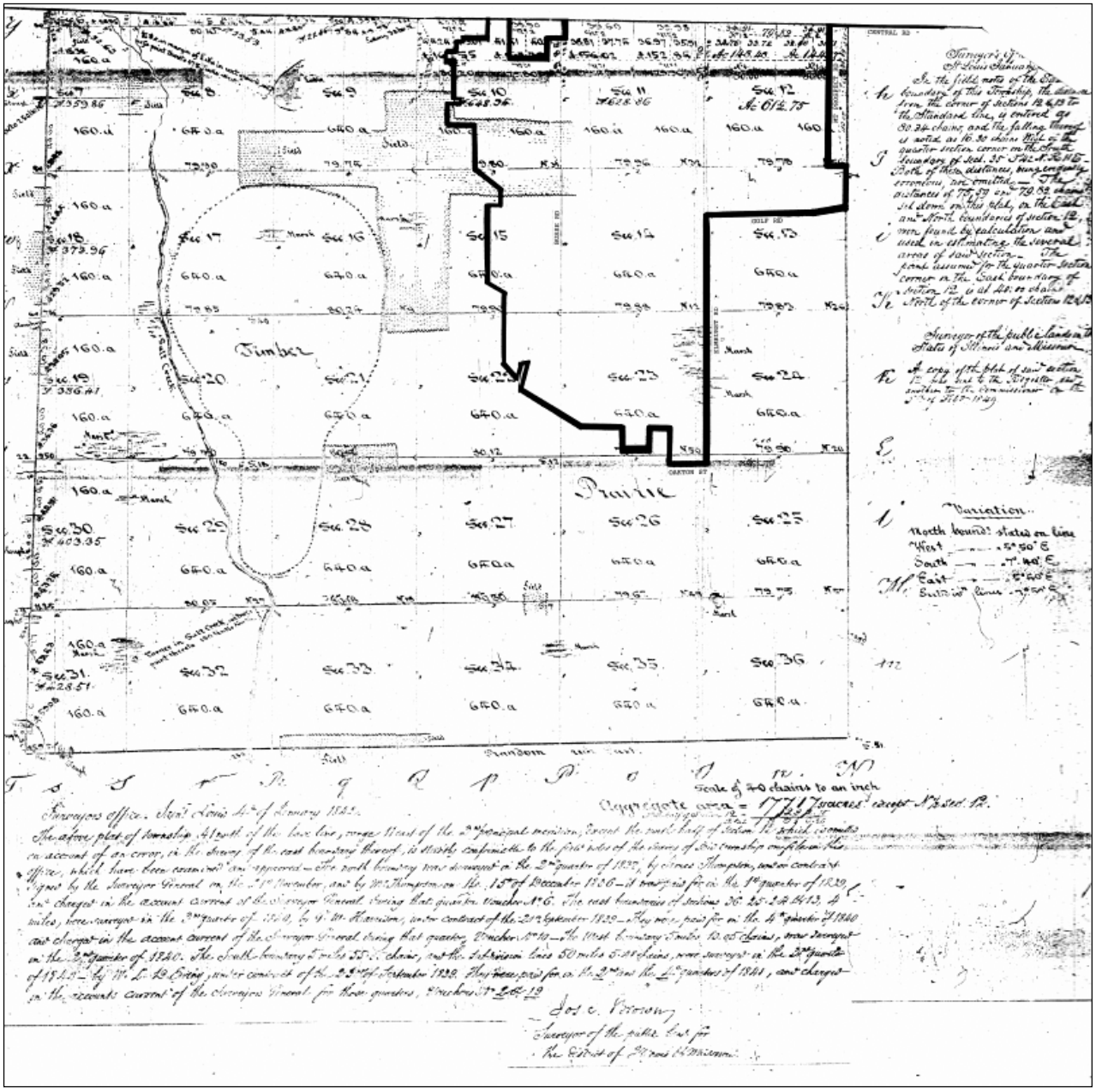
Appendix Section 2-1. Open Spaces Managed by the Village and Local Park Districts



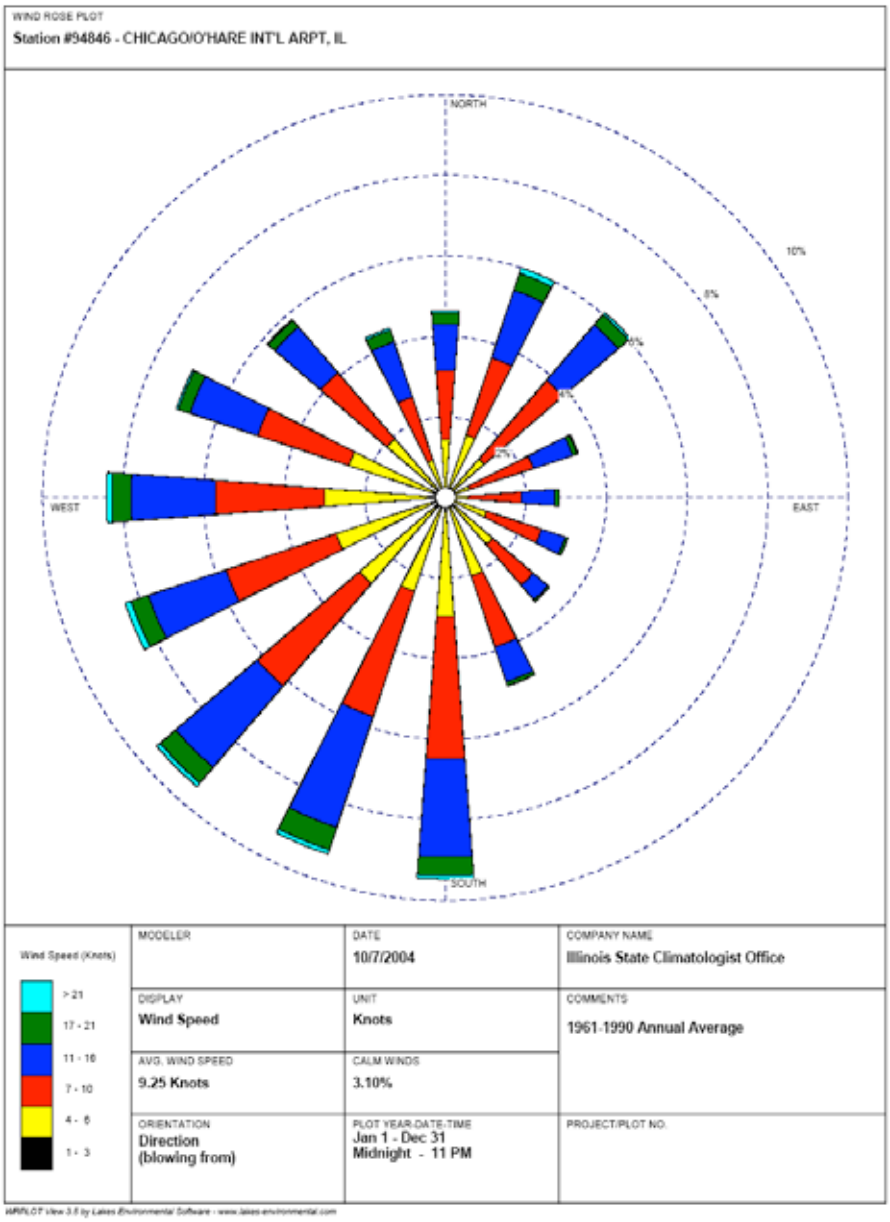
Appendix Section 2A-1. Original Survey Map of Wheeling Township



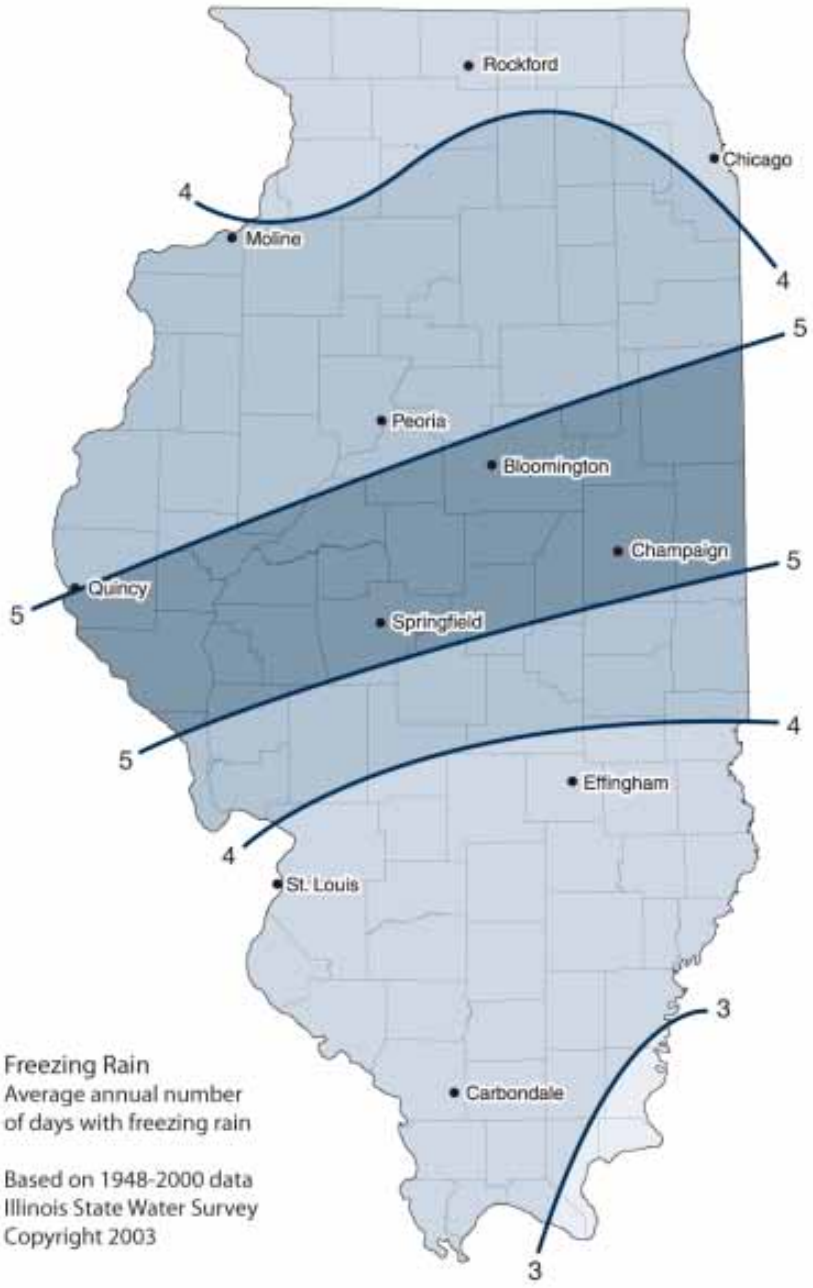
Appendix Section 2A-1. Original Survey Map of Elk Grove Township



Appendix Section 2C-1. Wind Rose Showing Direction of Prevailing Winds in the Village



Appendix Section 2C-2. Frequency of Annual Freezing Rain Events in Illinois



Appendix Section 3A-1

Village Ordinance - Summary of Language Related to Trees.		
Chapter/Article	**Title**	**Summary Description**
9.000	PUBLIC UTILITIES, PAVEMENT AND TREE REGULATIONS	
9.101	SUPERVISION	Defines management of parkway trees the responsibility of the Director of Public Works
9.700	TREES AND SHRUBS	The Village of Mount Prospect Urban Forest Protection and Planning Ordinance
9.703	GOALS	Goals of the urban forest planning and protection ordinance: A. Maintain A Healthy Urban Forest, B. Promote Age And Species Diversity Of The Tree Population, C.Improve Species And Site Selection For New Tree Plantings, D. Establish Optimum Canopy Closure. E. Resolution And Prevention Of Tree/Hardscape Conflicts Through Coordinated Planning, F. Promote Public Education And Support, G. Facilitate The Resolution Of Tree Related Conflicts
9.705	DEFINITIONS	Definitions specific to the ordinance
9.706	AUTHORITY AND RESPONSIBILITY	The Village will have the authority to manage trees located within the public right-of-way and on public property.
9.707	POLICY TO TAKE OVER SOLE OWNERSHIP OF BOUNDARY TREES AS PUBLIC TREES	Although boundary trees generally are, by operation of law, co-owned by the village and the private property owner abutting the public property or right of way, it shall be the village's policy to take over, wherever possible, sole ownership and control of all boundary trees.
9.709	PLANTING ON PUBLIC PROPERTY	Restrictions regarding planting of trees in the right-of-way and on public property.

