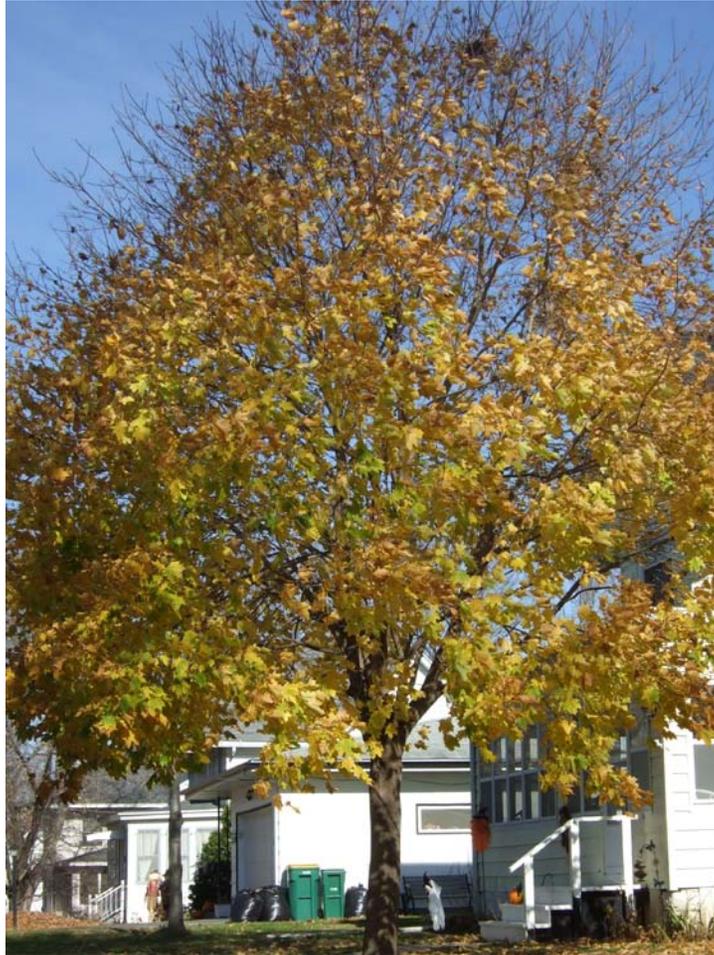


Village of Belleville Urban Forestry Plan & Tree Inventory Summary



March 8, 2010

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**Village of Belleville
Urban Forestry Management Plan & Tree Inventory Analysis**

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EXECUTIVE SUMMARY

The Village of Belleville recognizes that trees provide important economic, ecological and environmental benefits that significantly improve the quality of urban life. Bluestem Forestry Consulting Inc. was contracted to complete a street and park tree inventory and prepare a management plan in 2009/2010. This management plan and tree inventory marks a significant commitment to Belleville's urban forestry program. This document reports the findings of the inventory and makes specific, prioritized recommendations for managing the urban forest resource for the next five years based on resources and needs.

Important points of the inventory and current tree management program include:

- A total of 1140 trees and 325 planting sites. Of the total number of trees, 409 are park trees (27.7% of total population) and 731 are growing on the street right-of-way (72.3%).
- 74.7% of all trees are classified as in excellent, good or fair condition. This is a characteristic for initial tree inventories.
- There are 127 trees in need of removal or 8.6% of total inventoried population. Typical initial inventories experience a removal rate of 6-10%.
- The top five species of tree are green ash (18.3% of the total inventoried population), Norway maple (13.4%), silver maple (12.2%), Colorado blue spruce (6.7%) and sugar maple (6.3%). Maples and ash are routinely overrepresented in urban forests due to their easy availability and their reasonable price.
- 259 trees are ash (22.7%) and are susceptible to Emerald Ash Borer (EAB). A separate document has been prepared detailing steps for Belleville to take in preparation of EAB. The ash component in an urban forest varies widely from a high of 55% to a low of 7%.
- The Village is currently revising its ordinances to help improve safety and encourage proper planting in new developments.
- Maintenance of street trees has traditionally been the responsibility of the abutting property owner.
- This plan recommends at least one employee attain status as an International Society of Arboriculture (ISA) certified arborist. This certification is industry standard for urban forestry related work.
- It will require 244 staff-hours and approximately \$27,000 to complete routine forestry activities annually.
- Due to equipment limitations, most forestry work will need to be contracted to a qualified forestry firm.
- The maple family (Norway, silver, sugar, red, boxelder, etc.) represent 33.7% of the total tree population (384 trees). Stocking recommendations are not more than 5% of any one species and 20% of any one family.
- 17.1% of all trees and planting sites have overhead power lines present.
- The hypothetical value of street and park trees in Belleville is \$1,087,134.135.