Village Ordinance - Summary of Language Related to Trees.		
Chapter/Article	**Title**	**Summary Description**
9.710	PRUNING OF TREES	Restrictions regarding pruning of trees in the right-of-way and on public property.
9.711	REMOVAL OF TREES	Restrictions regarding the removal of trees in the right-of-way and on public property.
9.712	POTENTIALLY HAZARDOUS TREES AND SHRUBS	Provisions for the Village to take action to correct dangerous conditions created by trees or shrubs located on private property.
9.713	DUTCH ELM DISEASE/EMERALD ASH BORER CONTROL	Provisions for the Village to take action to correct trees infected/infested with DED or EAB located on private property.
9.714	GYPSY MOTH CONTROL	Provisions for the Village to take action to correct trees infested with Gypsy Moth located on private property.
9.715	PESTICIDE APPLICATION TO PARKWAY TREES	Provisions for a resident to treat a public tree with pesticides with a permit from the Village.
9.716	OBSTRUCTIONS TO TREES	Prohibits the posting of signs or attachment of foreign objects to public trees.
9.717	EXCAVATIONS AND CONSTRUCTION	Requires a permit for any construction work that in the opinion of the Director of Public Works may impact a public tree. Director may formulate and require a tree protection plan.
9.718	INJURY TO TREES	It shall be unlawful to injure any public tree.
9.719	PENALTY	Penalties for damages to public tree or failure to adhere to this section of the code.
9.817	TREE PRESERVATION	Specifies tree protection requirements
14.000	ZONING	Chapter enforced mostly by Community. Dev. Director
14.503	PROCEDURES FOR PLANNED UNIT DEVELOPMENTS	Requires the inventorying of trees 12 inches in diameter or larger

Village Ordinance - Summary of Language Related to Trees.		
Chapter/Article	**Title**	**Summary Description**
14.230	INTENT AND PURPOSE	Limit the removal of trees and require the replacement of trees on private property.
14.230	LANDSCAPE PLAN REQUIREMENT	Requires the development of a landscape plan and limits the removal of more than 3 trees on any property upon approval by the Director of Community Development.
14.230	CONTENT OF LANDSCAPE PLAN	Elements of the Landscape Plan including plant material to be planted and protection and preservation of trees during and after construction.
14.231	RIGHT OF WAY LANDSCAPING	Where development abuts the public right of way, parkway trees shall be provided.
14.231	PARKING LOT LANDSCAPING	Requires the planting of trees and plant material on parking lots.
14.231	FOUNDATION LANDSCAPING	Requires the foundation planting of trees and plant material.
14.231	PERIMETER LANDSCAPING	Defines the tree and plant material planting requirements for various types of properties.
14.231	TREE PRESERVATION	Provides standards for the protection and replacement of trees on private property.
15.000	SUBDIVISION, DEVELOPMENT AND SITE IMPROVEMENT PROCEDURES	Tree related provisions enforced mostly by Community Development Director
15.303	PRELIMINARY PLAT OF SUBDIVISION	Subdivision applications require the inventory and protection of trees on public and private property.
15.403	DEVELOPMENT PLAN	Requires the inventorying of trees on the parcel and parkway trees
15.502	SITE IMPROVEMENT REQUIREMENTS	Any site development shall be required to provide parkway trees.

Village Ordinance - Summary of Language Related to Trees.		
Chapter/Article	**Title**	**Summary Description**
15.701	SITE SUBMISSION AND REVIEW REQUIREMENTS FOR BUILDING PERMITS	Require documents and drawings with the locations of parkway and parcel trees.
15.808	PARKWAY TREE FEES	Applicant must deposit with the Village the cost to plant parkway trees as part of the development.
16.000	SITE CONSTRUCTION STANDARDS	
16.105	PROTECTION OF PROPERTY AND THE PUBLIC	Requires the protection of public trees during construction activities.
16.902	REQUIREMENTS FOR PARKWAY TREES	Requires the planting of parkway trees as authorized by the Director of Public Works.
16.903	EXISTING PUBLIC PROPERTY LANDSCAPING	Requires approval of the Director of Public Works for the removal and planting of trees on public property.
21.000	BUILDING CODE	
21.203	BUILDING PERMIT REQUIREMENTS	Requires survey including the location of trees on the property to be filed with Community Development as part of application.
21.225	TREES	Applicant must agree to pay for the planting of parkway trees.
23.000	OFFENSES AND MISCELLANEOUS REGULATIONS	Unlawful to damage any public tree.

Appendix Section 3B-1. Per Capita Spending by Community from Tree City USA Applications to the National Arbor Day Foundation (Source: National Arbor Day Foundation 2013)

2012 Illinois Tree City Applicant Per Capita Forestry Expenditures			
Municipality	**Population**	**Forestry Expenditures**	**Per Capita Expenditure**
Glencoe	9,100	$810,665	$89.1
Lake Forest	22,400	$1,883,667	$84.1
Highland	10,000	$659,407	$65.9
Lincolnwood	12,500	$564,217	$45.1
Winnetka	12,419	$544,422	$43.8
Hinsdale	16,816	$612,951	$36.5
St Charles	32,000	$1,152,365	$36.0
River Forest	11,635	$412,820	$35.5
Bolingbrook	70,977	$2,517,602	$35.5
Evanston	74,486	$2,396,098	$32.2
Burr Ridge	10,599	$332,420	$31.4
Naperville	147,433	$4,618,197	$31.3
Northbrook	33,170	$1,038,672	$31.3
Algonquin	30,145	$896,360	$29.7
Elmhurst	44,000	$1,289,498	$29.3
Riverwoods	3,660	$104,964	$28.7
Addison	37,000	$1,047,165	$28.3
Northfield	5,420	$152,011	$28.1
Downers Grove	47,833	$1,282,319	$26.8
Glen Ellyn	27,000	$710,351	$26.3
Mount Prospect	54,167	$1,409,524	$26.0
Lincolnshire	7,275	$186,875	$25.7
Marquette Heights	2,824	$71,696	$25.4
Moweaqua	1,831	$46,411	$25.4
Oak Park	52,000	$1,313,079	$25.3
Bensenville	18,352	$456,155	$24.9
Riverside	8,895	$217,412	$24.4
Winfield	9,080	$219,831	$24.2
Kankakee	25,537	$616,584	$24.1
Wilmette	27,087	$639,157	$23.6
Western Springs	12,975	$306,091	$23.6
Bloomingdale	22,018	$500,560	$22.7
Glenview	44,692	$993,764	$22.2
Park Ridge	37,480	$780,107	$20.8
Steward	256	$5,324	$20.8
Bannockburn	1,583	$29,337	$18.5
Quincy	40,633	$722,266	$17.8

2012 Illinois Tree City Applicant Per Capita Forestry Expenditures			
Municipality	**Population**	**Forestry Expenditures**	**Per Capita Expenditure**
Barrington	10,000	$177,321	$17.7
Lake Bluff	5,700	$100,683	$17.7
Batavia	27,700	$479,833	$17.3
Streamwood	39,858	$687,275	$17.2
Arlington Heights	75,101	$1,294,351	$17.2
Buffalo Grove	42,963	$732,476	$17.1
Lagrange	15,600	$262,314	$16.8
Clarendon Hills	8,486	$139,224	$16.4
Skokie	63,354	$1,007,590	$15.9
Hoffman Estates	52,530	$832,314	$15.8
Vernon Hills	25,113	$392,036	$15.6
Morton Grove	23,270	$357,348	$15.4
Highland Park	29,882	$422,060	$14.1
Country Club Hills	16,200	$224,188	$13.8
Hanover Park	37,973	$496,990	$13.1
Lombard	43,890	$553,912	$12.6
Wayne	2,431	$30,402	$12.5
Normal	52,772	$634,609	$12.0
Itasca	8,302	$98,372	$11.9
Urbana	37,362	$439,960	$11.8
Olympia Fields	4,988	$56,941	$11.4
South Elgin	22,300	$248,041	$11.1
Galesburg	32,195	$357,579	$11.1
Brookfield	19,046	$211,367	$11.1
North Barrington	3,047	$33,832	$11.1
Rockford	150,115	$1,633,008	$10.9
McHenry	26,992	$288,561	$10.7
Gurnee	31,295	$333,569	$10.7
Oswego	30,355	$312,727	$10.3
Genoa	5,400	$55,000	$10.2
Palos Hills	17,428	$173,088	$9.9
Lisle	22,930	$220,867	$9.6
Libertyville	20,315	$195,552	$9.6
Warrenville	13,140	$126,375	$9.6
Petersburg	2,400	$22,948	$9.6
Mount Vernon	15,277	$145,656	$9.5
Stickney	6,786	$64,035	$9.4
Wheaton	52,894	$498,939	$9.4
Mokena	18,740	$174,745	$9.3
Golf	500	$4,625	$9.3
Lake In The Hills	28,965	$262,978	$9.1

2012 Illinois Tree City Applicant Per Capita Forestry Expenditures			
Municipality	**Population**	**Forestry Expenditures**	**Per Capita Expenditure**
Champaign	75,254	$667,972	$8.9
Des Plaines	56,945	$495,817	$8.7
Dakota	500	$4,318	$8.6
Palos Heights	12,960	$110,850	$8.6
Elburn	5,602	$47,349	$8.5
Deerfield	18,420	$154,366	$8.4
Palatine	68,557	$567,668	$8.3
Wauconda	13,603	$111,355	$8.2
Inverness	7,399	$60,570	$8.2
Berwyn	55,000	$443,832	$8.1
Pontiac	12,000	$96,753	$8.1
Clinton	7,300	$57,683	$7.9
Macomb	19,288	$149,130	$7.7
Oak Lawn	56,690	$435,360	$7.7
Orland Park	59,400	$450,000	$7.6
Woodridge	32,971	$247,269	$7.5
Chicago	2,746,590	$20,509,033	$7.5
Elgin	110,000	$810,000	$7.4
Hazel Crest	14,200	$103,506	$7.3
Greenville	7,000	$50,746	$7.3
Rolling Meadows	23,000	$164,416	$7.2
Channahon	12,560	$88,381	$7.0
Glendale Heights	34,208	$237,931	$7.0
Centralia	13,300	$91,900	$6.9
Bloomington	76,610	$528,928	$6.9
Charleston	21,852	$150,706	$6.9
Riverdale	13,549	$91,050	$6.7
Sleepy Hollow	3,304	$21,941	$6.6
Palos Park	4,847	$31,867	$6.6
Blue Island	25,370	$162,259	$6.4
Lake Barrington	4,973	$31,670	$6.4
Homewood	19,323	$122,500	$6.3
Lake Zurich	19,709	$124,056	$6.3
Homer Glen	24,220	$150,707	$6.2
South Holland	22,000	$136,703	$6.2
Dekalb	43,862	$272,006	$6.2
North Aurora	16,760	$100,114	$6.0
Alton	28,000	$163,231	$5.8
River Grove	10,227	$57,884	$5.7
Pittsfield	4,558	$25,553	$5.6
Decatur	76,000	$425,831	$5.6
Wheeling	37,648	$208,455	$5.5

2012 Illinois Tree City Applicant Per Capita Forestry Expenditures			
Municipality	**Population**	**Forestry Expenditures**	**Per Capita Expenditure**
Paxton	4,473	$24,320	$5.4
Westmont	24,900	$135,240	$5.4
Hickory Hills	14,049	$74,924	$5.3
Lincoln	14,504	$76,362	$5.3
Barry	1,400	$6,964	$5.0
Carbondale	25,902	$126,888	$4.9
New Lenox	24,394	$119,524	$4.9
Roselle	23,115	$112,657	$4.9
East Hazel Crest	1,600	$7,600	$4.8
Ottawa	18,400	$86,117	$4.7
Aurora	197,899	$924,060	$4.7
Princeton	7,660	$32,687	$4.3
Rantoul	12,900	$54,247	$4.2
Henry	2,464	$10,296	$4.2
Forrest	1,200	$4,938	$4.1
Buffalo	501	$2,020	$4.0
Scott AFB	7,724	$30,478	$4.0
Taylorville	11,500	$45,204	$3.9
Stockton	1,862	$7,263	$3.9
Orland Hills	7,149	$26,463	$3.7
Grayslake	20,957	$77,114	$3.7
Shorewood	15,708	$57,641	$3.7
Lindenhurst	14,462	$52,795	$3.7
Lagrange Park	13,579	$46,895	$3.5
O'Fallon	29,421	$100,918	$3.4
Du Quoin	6,500	$22,012	$3.4
Savoy	7,400	$24,693	$3.3
Indian Head Park	3,809	$12,338	$3.2
Edwardsville	24,293	$78,262	$3.2
Belleville	45,500	$146,241	$3.2
Burbank	28,095	$88,502	$3.2
Sycamore	17,519	$55,250	$3.2
Oakbrook Terrace	2,300	$7,120	$3.1
Frankfort	17,782	$54,649	$3.1
Moline	44,000	$133,663	$3.0
Rock Island	39,684	$119,463	$3.0
Carpentersville	38,062	$107,209	$2.8
Sugar Grove	8,997	$25,188	$2.8
Plainfield	49,581	$131,256	$2.7
Gridley	1,411	$3,710	$2.6

2012 Illinois Tree City Applicant Per Capita Forestry Expenditures			
Municipality	**Population**	**Forestry Expenditures**	**Per Capita Expenditure**
Mackinaw	1,950	$4,898	$2.5
Lakewood	3,546	$7,772	$2.2
Forsyth	3,490	$7,404	$2.1
Joliet	147,433	$309,680	$2.1
Source: Randy Gordon, Program Manager at the Arbor Day Foundation, Lincoln, NE - June 2013			

Section 3B-2. Interoffice Memo Concerning Prevailing Wages

Mount Prospect Public Works Department

INTEROFFICE MEMORANDUM

TO: VILLAGE MANAGER MICHAEL E. JANONIS

FROM: DIRECTOR OF PUBLIC WORKS

DATE: JANUARY 4, 2012

SUBJ: CHANGES IN STATE OF ILLINOIS PREVAILING WAGE REQUIREMENTS

Background

In the 1940s, the State of Illinois enacted legislation requiring the payment of prevailing wages on public works projects utilizing state funds. At the time, this action was part of a national trend in which most states enacted local legislation intended to emulate the provisions of the federal Davis-Bacon Act. In fact, 1940s press reports often referred to these state acts as "little bacon".

Generally, this law required that workers on state-financed projects be paid at least what the locals were currently making in the area where the work was being performed. Since most communities lack the resources to establish justifiable prevailing wage rates, most workers are paid according to the prevailing wages rates established by the Illinois Department of Labor (IDOL) for the county in which the project is sited.

Arguably, the State of Illinois has one of the most vexing prevailing wage laws in the country. In large part, the confusion surrounding this law stems from the fact that the statute is vaguely worded and court case rulings have done little to answer important questions about the scope of the law. For your reference, a complete copy of the Illinois Prevailing Wage Act can be found at the Illinois General Assembly website:

http://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=2405&ChapterID=68

Initially, and for many subsequent years, the term "public works" was construed to refer to the *construction* of *fixed works*. That is, most lawyers advised public agency clients that the law applied to workers on state-financed construction projects. Notably, it was generally accepted that the law did not apply to maintenance work or non-construction work. It was also a widely held belief that the law did not apply to tree work or grounds maintenance work.

Over the years, amendments to the act, as well as interpretations made by IDOL, have significantly expanded the scope of the law. Today, the Village Attorney has advised staff that the law generally applies to all construction work and most maintenance work paid for with Village funds or any other public funds. As a consequence, payment of prevailing wages is required on most contracts let by the public works department.

One notable exception, however, has been contracts for tree work and grounds maintenance work. The Village Attorney has maintained, and staff concurs, that this type of work fails to satisfy the letter or intent of the "fixed works" requirement specified in the Act's "public works" definition.

Last November, staff attended a prevailing wage seminar in which an IDOL representative made a number of specific pronouncements that directly threaten the viability of our long-held tree work and grounds maintenance work exception. Specifically, IDOL stated:

- "Any job paid by any public funds that requires a screwdriver, except for janitorial work, requires prevailing wages."
- "If in doubt about whether prevailing wages are required, put it in".
- Tree planting and tree removal work requires the payment of prevailing wages because it "changes the landscape".

Problem Statement

Arguably, these statements are not supported by the text of the state's prevailing wage law. Nevertheless, IDOL appears intent on construing the law widely. If the Village strictly adheres to IDOL's pronouncements, tree and grounds maintenance contract budgets could require increases ranging from 65% to 100% in order to maintain existing levels of service.

Discussion

Staff has researched the potential financial impact of requiring prevailing wages in all tree work and applicable grounds maintenance work contracts. Our research included discussions with contractors that have executed prevailing wage contracts as well as communities that have required prevailing wages in their contracts. Conservatively, we estimate that our contractual costs could increase by 65% or $789,910. However, some communities reported that their costs doubled. For your reference, the attached table depicts these anticipated increases in greater detail.

Due to the vagueness of the statute, and differences in legal opinions offered by corporate counsel, there is no uniform interpretation of prevailing wage requirements among non-state public agencies in the Chicago metropolitan area. Some communities rarely require prevailing wages, others always require it, but most seem to have a unique mix of requirements that range between the two extremes.

It is also relevant to note that this latest IDOL initiative, in combination with the detrimental effects of emerald ash borer (EAB), gypsy moth, Dutch elm disease, and extreme weather events, has the potential to create tremendous pressure on tree maintenance budgets. Infestations and big storms have forged a dramatic increase in the volume of tree work. At the same time, this mandate threatens to lessen the purchasing power of already limited funds. Potentially, it is a "perfect storm" of constraints that could substantially hamper the Village's urban forestry program.

It is difficult to ascertain the vigor with which IDOL will pursue enforcement of their most recent prevailing wage interpretations. However, in the end, it seems certain that public agencies that fail to heed these interpretations will face enforcement action including fines and lawsuits.

Recommendations

Staff is currently advocating legislative clarification of prevailing wage requirements with respect to tree work and grounds maintenance work via several forums including the Illinois Arborists Association, the Illinois Landscape Contractors Association, the Illinois Municipal League, and

the North West Municipal Conference. The goal of these efforts is to garner the support of state lawmakers willing to champion a legislative amendment that specifically exempts tree work and grounds maintenance work from prevailing wage requirements. Our expectation is that this is a long-term solution that will not provide relief for the near term.

Staff has also asked the Village Attorney to research the viability of enacting a local prevailing wage ordinance that creates specific exemptions for tree work and grounds maintenance work. The City of Naperville has enacted such an ordinance and reports a successful experience. Most importantly, the Naperville ordinance appears to have withstood a rather thorough vetting from IDOL.

I would greatly appreciate it if you could consider this matter for the January 10 Committee of the Whole agenda. Appropriate staff will be in attendance.

[redacted]
Sean P. Dorsey

Cc: Village Attorney Buzz Hill
Village Clerk Lisa Angell
Deputy Director of Public Works Jason Leib
Forestry/Grounds Superintendent Sandy Clark
Administrative Assistant to the Village Manager Doreen Jarosz

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3B-3. Estimated Impact of Requiring Prevailing Wages on Forestry/Grounds Contracts.

PUBLIC WORKS DEPARTMENT
FORESTRY/GROUNDS DIVISION
PLANNED CONTRACTUAL WORK IN 2012

Revised December 2, 2011

Contract	Amount Budgeted	RFP/Bid Date	Est. % Increase If Prevailing Wages Required	New Contract Amount	Prevailing Wages Needed?*
Sodding	$64,530	Yr 3 of 3	65%	$106,475	Very likely
Restoration Seeding	$13,400	Yr 2 of 2	65%	$22,110	Probably
Urn/Bulb/ Shrub/Perennial Plantings	$41,569	2/13/12	65%	$68,589	Probably
Creek Spray	$2,000	2/20/12	65%	$3,300	Probably Not
Turf Fert and Broadleaf Weed Control	$2,000	2/20/12	65%	$3,300	Probably Not
Spray Paved Areas	$7,345	4/12/12	65%	$12,119	Probably Not
Landscape Maintenance Contract	$107,000	1/13/12	65%	$176,550	Probably Not
Sprinkler Maintenance	$8,487	2/20/12	65%	$14,004	Very likely
Expand Sprinkler Systems	$7,000	6/15/12	65%	$11,550	Very likely
White Light Installation	$33,390	7/13/12	100%	$66,780	Very likely
Installation of Hanging Baskets	$6,070	1/18/12	65%	$10,016	Very likely
Maintenance of Hanging Baskets	$7,600	1/18/12	65%	$12,540	Probably Not
Turf Mowing	$65,000	1/13/12	65%	$107,250	Probably Not
Creek Trim/Removals	$20,000	6/18/12	100%	$40,000	Probably
Creek Raking	$5,000	4/3/12	65%	$8,250	Probably Not
Tree Fertilization	$4,227	3/9/12	65%	$6,975	Probably Not
Tree Planting	$58,043	12/30/11	65%	$95,771	Very likely
Parkway Tree Removal	$155,000	12/13/11	100%	$310,000	Very likely
Parkway Tree Trimming	$183,000	12/30/11	100%	$366,000	Probably Not
Parkway Stump Removal	$85,000	Yr 2 of 2	100%	$170,000	Probably
EAB and Gypsy Moth Treatments	$38,760	2/10/12	65%	$63,954	Probably Not
Street Banner Installation	$28,800	2/3/12	100%	$57,600	Very likely
Total	$943,221			$1,733,131	

* This is S. Clark's interpretation of how likely IDOL is to say prevailing wages are required, based on 11/9/2011 meeting and IDOL website.

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3B-4. Landscape Questions and Answers Regarding Prevailing Wages from the Illinois Department of Labor Dated 5-10-13.

ILLINOIS DEPARTMENT OF LABOR

Pat Quinn
Governor

Joseph Costigan
Director

May 10, 2013

David Bennett
Executive Director
Metropolitan Mayors Caucus
233 South Wacker Drive, Suite 800
Chicago, IL 60606

Dear Mr. Bennett:

Enclosed is a copy of the Department's final Questions and Answers regarding Landscaping which will be posted on our website. The Department believes these Questions and Answers address majority of issues raised. While there still will remain certain situations which may need to be examined on a case by case basis, we believe that the vast majority of situations should be resolved.

We thank you for your time and input on these issues.

Sincerely,

[redacted]

Joseph Costigan
Director

Michael A Bilandic Building
160 North LaSalle, Suite C-1300
Chicago, Illinois 60601-3150
(312) 793-2800
Fax: (312) 793-5257

900 South Spring Street
Springfield, Illinois 62701
(217) 782-6206
Fax: (217) 782-0596

Regional Office Building
2309 West Main Street, Suite 115
Marion, Illinois 62959
(618) 993-7090
Fax: (618) 993-7258

LANDSCAPE
QUESTIONS AND ANSWERS

Many questions have been posed to the Department regarding the application of the Prevailing Wage Act in the counties of Cook, Lake, McHenry, DuPage, Kane, Will, Kendall, Boone and Grundy to work involving landscape (e.g. plants, bulbs, seeds, bushes, shrubs etc, dirt, organic materials, sod, and nonorganic materials used in connection with landscape) and the issues relating to modifications to real estate because of the uniqueness of the work and materials involved. In response to the above referenced inquiries regarding work in these counties and comments received from concerned persons, the Department believes it is appropriate to set forth certain questions and answers, which illustrate the Department's position as a matter of its enforcement policy to issues involving landscape work and the application of the Prevailing Wage Act.

Nothing set forth below should be interpreted as a change in the Department's view regarding traditional "hardscape work" (by way of example and not limitation "work associated with building, making, forming, demolishing brick or concrete paths or walk ways, fountains, concrete or masonry planters or retaining walls") that some might consider or refer to as falling under "landscape work." The Department has considered this work to have fallen under the Prevailing Wage Act and remains covered work under the Prevailing Wage Act.

Where examples are given, they should be considered as examples only to help provide guidance and should not be considered all encompassing.

1. Question: Is work in connection with landscape work covered under the Prevailing Wage Act?

Answer: Real estate is considered by the Department as a fixed work to which the Prevailing Wage Act applies. Work performed in connection with landscape is covered work depending upon the nature of the work.

2. Question: What established classification of employees under the Prevailing Wage Act covers those employees who perform landscape work, which falls under the coverage of the Prevailing Wage Act?

Answer: For the purpose of the Prevailing Wage Act, the Department of Labor does not recognize the classification of "landscape plantsman," "landscape laborer" "landscape helper" "landscape installer" "landscape operator" or "landscape truck driver." Work performed by persons who sometimes may be called "landscape plantsman" or "landscape laborer" is covered by the classification of laborer. Work performed by persons sometimes referred to as "landscape operator" is covered by the classification of operator and work performed by persons sometimes call "landscape truckdriver" is covered by the classification of truckdriver. Neither bids nor contracts nor acceptances on landscape work covered by the Prevailing Wage Act should be based upon rates of pay

other than that those associated with the classifications of laborers, operator, or truckdriver the Department has published.

3. Question: What are examples of landscape work that is covered under the Prevailing Wage Act when performed in connection with other work covered under the Prevailing Wage Act?

Answer: All work involving the installation or removal of landscape materials in conjunction with or as part of work which is otherwise covered under the Prevailing Wage Act is also work covered by the Prevailing Wage Act. For example only, and not by way of limitation; 1) original installation of landscape materials in connection with covered work involving buildings or structures; 2) landscape work in conjunction with covered work involving any road, boulevard, street, highway, bridge project, sewer or underground project; 3) lawn and landscape restoration performed in conjunction with covered work involving trenches and manholes, pipes, cables and conduits; 4) preparation of and landscaping of approaches associated with covered work performed in connection with shafts, tunnels, subways, and sewers; 5) landscaping of an old or new site in conjunction with covered work involving underpinning, lagging, bracing, propping r shoring; 6) landscaping in connection with covered work involving earthmoving and grading; 7) landscaping in connection with covered work performed at a park or preserve.

Even if the landscaping is to be performed after completion of the covered project, if it is an integral part of the overall project, it is deemed being performed in conjunction with or part of the project. The passage of time is not determinative. For example a municipality builds a new city hall, and the landscaping is to occur a year later or in stages over years, the landscape is an integral part of the overall project and is covered.