STATEMENT OF PURPOSE AND SCOPE

The purpose of Belleville's urban forest management plan is to recommend specific activities and designate responsibilities to improve the street and park tree urban forest. This plan includes specific, prioritized, inventory-based recommendations for managing the urban forest. It includes a five-year budget outline and a directive for responsibilities and support needs. The Director of Public Works in cooperation with other Village employees and the Public Works & Parks Committee will be responsible for implementation of this plan.

TREE INVENTORY

During November and December of 2009, Bluestem Forestry Consulting Inc. conducted a street and park tree inventory. All trees along the street right-of-ways were inventoried as were trees in Sugar River Park, Greenview Park, Memorial Park, Veteran's Park, Community Park and Blaser Park. Planting sites were inventoried along streets where a formal boulevard exists. Wooded, natural and undeveloped areas were inventoried for potential risk trees only. The inventory did not include hazard tree inspections, but did note general health condition. The following data was collected: address, street, sidestreet (where applicable), species, DBH, condition, maintenance needs, defects (up to 2 listed), growspace, utility, comments, priority rating, GPS coordinates and unique ID number. Hypothetical, extrapolated replacement values were ascertained from the collected data. These values were determined using the International Society of Arboriculture's "Valuation of Landscape Trees, Shrubs and Other Plants," Ninth Edition. Species, tree location, dbh and tree condition are used to calculate the replacement value of the individual trees. To further aid in understanding the terminology associated with the inventory findings, a Glossary of Terms can be found as attachment 9. A discussion of some of the overall inventory findings is below.

There are 51 different species within Belleville's urban forest. This is a good number of species, but overall diversity is lacking. Two families represent 56% of the total population. The maple family represents 33.7% of the population and ash accounts for 22.7%. Ideally, the forest should be comprised of not more than 5% of any one species and 20% of any one genus. For example, only 5% of sugar maple should be present and no more than 20% of all maples combined. The onset of EAB has again emphasized the importance of not planting too many of any one species or family. Belleville should not plant any ash or maple. At present, Belleville can expect to lose 22% of its publicly owned forest when EAB arrives. An even worse scenario would be to lose 33% of their population if a maple insect or disease were to appear. A separate document has been prepared by Bluestem Forestry Consulting, Inc. detailing readiness planning and strategies for the EAB.

Inventoried trees were either classified as excellent, good, fair, poor, very poor and dead. Belleville has 127 trees that need to be removed for safety reasons (8.6%), the majority of which are in dead, very poor or poor conditions. Ideally, no tree in any forest should be in a condition of less than fair.

This is an average number of removals for a first time inventory. Most of the trees identified as removals are experiencing severe safety issues such as trunk/basal (within 12 inches of the ground) decay, trunk cavity or major dieback. It is important to recognize that trees are finite and they will eventually die. Belleville's primary forestry goal is to provide a safe urban forest. To assure a safe forest for residents and visitors it is necessary to remove trees. While Belleville does have some high risk trees, 74.7% of the population is in excellent, good or fair condition.

Belleville is in the process of revising/rewriting its current forestry ordinances. The current ordinances dictate that abutting homeowners are responsible for street trees and their management such as planting, pruning and removal. However, it can be difficult to convince homeowners to properly manage their street trees. As a result, some unsafe tree situations exist. The ordinance revision is addressing this problem and will likely charge the Village with proper management of all street and park trees. This management plan assumes that all public tree maintenance will be performed by the Village.

The average diameter at breast height (also know by the acronym DBH – measured at 4.5 feet above ground) is 16.8". This is a large diameter average for an urban forest and indicates that Belleville's forest is relatively mature. There are also 325 vacant planting sites along street rights-of-way in the Village. This is primarily due to the lack of tree planting by the Village. Within the last several years, most tree planting has been completed by developers.