4. Question: When is landscape work no longer, considered to be performed in conjunction with or as part of a project otherwise covered under the Prevailing Wage Act?

Answer: Landscape work is no longer considered to be performed in conjunction with or as part of a project when the architect, project manager, or other appropriate authorized representative issues a certificate of substantial completion to the landscape contractor or other document reflecting substantial completion, such as final payment, which under the contract is to be made upon completion of work. If the manager refuses to issue such a certificate, then when the installation and or removal of all materials as required in the contract has been completed, subsequent work is no longer considered in conjunction with or part of the project For example, after planting a tree or shrub, the initial edging, mulch application and watering and continued mulching, watering, edging, trimming of already installed materials while the contractor is at the job site performing work under the contract, is work performed in conjunction with and/or part of a project since it is work integral to the covered activities. However, if the contractor has fulfilled the installation/removal work required under the contract and left the project, and the contractor has to return months later to replace an installed plant that has died or is required to water the plants, the replacement would not be deemed work in conjunction

with or part of a project since it is not integral to the covered activities Thus, continued watering or pruning or mulching after the substantial completion is no longer work performed in conjunction with or as part of a covered project.

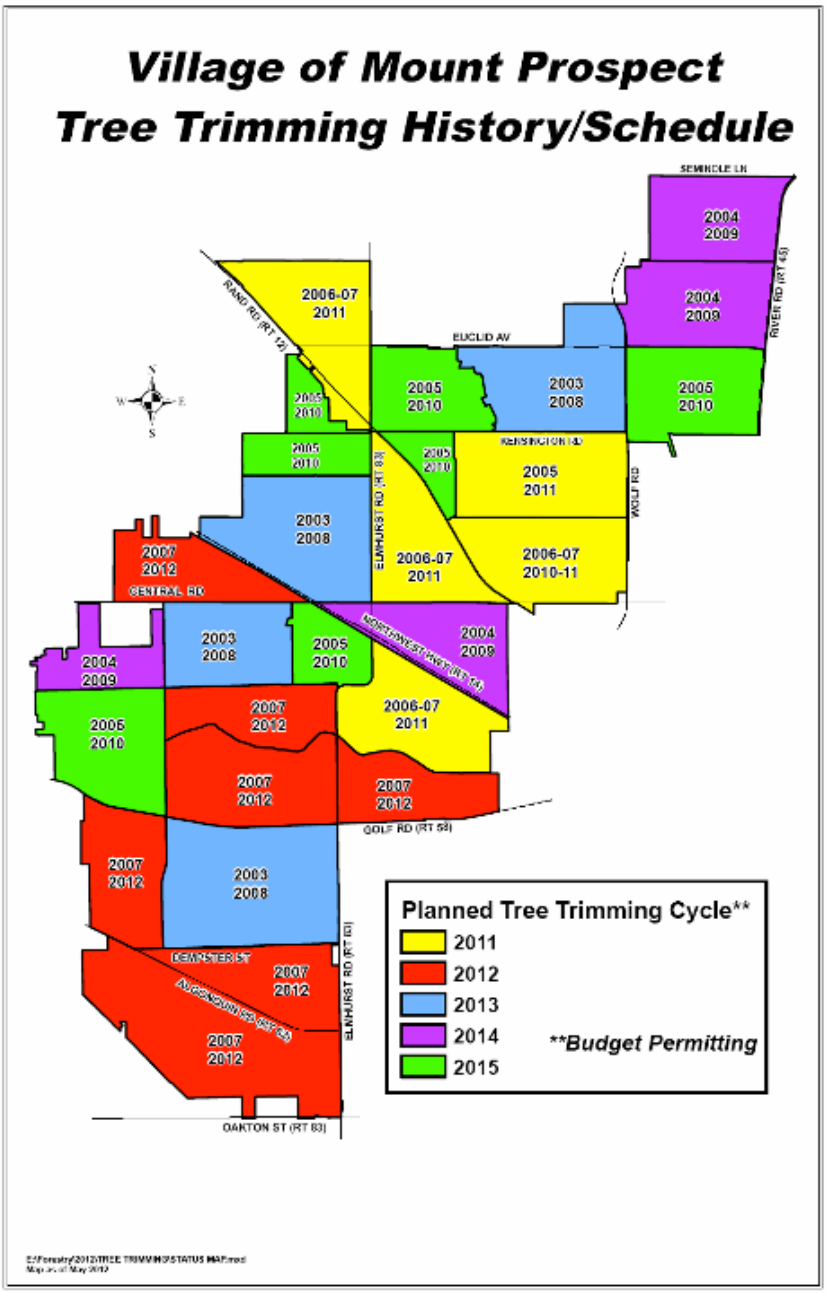
5. Question: Can work associated with landscape work by itself be considered work covered under the Prevailing Wage Act?

Answer: When landscape work changes the nature, function, or character of the real estate, although no other covered work such as "hardscape" is involved, the work is covered work under the Prevailing Wage Act. For example, and not by way of limitation, covered work under the Prevailing Wage Act would include projects involving earthmoving and grading; converting a vacant lot by the planting of trees, flowers, shrubs, or sod-grass; removing all trees on a lot and the replacing of trees by the planting of shrubs, grass or the making of a nature park; or the removal of trees and vegetation to leave the lot as a vacant lot so as to make the lot ready for construction.

6. Question: What are examples of work associated with landscaping that is not covered work when it is not done in conjunction with or part of covered work or does not fall within the scope of the work described in Question 5?

Answer Lawn mowing or grass cutting; line trimming; edging; weeding; cultivating beds; mulch application; bed preparation using soil amendments; core aeration; sweeping and blowing of landscape materials; pruning, planting, removal or replacement of shrubs, plants, and flowers; pruning of trees and replacement of trees that are planted as a replacement due to the removal of diseased or irreparably damaged trees, or trees that constitute a hazard; non-substantive replacement of sod, the removal of diseased or irreparably damaged trees or trees that are a hazard; seeding, including the preparation and application of erosion control blanket, application of fertilizer, herbicide, pesticide, fungicide; aquatic applications, raking, watering of trees, shrubs, plants, flowers, bulbs, seeds and sod; grooming; dividing plants; dead-leafing; sweeping; trash pick-up and removal of landscape litter; holiday light and seasonal decoration installation excluding the electrical connections if any.

Appendix Section 3C-1. Planned Annual Tree Trimming Schedule for the Village for 2003 to 2015



Appendix Section 3C-2. Proposed Five-year Tree Trimming Cycle in the Village

PROPOSED 5-YEAR TREE TRIMMING CYCLE — Update Feb 2013

Year	Sect.	Location*	Last Trim Date	Total # Trees	(Contractor) # Trees >=3.0"	(Village) # Trees < 3.0"	
2011							
	7	7.3 (Fairview Gardens & Perimeter)*	2006	759	705	54	* Completed in 2011
Do last in 2015	7	7.2 (KCB)	2005	549	327	222	
	9		2006	1445	1226	219	
	5	5.1 (Wedgewood)	2006	503	488	15	
	6		2006	1380	1225	155	
				4636	3971	665	
2012							
	10		2007	1086	946	140	
	13		2007	537	407	130	
	16	16.3 (S. of Lincoln)	2007	863	767	96	
	11		2007	1318	1071	247	
	17		2007	325	278	47	
	14		2007	778	615	163	
				4907	4084	823	
2013							
	4	4.2 (E. of Brentwood)	2008	1336	1166	170	
	5	5.4 (S. of Highland)	2008	1611	1390	221	
	16	16.1 (W. of Candota)	2008	1047	964	83	
	12		2008	1389	1174	215	
				5383	4694	689	
2014							
	1		2009	1375	1281	94	
	8		2009	1234	1032	202	
	15	15.1 (N. of Lincoln)	2009	796	718	78	
	2		2009	1183	1076	107	
	7	7.1 (Little Brickman)	2010	241	219	22	
				4829	4326	503	
2015							
	15	15.2 (all of Lincoln)	2010	1286	1123	163	
	3		2010	1102	1018	84	
	5	5.3 (Kensgtn. & Highland)	2010	456	415	41	
	5	5.2 (Prospect Meadows)	2010	270	242	28	
	16	16.2 (E. of Candota)	2010	660	596	64	
	4	4.1 (W. of Brentwood)	2010	479	423	56	
Do 1st in 2016	7.3	7.3 (Fairview Gardens & Perimeter)*	2010	530	475	55	* Started in 2010
				4783	4292	491	
			TOTALS	24538	21367	3171	

Note1) For 24,580 trees must average 4916/year to maintain 5 year cycle.
Note 2) In "Last Trim Date" column, underlined number shows calendar year when work was completed.
Note 3) # of trees includes both Contractual and "in-house" trimming.
Note 4) Locations are approximate in regards to boundary streets (see H:FORESTRY/EXCEL/1999/AREA-SECTION.XLS)

H:\Forestry\EXCEL\FIVE YEAR TRIM CYCLE.xls

Appendix Section 3D-1. Tree Species planted in 2012

Tree Species Planted in 2012		
Tree Species	**Common Name**	**# of Trees**
ACER CAMPESTRE	HEDGE MAPLE	14
ACER GRISEUM	PAPERBARK MAPLE	1
ACER MIYABE	MIYABE MAPLE	33
ACER PLATANOIDES	NORWAY MAPLE	3
ACER PLATANOIDES 'COLUMNAR'	NORWAY MAPLE 'COLUMNAR'	1
ACER PLATANOIDES CRIMSON KING	NORWAY MAPLE 'CRIMSON KING'	20
ACER PLATANOIDES EMERALD LUSTR	NORWAY MAPLE 'EMERALD LUSTRE'	19
ACER RUBRUM	RED MAPLE	1
ACER SACCHARUM GREEN MOUNTAIN	SUGAR MAPLE 'GREEN MOUNTAIN'	10
ACER TRUNCATUM	SHANTUNG MAPLE	10
ACER TRUNCATUM PACIFIC SUNSET	SHANTUNG MAPLE 'PACIFIC SUNSET	2
ACER X FREEMANII	FREEMAN MAPLE	1
ACER X FREEMANII AUTUMN BLAZE	FREEMAN MAPLE 'AUTUMN BLAZE'	80
CARPINUS CAROLINIANA	AMERICAN HORNBEAM	15
CELTIS OCCIDENTALIS	HACKBERRY COMMON	67
CLADRASTIS LUTEA	YELLOWWOOD	19
CRATEAGUS CRUS-GALLI INERMIS	COCKSPUR HAWTHORN THORNLESS	3
GINKGO BILOBA 'AUTUMN GOLD'	GINKGO 'AUTUMN GOLD'	17
GINKGO BILOBA MALE	GINKGO BILOBA MALE	1
GINKGO BILOBA PRINCETON SENTRY	GINKGO 'PRINCETON SENTRY'	10
GLEDITSIA TRIACANTHOS INERMIS	HONEYLOCUST THORNLESS	15
GYMNOCLADUS DIOICUS	KENTUCKY COFFETREE	27
GYMNOCLADUS DIOICUS 'JC MCDANI	KENTUCKY COFFEETREE 'JC MCDANI	10
LIRIODENDRON TULIPIFERA	TULIPTREE	17
MALUS	CRABAPPLE UNKNOWN	1
MALUS 'CARDINAL'	CRABAPPLE 'CARDINAL'	9
MALUS 'PRAIRIFIRE'	CRABAPPLE 'PRAIRIFIRE'	9
MALUS 'PROFUSION'	CRABAPPLE 'PROFUSION'	1
MALUS 'RED JEWEL'	CRABAPPLE 'RED JEWEL'	19
METASEQUOIA GLYPTOSTROBOIDES	DAWN REDWOOD	11
NYSSA SYLVATICA	BLACK TUPELO	9
PLATANUS X ACERIFOLIA EXLAMATN	LONDON PLANTREE 'EXCLAMATION'	17
PRUNUS DOMESTICA	COMMON PLUM	1
PRUNUS SUBHIRTELLA	FLOWERING CHERRY	1
PYRUS CALLERYANA	CALLERY PEAR	3
PYRUS CALLERYANA 'CHANTICLEER'	CALLERY PEAR 'CHANTICLEER'	24
QUERCUS ALBA	WHITE OAK	13
QUERCUS IMBRICARIA	SHINGLE OAK	5
QUERCUS MACROCARPA	BUR OAK	4

Tree Species Planted in 2012		
Tree Species	**Common Name**	**# of Trees**
QUERCUS MUEHLENBERGII	CHINKAPIN OAK	15
QUERCUS ROBUR	ENGLISH OAK	14
QUERCUS RUBA	RED OAK	11
SYRINGA PEKINENSIS 'SUMMER CHA	TREE LILAC 'SUMMER CHARM'	10
SYRINGA RETICULATA IVORY SILK	JAPANESE TREE LILAC IVORY SILK	27
TAXODIUM DISTICHUM	BALD CYPRESS	1
TILIA AMERICANA 'DOUGLAS'	AMERICAN LINDEN 'DOUGLAS'	20
TILIA AMERICANA 'REDMOND'	AMERICAN LINDEN 'REDMOND'	52
TILIA AMERICANA 'SENTRY'	AMERICAN LINDEN 'SENTRY'	20
TILIA CORDATA	LITTLELEAF LINDEN	32
TILIA TOMENTOSA 'STERLING'	SILVER LINDEN 'STERLING'	28
ULMUS AMERICANA 'PRINCETON'	AMERICAN ELM 'PRINCETON'	20
ULMUS COMPLEX HYBRID 'PATRIOT'	'PATRIOT' ELM	4
ULMUS JAPON X WILSONIANA 'ACCOLADE'	'ACCOLADE' ELM	23
	TOTAL	800

Appendix 3D-2. Tree Species Planted Reforestation & EAB Programs 1993-2012

SCIENTIFIC NAME	CULTIVAR	REFOREST PROG.	EAB REPLACE PROG.	TOTAL by Cultivar	TOTAL by Species
ACER CAMPESTRE		9	9		**18**
ACER GRISEUM		10			**10**
ACER MIYABE		11	26		**37**
ACER PLATANOIDES					**22**
		1		1	
	CLEVELAND	1		1	
	COLUMNAR	1		1	
	CRIMSON KING	15	4	19	
ACER SACCHARUM					**11**
	GREEN MOUNTAIN	8	2	10	
	LEGACY	1		1	
ACER TRUNCATUM					**6**
	NORWEGN SUNSET	2		2	
	PACIFIC SUNSET	2	2	4	
ACER X FREEMANII					**16**
	AUTUMN BLAZE	10	4	14	
	MARMO	2		2	
ALNUS GLUTINOSA					**52**
		48		48	
	IMPERIALIS	4		4	
AMELANCHIER ARBOREA					**19**
	AUTUMN BRILLIANCE	10	2	12	
	COLE'S SELECT	7		7	
AMELANCHIER X GRANDIFLORA					**32**
	FOREST PRINCE	27		27	
	SPRING FLURY	5		5	
CARPINUS BETULUS					**52**
		42		42	
	COLUMNARIS	10		10	
CARPINUS CAROLINIANA		52	16		**68**
CELTIS OCCIDENTALIS *					**241**
		143	50	193	
	CHICAGOLAND	48		48	
CERCIDIPHYLLUM JAPONICUM		6			**6**
CLADRASTIS LUTEA		9	18		**27**
CORNUS MAS 'GOLDEN GLORY'	GOLDEN GLORY	9			**9**
CORYLUS COLURNA		169	6		**175**
CRATEAGUS CRUS-GALLI INERMIS		7	2		**9**

SCIENTIFIC NAME	CULTIVAR	REFOREST PROG.	EAB REPLACE PROG.	TOTAL by Cultivar	TOTAL by Species
FAGUS SYLVATICA SPAETHIANA		10			**10**
FRAXINUS AMERICANA					**7**
		1		1	
	AUTUMN PURPLE	5		5	
	WINDY CITY	1		1	
FRAXINUS EXCELSIOR	KIMBERLY	5			**5**
FRAXINUS MANDSHURICA MANCANA		6			**6**
FRAXINUS PENNSYLVANICA					**9**
	CIMMARON	7		7	
	SUMMIT	2		2	
FRAXINUS QUADRANGULATA		135			**135**
GINKGO BILOBA					**189**
	AUTUMN GOLD	55	5	60	
	MAGYAR	91		91	
	MALE	5		5	
	PRINCETON SENTRY	28	5	33	
GLEDITSIA TRIACANTHOS	SHADEMASTER	7			**7**
GYMNOCLADUS DIOICUS		43	5		**48**
LIRIODENDRON TULIPIFERA		54	31		**85**
MALUS 'cultivars'					**199**
		13		13	
	ADAMS	5	7	12	
	CARDINAL	4	5	9	
	DONALD WYMAN	20		20	
	GOLDEN RAINDROPS		14	14	
	JACKII		2	2	
	PRAIRIFIRE	9		9	
	PROFUSION	5		5	
	PURPLE PRINCE	14	16	30	
	RED JEWEL	6	4	10	
	ROYAL RAINDROPS		18	18	
	SENTINEL	57		57	
METASEQUOIA GLYPTOSTROBOIDES		63			**63**
NYSSA SYLVATICA		13	9		**22**
OSTRYA VIRGINIANA		58	18		**76**
PHELLODENDRON AMURENSE					**11**
		4		4	
	MACHO	7		7	
PLATANUS X ACERIFOLIA					**152**
		10		10	

SCIENTIFIC NAME	CULTIVAR	REFOREST PROG.	EAB REPLACE PROG.	TOTAL by Cultivar	TOTAL by Species
	BLOODGOOD	84		84	
	EXCLAMATION	22	36	58	
PYRUS CALLERYANA					**8**
		5		5	
	CHANTICLEER	3		3	
QUERCUS ACUTISSIMA		12			**12**
QUERCUS ALBA		65	7		**72**
QUERCUS BICOLOR		103			**103**
QUERCUS ELLIPSOIDALIS		18			**18**
QUERCUS IMBRICARIA		32	53		**85**
QUERCUS MACROCARPA		121	30		**151**
QUERCUS MUEHLENBERGII		98	30		**128**
QUERCUS ROBUR		63	26		**89**
QUERCUS ROBUR 'REGAL PRINCE'	REGAL PRINCE		11		**11**
QUERCUS RUBRA	QUERCUS RUBRA	201	4		**205**
SYRINGA PEKINENSIS	CHINA SNOW	10			**10**
SYRINGA RETICULATA					**84**
		13		13	
	IVORY SILK	47	24	71	
TAXODIUM DISTICHUM					**37**
		33		33	
	SHAWNEEBRAVE	4		4	
TILIA AMERICANA					**492**
	DOUGLAS'	77	10	87	
	REDMOND	161	39	200	
	SENTRY	184	21	205	
TILIA CORDATA					**28**
		1		1	
	GLENLEVEN	17		17	
	GREENSPIRE	2		2	
	SUMMER SPRITE		8	8	
TILIA TOMENTOSA					**188**
		30		30	
	STERLING	158		158	
ULMUS AMERICANA					**21**
		1		1	
	PRINCETON	18	2	20	
ULMUS CARP X PARVIFOL	FRONTIER	9			**9**
ULMUS COMPLEX HYBRID					**30**
	COMMENDATION	5		5	
	HOMESTEAD	24		24	
	TRIUMPH ELM	1		1	

SCIENTIFIC NAME	CULTIVAR	REFOREST PROG.	EAB REPLACE PROG.	TOTAL by Cultivar	TOTAL by Species
ULMUS JAPON X WILSONIANA 'ACC'	ACCOLADE	24	12		**36**
ULMUS PARVIFOLIA		13			**13**
TOTALS		**3,071**	**593**		**3,664**

Appendix 3G-1. 2012 Tree Removals by Tree Removal Reason Category

Year	Accident	Construction	DEAD	DED	EAB Infested	EAB Ash Reduction	Stand Improvement	Other	Storm Damage	Poor Structure	Utility Conflict	Vandalism	Totals
1993	15	31	116	25				42	39	24	14	5	311
1994	14	21	158	15				60	26	60	28	5	387
1995	18	57	129	24				41	18	106	26	9	428
1996	8	15	173	13				95	24	103	24	30	485
1997	14	10	142	15			20	96	23	71	62	3	456
1998	17	50	91	22				41	92	137	82	22	554
1999	16	5	112	54				77	2	94	104	13	477
2000	24	86	90	28			3	21	181	94	20	2	549
2001	15	37	180	48			7	63	21	119	21	1	512
2002	17	13	191	62			15	45	4	59	20	0	426
2003	13	79	159	66			2	16	33	65	12	3	448
2004	16	37	141	28			6	49	35	68	12	0	392
2005	22	13	93	61			1	12	19	77	41	2	341
2006	14	6	154	65			3	35	22	128	9	6	442
2007	20	12	149	110			0	25	340	93	21	3	773
2008	17	38	252	72		63	1	13	17	76	13	4	566
2009	20	19	168	78		145	5	31	32	21	8	1	528
2010	8	22	157	26	23	151	18	7	37	58	18	4	529
2011	18	7	184	34	171		0	11	322	40	28	2	817
2012	7		291	34	715		1	29	15	51	10	1	1,154
Totals	313	558	3,130	880	909	359	82	809	1,302	1,544	573	116	10,575

Appendix 3H-1. Risk Management Annual Calendar for the Village

RISK MANAGEMENT TASK CALENDAR
Year 2012

Date Due	Task	Task Completed
January	Contract out tree removals from previous year's assessment	Jan 2012
February	Define list of topics to cover at Tree Risk Session	
February	Conduct Tree Risk Session	
February	Record attendance and minutes of session in Tree Risk Manual	
June	Train intern about our policy of trees whose trunks are completely on private property	June 2012
June	Train intern to be aware of and correctly inventory boundary trees	
June	Train intern to correctly measure multi-stemmed trees	
June	Train intern to correctly rate tree condition by including structure	
June	Train intern to correctly assess newly planted trees	
June	Establish a general number of trees to inspect for Tree Risk Assessment RFP (include multi-stems)	
July	Mail RFP for Tree Risk Assessment Services	2 yr Contract Done
August	Incorporate any additional boundary trees into TMW	Aug 2012
August	Complete annual re-inventory	Sept 2012
September	Award Tree Risk Assessment contract	"
September	Tree Risk Assessments begin	—
September	Send letters to boundary line tree property owners for signature, if necessary - track in Excel	Nov 2012
October	Final report from Tree Risk consultant submitted	Jan 2013
October	Run listing of all cabled trees	Jan 2013
November	Enter consultant's mitigation recommendations in TMW	Jan 2013
December	Make sure Tree Risk Manual from the year's events is updated	Jan 2013
December	Tag removals suggested by consultant	Feb 2013
Winter	Inspect all cabled trees	

H:\Forestry\WORD\2012\UCFA GRANT (Mgt Plan)\3. Review of past history\3g Tree risk assessment\3g 2 Annual Risk Management Task Calendar

Appendix Section 3M-1. Mount Prospect's Participation in Research Projects and Studies Since 1993.

1. Girdling Roots Study and Journal of Arboriculture Article – Dr. Gary Watson; Morton Arboretum - 1993
2. Soil Compaction Study – Dr. Frederic Miller; University of Illinois Extension - 1993
3. Norway Maple Rootstock Study – Dr. Gary Watson and Dr. Susan Wiegrefe; Morton Arboretum - 1998
4. Ash Peeling/Trap Tree Project – Morton Arboretum Staff – 2006 and 2007
5. EAB Purple Traps Project – Illinois Department of Agriculture – 2008, 2009, 2010
6. Gypsy Moth Scouting Project – Dr. Frederic Miller and Morton Arboretum staff – 2009, 2010
7. Diameter Growth of Street Trees Research Study – Dr. John Dwyer; Morton Arboretum – 2009
8. EAB Treatment Project – Rainbow Treecare Scientific Advancements – 2012, 2013
9. Urban Site Index Study – Dr. Bryant Scharenbroch; Morton Arboretum - 2013

Appendix Section 3N-1. Hansen® Promotional Description

ASSET AND WORK MANAGEMENT SOLUTIONS

MANAGING THE BUSINESS OF ASSET AND WORK MANAGEMENT

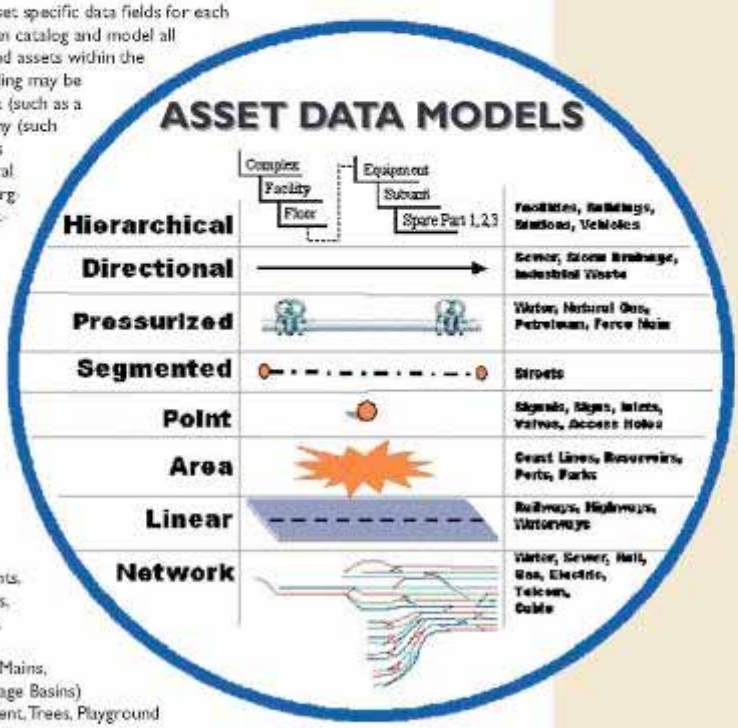
Asset Management begins with an organization's strategic, budgeting and planning decisions and continues through installation, operation and eventually disposal of the asset. Installation, preventive maintenance, unscheduled maintenance and evaluation are all a part of the asset lifecycle. The cost of maintenance and replacement represents a significant portion of the operating and total cost of the assets. Bottom line savings come from effective asset management and represent direct savings to an organization's operating budget. Hansen's Asset and Work Management Modules will effectively help you manage the full asset and work management cycle while gaining measurable benefits and Return on Investment (ROI). Each module includes integrated work order, preventive maintenance, inspection, valuation, and condition assessment capabilities with numerous pre-defined reports.