In this age of global warming, urban trees are experiencing a renewed interest because of the benefits they provide to residents and the environment. A few of the many benefits of Belleville's urban forest include:

"The net cooling effect of a young, healthy tree is equivalent to ten room-size air conditioners operating 20 hours a day."—*U.S. Department of Agriculture*

"Landscaping can reduce air conditioning costs by up to 50 percent, by shading the windows and walls of a home." —*American Public Power Association*

"If you plant a tree today on the west side of your home, in 5 years your energy bills should be 3% less. In 15 years the savings will be nearly 12%." —*Dr. E. Greg McPherson, Center for Urban Forest Research*

"A mature tree can often have an appraised value of between \$1,000 and \$10,000." —*Council of Tree and Landscape Appraisers*

"In one study, 83% of realtors believe that mature trees have a "strong or moderate impact" on the salability of homes listed for under \$150,000; on homes over \$250,000, this perception increases to 98%." —*Arbor National Mortgage & American Forests*

"Landscaping, especially with trees, can increase property values as much as 20 percent."—*Management Information Services/ICMA*

"One acre of forest absorbs six tons of carbon dioxide and puts out four tons of oxygen. This is enough to meet the annual needs of 18 people."—*U.S. Department of Agriculture*

"Trees properly placed around buildings can reduce air conditioning needs by 30 percent and can save 20 - 50 percent in energy used for heating."—*USDA Forest Service*

"Trees can be a stimulus to economic development, attracting new business and tourism. Commercial retail areas are more attractive to shoppers, apartments rent more quickly, tenants stay longer, and space in a wooded setting is more valuable to sell or rent."—*The National Arbor Day Foundation*

"Healthy, mature trees add an average of 10 percent to a property's value."—*USDA Forest Service*

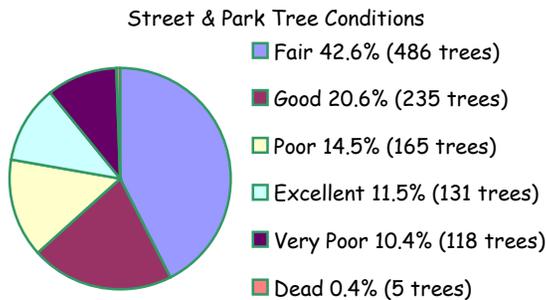
"The planting of trees means improved water quality, resulting in less runoff and erosion. This allows more recharging of the ground water supply. Wooded areas help prevent the transport of sediment and chemicals into streams."—*USDA Forest Service*

"In laboratory research, visual exposure to settings with trees has produced significant recovery from stress within five minutes, as indicated by changes in blood pressure and muscle tension."—*Dr. Roger S. Ulrich Texas A&M University*

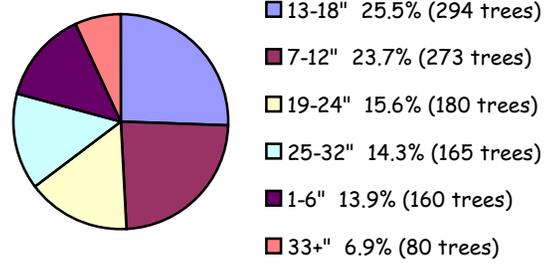
The following graphs give a visual representation of the inventory results:

TOP SIX SPECIES SUMMARY TABLE

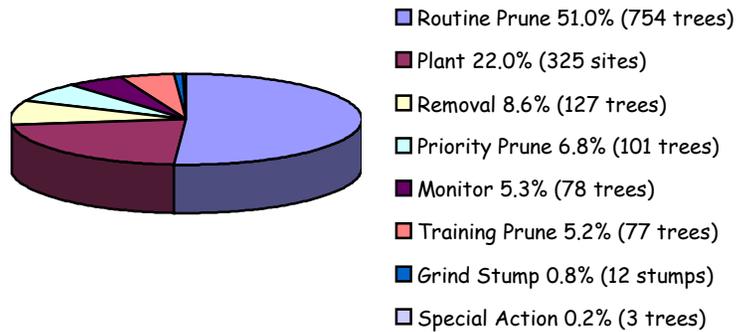
Species	Count	Percentage of Total Population	Average DBH (in inches)	Average Condition Percentage
Green Ash	211	18.3%	18.1	65%
Norway Maple	154	13.4%	17.0	61%
Silver Maple	141	12.2%	25.6	64%
Colorado Blue Spruce	77	6.7%	9.1	79%
Sugar Maple	73	6.3%	15.9	56%
Honeylocust	50	4.3%	14.4	76%
Overall	1140	n/a	16.8	67%