PRODUCT MODULES

Asset Management

Hansen's solution provides asset specific data fields for each asset type. An organization can catalog and model all underground and above-ground assets within the Hansen solution. Asset modeling may be performed in a linear network (such as a sewer system) or in a hierarchy (such as plant/facility). The system is scalable for the smallest of local government agencies to the largest of state and federal departments. Hansen has detailed asset inventories to manage all government assets including:

- Plant (Facilities, Equipment, Vehicles)
- Sewer (Mains, Manholes, Service Lines, Lift Stations, Nodes)
- Water (Mains, Valves, Meters, Hydrants, Service Lines, Water Nodes, Wells)
- Street/Roadway (Segments, Signals, Signs, Lights, Trees, Landscape, Intersections, Bridges)
- Storm (Channels, Inlets, Mains, Manholes, Culverts, Storage Basins)
- Parks (Buildings, Equipment, Trees, Playground Equipment, Sports Complexes)
- Railway (Equipment, Tracks, Signals, Signs, Yards)
- Customer Service (Service Request Management)



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Appendix Section 3P-1. Tree Protection Plan Document

Village of Mount Prospect
Public Works Department – Forestry/Grounds Division
1700 West Central Road
Mount Prospect, Illinois 60056
Phone: 847/870-5640 Fax: 847/253-9377 TDD: 392-1235

PUBLIC TREE PROTECTION PLAN

TREE CITY USA

Project Address_____ **Forestry Section** _____**T.P.P. Prepared by** _____**Date Prepared**_____

The Village takes great pride in its 24,000+ publicly-owned trees. A signed Tree Protection Plan is required before work begins (including equipment mobilization) for any project that may impact publicly owned trees. Protecting these trees is the responsibility of each property owner/contractor throughout the construction process. The following is a summary of the Village's code requirements as of Jan. 2008. **Failure to follow the regulations in the Village Code may result in a Stop Work Order and possible substantial fines. Note that the Village considers it a "separate offense committed" for each day that a violation occurs/continues.**
Note: The following three project types require adherence to Part A regulations below only (unless construction activities dictate otherwise): 1) All flatwork and any driveway aprons replaced without widening, 2)Emergency sewer repair excavations, and 3)Building additions with no parkway excavation. All other projects require advance review and completion of Part B below by Forestry/Grounds Division.
****Also, be aware that during construction, the Village reserves the right to require additional tree protection measures, including snow fencing the Critical Root Zone, if trees are being impacted. ****

PART A—GENERIC REQUIREMENTS FOR ALL PROJECTS

Except as noted below, the following measures must be taken to protect all publicly-owned trees adjacent to or affected by the project .

- Keep the area within the tree's dripline, except for existing paved areas, free from heavy equipment operation, spoil piles, or material storage.
- Do not prune publicly-owned trees without a permit. If branches interfere with construction, call Forestry/Grounds.
- Do not excavate inside the dripline of any parkway tree without written authorization by the Village on Part B of this Tree Protection Plan, with the following two exceptions:

  a. Driveway aprons may be replaced "in-kind" without any widening, but roots must be pruned as described below.
  b. Excavations for emergency sewer repairs may be made within the dripline if necessary. Make every possible effort in these situations to keep excavation outside the "Minimum Required Separation" shown in Detail 1. If this requirement cannot be followed, contact the Forestry/Grounds Division before procedure.
- Properly prune tree roots 2" or larger with a saw before backfilling (see Detail 2). Do not backfill the upper 18" of soil within the critical root zone before the Forestry/Grounds Division has inspected it (inspections can be scheduled by calling (847) 870-5640).
- Be aware that if tree root damage is too extensive, the Forestry/Grounds Division may determine that the tree needs to be removed and charge the cost of removal/replacement to the party who signed the tree protection plan. Additional fines may be added if it is determined that tree damage was more extensive than necessary.
- Follow all other Village regulations regarding public trees; these can be found in Chapter 9 of the Village Code and in the Village Arboricultural Standards Manual. These regulations prohibit removal of public trees without a permit, grade changes within the dripline, trunk wounding, etc.

PART B—ADDITIONAL REQUIREMENTS SPECIFIC TO THIS PROJECT

In addition to the requirements in Part A, the following measures shall also be taken to protect all publicly-owned trees adjacent to or affected by this project:

❒ The location and trunk diameter (at 4 ½' above ground) of all publicly owned trees must be shown on plans.

❒ **Tree Protection snow fencing must be placed before equipment mobilization and maintained until project completion.** (See detail). Note that snow fence should be placed one foot behind curb/pavement edge. Trees to be fenced and fence dimensions:

_____

_____

_____

Do not deviate from the above dimensions without obtaining an amendment form from Forestry /Grounds first!
❒ No excavation or pavement installation shall be allowed within the driplines of publicly owned trees (also known as CRZ; see Detail 1), except as specified below.

❒ Excavation or pavement installation within the Critical Root Zone (CRZ) shall be allowed for the following trees,

_____

_____, but only under the conditions listed below:

a) Every effort shall be made to minimize excavation within the CRZ, and to limit excavation to only one side of the tree.

b) Excavation shall not be made any closer than the "Minimum Required Separation" shown in Detail 1, without express written authorization from the Public Works Director.
c) Any roots 2" in diameter and over shall be cleanly root pruned with a saw (see Detail 2).
d) Contractor shall be required to call for and obtain a tree root inspection from the Forestry/Grounds Division after root pruning and before backfilling the top 18" of soil.
e) If in spite of the above precautions, the resulting damage necessitates removal of the tree, in the Village's opinion, the party who signed the tree protection plan shall be required to pay for removal/replacement of the tree at the rates currently specified in the Village code.

❒ No driveways may be installed any closer than 6' from the center of any publicly owned tree. Note that for 10" diameter trees and larger, driveways must be further away (see Detail 1). When abandoning existing driveways, all pavement/stone must be removed to a minimum depth of 2 feet and replaced with topsoil.

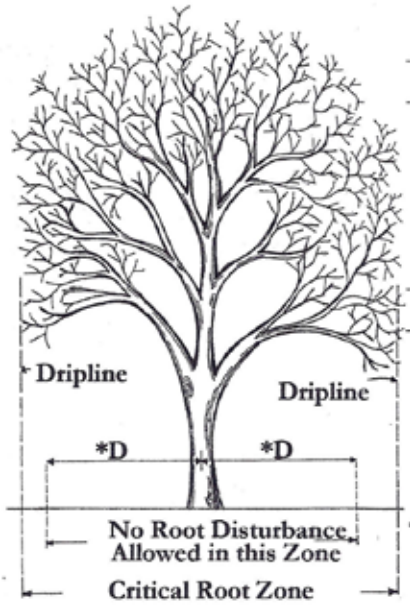
❒ Other special provisions specific to this project: _____

_____

_____

PART C—TREE PROTECTION DETAILS

1) CRITICAL ROOT ZONE (CRZ)



Minimum Required Separation

Tree Diameter (4.5' above ground)	*D (Excavation)
less than 3"	1'
3" to 4"	2'
5" to 9"	5'
10" to 14"	10'
15" to 19"	12'
greater than 19"	15'

Tree Diameter (4.5' above ground)	*D (New Pavement)
less than 3"	6'
3" to 4"	6'
5" to 9"	6'
10" to 14"	10'
15" to 19"	12'
greater than 19"	15'

*D - minimum required distance between excavation, trenching, paving, etc. and the center of the tree

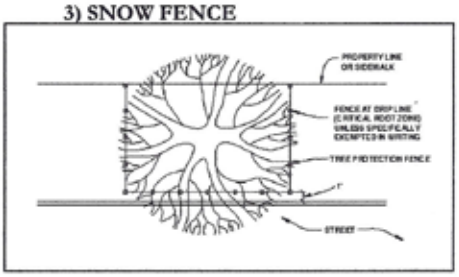
2) PROPER ROOT PRUNING

Reason: Roots with a sharply cut end will quickly produce a flush of new roots, helping the tree to recover from its injury. A crushed or torn root leads to decay and few new roots.

Procedure: When tunneling or avoiding roots is not possible, trench carefully by hand or machine near trees, sawing roots over 2" in diameter. Make the cut flush with the side of the trench closest to the tree. No need to paint or treat the ends.

When roots 2" or larger are accidentally broken, dig out enough of the trench to saw through an undamaged portion of the root.

3) SNOW FENCE



NOTE: SIGNED TREE PROTECTION PLAN MUST BE KEPT ON JOB SITE!

I acknowledge that I have received and read this document, and that it will be followed. Deviations may only be made if authorized in writing by the Public Works Director or other authorized staff.

_____ _____ _____
Project Address *Project Type* *Permit #*

_____ _____
Applicant's Name (Printed) *Applicant's Mailing address (Citations to be sent here)*

_____ _____ _____ _____
Applicant's Signature *Date Signed* *This TPP includes Part A only (Generic) or Part A and B (Custom)*

Applicant is functioning as (Circle One): Owner Acting as Contractor Or Contractor

_____ _____
Clerk Initials *Date scanned*

H:\Forestry\WORD\2009\PUBLIC TREE PROTECTION PLAN-Revised 11-09.doc

Appendix Section 3P-2. Boilerplate Construction Tree Protection Specifications

Boiler Plate Construction Tree Protection Specifications

Village of Mount Prospect

TREE PROTECTION (Incidental)
To preserve parkway trees, the Village has adopted ordinances in Chapter 9 of the Village code and standards in the Village's *Arboriculture Standards Manual*. A copy of the Village code is available at the Village Clerk's office and the *Arboriculture Standards Manual* from the Forestry Division at the Public Works Department.

All tree protection shall be incidental to the contract and shall be installed and maintained in accordance with the Tree Protection Ordinance and plan as specified by the Village.

REMOVAL PROHIBITED UNLESS AUTHORIZED: All trees shall be maintained, saved, and protected from damage unless removal is approved by the Village.

CRITICAL ROOT ZONE: To prevent unnecessary damage to existing public trees during construction, proper tree protection guidelines must be followed, particularly in the root zone where major support roots securely hold the tree in the soil. This Critical Root Zone (CRZ) is defined as the entire ground area within the vertical projection of the crown of a tree. This is also commonly referred to as the area within the drip line of a tree.

Power equipment may not be used to excavate soil, change grades, or dig trenches in the Critical Root Zone. All soil excavation done within the CRZ must be done by hand, except as authorized in these specifications. Exceptions to the above shall be granted only with written permission from the Director of Public Works.

FENCING: All unpaved ground on public property within the Critical Root Zones (CRZ) of existing trees subject to construction damage shall be fenced before any work is started. This Tree Protection Fencing will be paid for as specified in these contract documents. Once assembled, no fencing shall be removed without prior approval of the Engineer, and there shall be no construction activity or material including storage, stockpiling, and equipment access within the enclosure. Fencing material shall be orange polypropylene snow fence supported with metal posts, and installed according to the detail which will be provided by the Forestry Division.

CHANGES TO EXISTING GRADE: No changes to original grade shall be allowed inside the CRZ.

ROOT PRUNING DURING CONSTRUCTION: All tree roots greater than two inches (2") in diameter that are encountered in any construction process shall be cut cleanly with an appropriate saw or pruning shear or other tool specifically designed for cutting wood. Axes or other such chopping tools shall not

be used. Shovels or other tools designed for digging shall not be used. Contractor shall contact Forestry for a root inspection before backfilling.

ATTACHMENTS TO TREES: No signs, placards or other objects may be nailed or stapled to trees.

BRANCH REMOVAL: Tree branches shall not be cut, pruned or trimmed by the Contractor. If parkway tree branches interfere with the Contractor's work, he should contact the Forestry Division to request pruning. If Forestry deems the request reasonable they will endeavor to promptly prune the branches at the Village's expense.

PENALTIES FOR TREE DAMAGE: Where limbs, trunks or roots of trees not approved for removal are damaged, the Village shall determine whether the tree can be repaired or must be removed. Repairs may include, but are not strictly limited to, pruning of broken limbs, removal of loose bark and proper shaping of wounds, thinning of the crown to compensate for root loss, fertilization, straightening and staking.

Repairs shall be performed by the Village. The cost of such repairs shall be paid for by the Contractor to the Village, using rates listed in the current edition of the Village's Equipment and Labor Rate Charges. Additionally, the Village may fine the contractor for unnecessary tree damage according to the schedule listed in Appendix A, Division III of the Village Code.

If in the opinion of the Village, the amount of damage warrants removal of the tree due to safety or aesthetic concerns, the Contractor shall remove the tree, along with its stump to a depth of 12 inches below grade. The Contractor shall pay the Village for replacement of the tree. Replacement cost will be determined by multiplying the diameter of the damaged tree, as measured 4-1/2 feet above the ground, by the rate of $150.00/inch.

The Contractor shall be responsible for being familiar with and complying with all aspects of the Village of Mount Prospect Tree Protection ordinances and Arboricultural Standards Manual as they relate to the various site locations. Any questions regarding tree protection shall be directed to the Village Forestry Division and their response or direction shall be considered as the final word/decision on tree protection issues. Any costs for tree protection fencing, posts, labor or other associated labor or material shall be incidental to the fixed cost per unit bid.

Appendix Section 3S-1. Mount Prospect Greenspaces Managed by the Village

Mt. Prospect Greenspaces Managed by the Village		
Forestry Section	**Sub Sec #**	**Facility/Address/Location**
03	**0**	Fire Station # 14 (1924 Kensington Rd.)
05	**1**	Well #17 (1480 North Elmhurst Road -- South of Camp McDonald)
05	**4**	RR ROW on NW HWY Waterman Entrance Marker (South side NW Highway, near Waterman Ave.)
05	**4**	RR ROW on NW HWY from Waterman Ave. to Central Rd. (From Poles 1-25)
05	**4**	Prospect Manor Ave. at NW Highway - Center Island
05	**4**	NW Highway (North Side) Central Road to 1040 West NW Highway (State Farm)
05	**4**	Pine St. at Henry St. - Center Island
05	**4**	Ridge Ave. at Henry St. - Center Island
06	**0**	Well # 5 (112 E. Highland St., at Emerson St.)
06	**0**	Northwest Corner of Rand Road and Central Road - Gateway Sign
07	**2**	Kensington Center Island at Feehanville Dr. and Wolf Road
07	**3**	Centennial Park - 1000 Centennial Dr. (North side Centennial Drive from Westgate Rd to 900 Centennial Dr.)
07	**3**	1400 Horner Ln. - Bed area around Generator
08	**0**	2 S. Mount Prospect Road - West side of S. Mount Prospect Rd South of Central Rd.
08	**0**	NW Highway (North Side) Albert St. to Mount Prospect Road
08	**0**	NW Highway (North Side) Owen St. to William St.
08	**0**	RR ROW on NW HWY Central Rd. to West Commuter Lot (From Poles 26-31)
08	**0**	RR ROW on NW HWY West Commuter Lot (Between Pine St. and S. Main Street) (From poles 32A - 38A)
08	**0**	RR ROW on NW HWY Train Station (11 East NW Highway) (From poles 40A - 43A)
08	**0**	RR ROW on NW HWY East Commuter Lot (East of Emerson St.) (From poles 45A - 50A)
08	**0**	RR ROW on NW HWY East Commuter Lot to Mount Prospect Road (From Poles 51-71)
08	**0**	RR ROW on NW HWY Mount Prospect Road Entrance Marker (250 feet West of Mount Prospect Road)
08	**0**	Water Tower (Northeast corner of Maple St. and Evergreen Ave.)
08	**0**	Public Safety Building (112 East NW Highway)
08	**0**	Historical Society Museum (101 S. Maple St.)
08	**0**	Streetscape II & III - Village block of NW Highway, Main St., Busse Ave., and Both sides of Emerson St.
08	**0**	Village Hall Civic Block - Village block of Busse Ave., both sides of Main St., Central Rd., and both sides of Emerson St.
08	**0**	Busse/Wille Improvement - Village block of Busse Ave, Main St, and Northwest Highway

Mt. Prospect Greenspaces Managed by the Village		
Forestry Section	**Sub Sec #**	**Facility/Address/Location**
08	**0**	Wille Street (Between Central Rd. and NW Highway)
08	**0**	Village Centre Lot (Between Main Street and Wille St.)
08	**0**	Streetscape I - Village block of NW Highway, Central Rd., and Pine St., including S. Elmhurst Ave.
08	**0**	Pine Street (East Side) from NW Highway to Central Rd.
08	**0**	Central Rd. south side (Pine St. to Wille St.)
08	**0**	Moehling Park (10 S. Pine St.)
08	**0**	NW Highway (North Side) George St to Edward St.
08	**0**	NW Highway (North Side) Edward St to Louis St
09	**0**	RR ROW on Prospect Avenue Maple St. to Mount Prospect Road
09	**0**	RR ROW on Prospect Avenue Main St. to Maple St.
09	**0**	Prospect Avenue South Side Main St. to Maple St.
09	**0**	Prospect Avenue Center Islands Main St. to Emerson St.
09	**0**	Prospect Avenue Center Islands Maple to Mount Prospect Road
09	**0**	School St. and Berkshire Ln. (North of footbridge)
09	**0**	Klehm's Island (Northwest corner Main Street / Lincoln St.)
09	**0**	Maple Street Lot (Southeast corner East side of Maple St. from Prospect Avenue to Lincoln St.)
09	**0**	717 S. Louis St. - Bed area around Generator
09	**0**	Southwest Corner of Berkshire Lane and William St. - bed area around Generator
09	**0**	Between 203 and 205 E. Berkshire Ln. - Bed area around Generator by Creek
10	**0**	400 E. Lonquist Blvd. - NE Corner of School St. and Lonquist Blvd. includes area between William St. and Owen St.)
10	**0**	Emerson Street Bridge (at Weller Creek)
10	**0**	Main Street Footbridge (at Weller Creek) - Both sides North and South of Creek
10	**0**	North East Corner of Golf Road and South Elmhurst Rd continuing along sidewalk East to Country Lane
10	**0**	208 West Hiawatha Trl. (Village Lot)
11	**0**	Lonnquist Center Islands from S. Main St. to Busse Rd.
12	**0**	Fire Station # 12 - 1601 W. Gold Rd to include Vacant Lot to the east
16	**1**	Central Road (South side) From Busse Rd. to Prospect Avenue
16	**1**	Behind 315 We Go Trail - bed area around Generator
16	**2**	Elmhurst Avenue Center Islands from Lincoln St. to Prospect Avenue
16	**2**	Along Pine Street from Prospect Ave. to Alley on both sides
16	**2**	Parking Lot at 115 South Pine Street - along alley just east of Pine St.
16	**2**	Wille Street Parking Lot - West of Wille Street and North of 122 S. Wille St.
16	**2**	Along Wille Street from Evergreen to Prospect Avenue on both sides
16	**2**	Along W. Evergreen Ave. to include center Islands and sidewalk on both sides from Main St. to Elmhurst Ave.
16	**2**	Center Islands along Prospect Ave. from Main St. to Central Rd.

Mt. Prospect Greenspaces Managed by the Village		
Forestry Section	**Sub Sec #**	**Facility/Address/Location**
16	**2**	Sidewalk on the South Side of Prospect Avenue from Main St. to Central Rd.
16	**2**	RR ROW on Prospect Avenue from Main St. to Central Rd.
16	**2**	Center Island at Hi Lusi Ave. and Prospect Ave.
16	**3**	S-Curve by Saint Raymond's Church - Both sides of Lincoln Ave. at S. Elmhurst Rd. continuing along S. Elmhurst Rd. to Sha Bonee Trail - Not to include bed alng fenceline.
17	**0**	Center Island at Central Rd. and Lancaster St.
17	**0**	Well # 4 at 117 North Waverly Pl.
17	**0**	Center Island at Central Rd. and Waverly Pl.
17	**0**	Public Works Facility (1700 West Central Rd.) and Emergency Operations Center (1720 West Central Rd.)

Appendix Section 4A-1. Percent of Trees by Size Class (diameter) in the Village's Forestry Sections

	Size Class (dbh)						
Section	**1-6**	**7-12**	**13-18**	**19-24**	**25-30**	**31-36**	**37+**
1	18.0	14.9	27.8	26.6	9.6	2.5	0.6
2	18.8	16.6	20.7	24.2	16.3	2.9	0.5
3	18.8	23.0	23.1	21.8	10.0	2.8	0.5
4.1	30.7	14.8	21.0	17.1	12.0	3.9	0.4
4.2	20.3	16.9	23.0	26.3	10.4	2.8	0.3
5.1	21.9	37.8	23.2	9.5	5.4	1.7	0.4
5.2	33.7	25.6	13.0	16.7	6.7	3.0	1.5
5.3	17.9	12.0	17.0	28.1	19.9	3.6	1.6
5.4	21.2	20.4	19.7	18.5	10.5	5.4	4.2
6	24.9	15.2	20.7	22.6	10.8	4.1	1.6
7.1	20.8	22.9	22.1	20.3	13.0	0.9	0.0
7.2	75.6	18.5	5.0	0.8	0.0	0.2	0.0
7.3	19.4	21.1	14.3	22.0	17.4	5.4	0.3
8	34.8	13.7	27.7	15.1	4.6	2.0	2.0
9	26.6	15.2	22.8	21.6	10.4	2.7	0.6
10	17.8	13.4	17.7	27.9	20.9	1.6	0.7
11	25.9	20.6	18.8	17.9	13.0	2.1	1.7
12	20.2	24.7	17.4	20.1	13.1	3.5	0.9
13	45.3	30.7	17.3	3.8	2.3	0.4	0.2
14	56.0	14.7	12.7	9.6	4.7	2.1	0.1
15.1	18.7	13.7	20.6	31.2	12.3	3.0	0.5
15.2	29.3	23.3	21.8	18.0	5.6	1.4	0.5
16.1	16.7	19.5	16.8	22.6	19.9	3.1	1.4
16.2	32.4	18.9	22.7	18.0	5.2	2.1	0.7
16.3	30.0	16.1	20.4	20.1	9.2	2.2	2.0
17	31.5	29.9	16.7	14.1	5.1	2.3	0.3

Appendix Section 4B-1. 2012 Parkway Tree Species Distribution

Botanical Name	Common Name	# of Trees	% of Pop
ABIES BALSAMEA	BALSAM FIR	4	0.02%
ACER CAMPESTRE	HEDGE MAPLE	47	0.20%
ACER GINNALA	AMUR MAPLE	9	0.04%
ACER GRISEUM	PAPERBARK MAPLE	16	0.07%
ACER MIYABE	MIYABE MAPLE	181	0.76%
ACER NEGUNDO	BOXELDER	49	0.21%
ACER NIGRUM	BLACK MAPLE	72	0.30%
ACER PALMATUM	JAPANESE MAPLE	1	0.00%
ACER PLATANOIDES	NORWAY MAPLE	3,006	12.67%
ACER PSUEDOPLATANUS	SYCAMORE MAPLE	7	0.03%
ACER RUBRUM	RED MAPLE	724	3.05%
ACER SACCHARINUM	SILVER MAPLE	3,342	14.09%
ACER SACCHARUM	SUGAR MAPLE	414	1.75%
ACER TRUNCATUM	SHANTUNG MAPLE	46	0.19%
ACER X FREEMANII	FREEMAN MAPLE	307	1.29%
AESCULUS GLABRA	OHIO BUCKEYE	40	0.17%
AESCULUS HIPPOCASTANUM	HORSECHESTNUT COMMON	18	0.08%
AESCULUS X CARNEA	HORSECHESTNUT RED	1	0.00%
ALNUS GLUTINOSA	EUROPEAN BLACK ALDER	29	0.12%
AMELANCHIER ARBOREA	SERVICEBERRY	69	0.29%
AMELANCHIER X GRANDIFLORA	APP SERVICE BERRY	24	0.10%
BETULA NIGRA	RIVER BIRCH	21	0.09%
BETULA PAPYRIFERA	PAPER BIRCH	10	0.04%
BETULA PENDULA	EUROPEAN WHITE BIRCH	12	0.05%
CARPINUS BETULUS	EUROPEAN HORNBEAM	29	0.12%
CARPINUS CAROLINIANA	AMERICAN HORNBEAM	60	0.25%
CASTANEA MOLLISSIMA	CHINESE CHESTNUT	1	0.00%
CATALPA SPECIOSA	NORTHERN CATALPA	4	0.02%
CELTIS OCCIDENTALIS	HACKBERRY	704	2.97%
CERCIDIPHYLLUM JAPONICUM	KATSURATREE	18	0.08%
CERCIS CANADENSIS	REDBUD	4	0.02%
CLADRASTIS LUTEA	YELLOWWOOD	22	0.09%
CORNUS FLORIDA	FLOWERING DOGWOOD	1	0.00%
CORNUS MAS	CORNELIAN DOGWOOD	9	0.04%
CORYLUS COLURNA	TURKISH FILBERT	186	0.78%
CRATAEGUS VIRIDIS	GREEN HAWTHORN	1	0.00%
CRATEAGUS CRUS-GALLI	COCKSPUR HAWTHORN	110	0.46%
ELAEGNUS ANGUSTIFOLIA	RUSSIAN OLIVE	3	0.01%
FAGUS SYLVATICA	EUROPEAN BEECH	1	0.00%
FRAXINUS AMERICANA	WHITE ASH	777	3.28%
FRAXINUS EXCELSIOR	EUROPEAN ASH	135	0.57%

Botanical Name	Common Name	# of Trees	% of Pop
FRAXINUS MANDSHURICA	MANCHURIAN ASH	6	0.03%
FRAXINUS PENNSYLVANICA	GREEN ASH	1,605	6.77%
FRAXINUS QUADRANGULATA	BLUE ASH	255	1.07%
FRAXINUS TOMENTOSA	PUMPKIN ASH	1	0.00%
GINKGO BILOBA	GINKGO BILOBA	408	1.72%
GLEDITSIA TRIACANTHOS	HONEYLOCUST	2,879	12.14%
GYMNOCLADUS DIOICUS	KENTUCKY COFFETREE	128	0.54%
ULMUS JAPON X WILSONIANA 'ACCOLADE'	'ACCOLADE' ELM	122	0.51%
JUGLANS CINEREA	BUTTERNUT	1	0.00%
JUGLANS NIGRA	BLACK WALNUT	17	0.07%
JUGLANS REGIA	ENGLISH WALNUT	3	0.01%
JUNIPERUS CHINENSIS	CHINESE JUNIPER	7	0.03%
JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	25	0.11%
LIQUIDAMBAR STYRACIFLUA	SWEETGUM	7	0.03%
LIRIODENDRON TULIPIFERA	TULIPTREE	97	0.41%
MACLURA POMIFERA	OSAGE ORANGE	2	0.01%
MAGNOLIA SOULANGIANA	SAUCER MAGNOLIA	11	0.05%
MALUS PUMILA	APPLE	2	0.01%
MALUS SPECIES	CRABAPPLE	1,221	5.15%
METASEQUOIA GLYPTOSTROBOIDES	DAWN REDWOOD	80	0.34%
MORUS ALBA	WHITE MULBERRY	30	0.13%
MORUS RUBRA	RED MULBERRY	6	0.03%
NYSSA SYLVATICA	BLACK TUPELO	22	0.09%
OSTRYA VIRGINIANA	HOPHORNBEAM	66	0.28%
PHELLODENDRON AMURENSE	AMUR CORKTREE	35	0.15%
PICEA ABIES	NORWAY SPRUCE	58	0.24%
PICEA GLAUCA	WHITE SPRUCE	16	0.07%
PICEA PUNGENS	COLORADO SPRUCE	173	0.73%
PINUS BANKSIANA	JACK PINE	2	0.01%
PINUS NIGRA	AUSTRIAN PINE	8	0.03%
PINUS RESINOSA	RED PINE	49	0.21%
PINUS STROBUS	EASTERN WHITE PINE	25	0.11%
PINUS SYLVESTRIS	SCOTCH PINE	10	0.04%
PLATANUS OCCIDENTALIS	SYCAMORE	29	0.12%
PLATANUS X ACERIFOLIA	LONDON PLANTREE	156	0.66%
POPULUS ALBA	WHITE POPLAR	7	0.03%
POPULUS DELTOIDES	COTTONWOOD	67	0.28%
POPULUS NIGRA	LOMBARDY POPLAR	1	0.00%
POPULUS TREMULOIDES	QUAKING ASPEN	1	0.00%
PRUNUS AVIUM	SWEET CHERRY	1	0.00%
PRUNUS CERASIFERA	PURPLE LEAF PLUM	1	0.00%
PRUNUS DOMESTICA	COMMON PLUM	1	0.00%
PRUNUS PENSYLVANICA	PIN CHERRY	1	0.00%

Botanical Name	Common Name	# of Trees	% of Pop
PRUNUS SEROTINA	BLACK CHERRY	10	0.04%
PRUNUS SUBHIRTELLA	FLOWERING CHERRY	1	0.00%
PRUNUS VIRGINIANA	COMMON CHOKECHERRY	7	0.03%
PSEUDOTSUGA MENZIESII	DOUGLAS FIR	15	0.06%
PYRUS CALLERYANA	CALLERY PEAR	571	2.41%
PYRUS COMMUNIS	PEAR COMMON	1	0.00%
QUERCUS ACUTISSIMA	SAWTOOTH OAK	19	0.08%
QUERCUS ALBA	WHITE OAK	72	0.30%
QUERCUS BICOLOR	SWAMP WHITE OAK	166	0.70%
QUERCUS COCCINEA	SCARLET OAK	1	0.00%
QUERCUS ELLIPSOIDALIS	HILLS OAK	18	0.08%
QUERCUS IMBRICARIA	SHINGLE OAK	87	0.37%
QUERCUS MACROCARPA	BUR OAK	233	0.98%
QUERCUS MUEHLENBERGII	CHINKAPIN OAK	137	0.58%
QUERCUS PALUSTRIS	PIN OAK	62	0.26%
QUERCUS ROBUR	ENGLISH OAK	197	0.83%
QUERCUS RUBA	RED OAK	427	1.80%
QUERCUS X SCHUETTII B/S WH OAK	BUR/SWAMP WHITE OAK HYBRID	4	0.02%
RHAMNUS CATHARTICA	BUCKTHORN COMMON	48	0.20%
ROBINIA PSEUDOACACIA	BLACK LOCUST	31	0.13%
SALIX	WEEPING WILLOW	2	0.01%
SORBUS AUCUPARIA	EUROPEAN MOUNTAINASH	1	0.00%
SYRINGA PEKINENSIS	PEKIN LILAC	47	0.20%
SYRINGA RETICULATA	JAPANESE TREE LILAC	440	1.85%
TAXODIUM DISTICHUM	BALD CYPRESS	35	0.15%
TAXUS SPP.	UPRIGHT YEW	4	0.02%
THUJA OCCIDENTALIS	WHITE CEDAR	14	0.06%
TILIA AMERICANA	AMERICAN LINDEN	655	2.76%
TSUGA CANADENSIS	CANADIAN HEMLOCK	3	0.01%
TILIA CORDATA	LITTLELEAF LINDEN	1,216	5.13%
TILIA TOMENTOSA	SILVER LINDEN	378	1.59%
ULMUS AMERICANA	AMERICAN ELM	282	1.19%
ULMUS CARP X PARVIFOL FRONTIE	'FRONTIER' ELM	9	0.04%
ULMUS CARPINIFOLIA	EUROPEAN ELM	16	0.07%
ULMUS COMPLEX HYBRID COMENDTN	'COMMENDATION' ELM	7	0.03%
ULMUS COMPLEX HYBRID DANDA CHA	'DANADA CHARM' ELM	2	0.01%
ULMUS COMPLEX HYBRID HOMESTEAD	'HOMESTEAD' ELM	24	0.10%
ULMUS COMPLEX HYBRID 'PATRIOT'	'PATRIOT' ELM	12	0.05%
ULMUS COMPLEX HYBRID TRIUMPH	'TRIUMPH' ELM	7	0.03%
ULMUS PARVIFOLIA	LACEBARK ELM	12	0.05%
ULMUS PUMILA	SIBERIAN ELM	294	1.24%
ZELKOVA SERRATA	JAPANESE ZELKOVA	1	0.00%
	Total	23,724	100.00%

Appendix Section 4C-1. Percentage of Trees by Condition Rating by Forestry Section

			Condition Rating					
Forestry Section	3	4	5	6	7	8	9	10
1	0.0	0.1	0.5	14.4	56.1	19.0	9.9	0.0
2	0.0	0.0	0.6	11.7	48.7	23.8	15.1	0.0
3	0.0	0.6	2.6	17.2	55.6	10.5	13.4	0.0
4.1	0.0	0.0	1.2	24.7	41.6	10.1	22.3	0.0
4.2	0.0	0.2	1.4	8.7	46.6	25.1	16.5	1.5
4.3	0.0	0.0	6.0	10.5	49.5	24.3	9.5	0.2
5.2	0.0	0.0	1.9	14.8	47.4	13.7	21.9	0.4
5.3	0.0	0.0	2.7	16.1	61.1	5.7	14.5	0.0
5.4	0.0	0.1	1.5	8.8	34.8	25.2	28.1	1.5
6	0.1	0.0	0.6	5.2	35.6	33.1	24.9	0.6
7.1	0.0	0.0	0.9	14.7	45.5	20.8	18.2	0.0
7.2	0.0	0.8	1.9	5.0	29.9	28.8	33.3	0.4
7.3	0.1	0.0	0.5	4.8	64.5	19.3	10.8	0.1
8	0.0	0.1	0.5	9.9	34.1	24.2	31.1	0.0
9	0.0	0.0	0.5	5.0	33.5	36.0	24.9	0.1
10	0.0	0.0	0.5	4.9	49.8	25.4	19.4	0.0
11	0.0	0.1	1.5	6.0	25.5	32.4	34.1	0.4
12	0.0	0.0	1.5	9.0	47.9	25.3	15.5	0.7
13	0.0	0.0	0.6	3.1	14.8	35.7	45.9	0.0
14	0.0	0.1	0.4	3.2	16.9	24.2	55.1	0.0
15.1	0.0	0.0	0.5	31.0	40.8	13.5	14.2	0.0
15.2	0.0	0.9	2.2	15.7	57.1	5.0	19.1	0.0
16.1	0.0	0.0	1.5	12.9	43.8	19.8	21.4	0.5
16.2	0.0	0.0	0.3	13.2	37.1	17.2	32.1	0.0
16.3	0.0	0.1	0.3	3.7	26.8	33.1	36.0	0.0
17	0.0	0.0	0.0	1.0	20.6	37.0	41.5	0.0

Appendix Section 6-1. Village of Mount Prospect Urban Forestry Goals, adopted in Village code in 2002.

A. Maintain a Healthy Urban Forest: The urban forest of Mount Prospect is a dynamic ecosystem comprised of trees, soil, water, air, wildlife and humans. Proper stewardship of the ecosystem is the most efficient and economical method of ensuring a safe and relatively hazard free environment for the citizens of Mount Prospect.

B. Promote Age and Species Diversity of the Tree Population: The long term health of Mount Prospect's urban forest depends on a proper distribution of young, middle aged and mature trees. Adequate stocking of variously aged trees ensures that as mature trees decline and are removed, younger trees are available to fill in the canopy. Species diversity is also important to guard against substantial losses to a species specific pest or disease, such as Dutch elm disease.

C. Improve Species and Site Selection for New Tree Plantings: Increasing species diversity will only improve the urban forest if the species are matched with the site in which they are growing. Large trees provide the greatest benefits relative to energy conservation, air quality and stormwater retention, but require sufficient space to reach their full size at maturity. Large growing trees shall not be planted directly under existing power lines. Small trees can be used in a variety of places that are size restricted, however, if a space will accommodate a tree that achieves a larger size at maturity, the larger growing species should be considered. The proper tree should be located according to the conditions of the site with consideration given to increasing canopy closure, maximizing environmental benefits and achieving consistency in the landscape design.

D. Establish Optimum Canopy Closure: Trees help to conserve energy by providing shade to buildings during the summer. Additional cooling can be realized by shading roads and parking lots that would otherwise absorb sunlight and radiate heat. Since Mount Prospect is located in a climate where considerably more energy is spent on heating than cooling, consideration must also be given to the effect of shade on heating costs in the winter. Careful consideration of the establishment of new trees will result in the optimum canopy closure relative to energy conservation.

E. Resolution and Prevention of Tree/Hardscape Conflicts Through Coordinated Planning: Trees require space for roots, trunk, and branches. Frequently the space occupied by portions of trees is needed for other elements of the infrastructure such as roads, sewers, utility lines and buildings. Conflicts between trees and other infrastructure components can be minimized through cooperation of the various village departments, local utility companies and citizens. The

provisions of this article are intended to facilitate communication and cooperation between those individuals and agencies charged with maintaining Mount Prospect's infrastructure.

F. Promote Public Education and Support: The primary reason to care for trees and natural resources in Mount Prospect is to improve the community for its citizens. The urban forest management program must be based on the informed support of the citizens. A goal of this article is to provide proper tree care through informed, professional management based on knowledge. Those village employees responsible for the management of natural resources in Mount Prospect are also responsible for sharing their knowledge and sources of information with the public.

G. Facilitate The Resolution of Tree Related Conflicts: A goal of this article is to make available reasonable and fair guidelines for maintaining healthy, structurally sound and safe trees, and providing a comprehensive standards manual for planting, pruning and removing trees. By providing these guidelines in a clear and understandable format, equal and fair treatment is guaranteed for all residents.

Christopher J. Luley, Ph.D.
Project Manager/Urban Forester | Urban Forestry LLC
6050 Hicks Rd. | Naples, NY 14512-9327 | (585) 330-1722
chris@urbanforestryllc.com

Andrew Pleninger
Vice President | Urban Forestry, LLC
2553 Creek Road | Palmyra, NY 14522 | (585) 415-8720
andy@urbanforestryllc.com

urbanforestryllc.com


URBAN
FORESTRY LLC