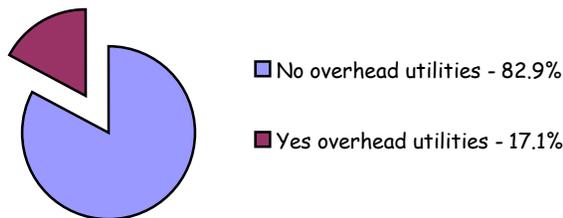
Diameter Distribution of Street & Park Trees



Street & Park Tree Maintenance Needs



Presence of Overhead Utilities for Total Population



Below is a discussion of the specific areas of the Village that were included in the inventory.

Street Trees

Street trees provide a sense of continuity in neighborhoods. They define neighborhoods by their uniformity and designate areas of the community by their diversity. They provide privacy from traffic and streets and form a barrier between private yards and public street space.

There is just over 700 street trees, 325 planting sites and 11 stumps located along the street right-

of-way. Approximately 40% of the street tree population is a maple. 20.0% of the street tree population is ash. Belleville will lose 1/5 of all of its street trees without chemical treatment when the emerald ash borer arrives. The Village would lose nearly half of its street trees if a maple disease were to appear on the horizon. Two facts can be gathered from this data. First, that most of Belleville's ash and maple are growing on the street right of way. In actuality, 56% of all of the street trees in Belleville are either maple or ash. Second, Belleville's residents have not done an adequate job diversifying its tree species in the past. It will take decades to remedy the over population of maple. The ash situation will be remedied much sooner because of EAB. The loss of Belleville's ash is an excellent opportunity to begin a true diversification of population.

As a result of homeowners being responsible for tree maintenance on street trees, very little pruning has been completed. All of the trees need a thorough pruning and the frequency of pruning needs to increase. Pruning guidelines recommend pruning a larger tree (typically one over 6" dbh) once every 5-8 years. A seven year routine pruning cycle has been established for Belleville. This equates to pruning approximately 133 trees annually.

Most street trees in Belleville are in fair health. A tree in fair condition will be exhibiting minor to moderate defects. Some situations that would warrant a fair rating include: a thinning canopy, twigs growth may only be 1/2 the expected rate, significant mechanical injury such as scarring on the trunk, insects or disease may be present but are controllable and the crown may be lacking the natural or desired symmetry characteristic to the species. If given routine maintenance such as pruning and mulching, a tree that is graded fair will contribute to the forest for many years. Many trees in Belleville are suffering from poor form such as narrow branch unions.

Ninety-eight street trees were identified as in need of removal. The overall removal percentage for all trees (street and park) is 8.6%. This is a fairly standard rate of removal for initial inventories. However, when park tree statistics are removed from the equation, 12.1% of all street trees were identified as a removal. This is a very high removal rate and indicates that the Village provides better care to its park trees than homeowners provide to the street trees. Again, the ordinance revision is looking to rectify this situation so that proper maintenance on all trees is completed.



It is critical that these removals be completed as soon as possible. There are many serious tree defects present in Belleville. While it is not possible to determine whether a tree will fail or not, there are certain defects that indicate a failure is more likely to occur. The following photographs were taken of street trees within Belleville that are indicative of the type and severity of defects that were identified.

Silver maple exhibiting severe dieback and crown decay.



Ash with severe basal and trunk decay.



Ash with basal and trunk cavities.



Fredericks Memorial Park

Park Trees

There are a total of 409 park trees throughout the Village. A discussion of some specific parks and their unique circumstances is as follows.

COMMUNITY PARK

Community Park has the most trees of any park in Belleville. It is essentially an island located in Lake Belle View off of State Highway 69. One hundred eight-nine trees were inventoried in Community Park. This park has the highest concentration of ash of any park in Belleville. There are 66 ash trees in Community Park (34.9% of the total population). There are 26 different species of trees within Community Park, which is a very high number. However, diversity remains low because most trees are ash or maple.

FREDERICKS MEMORIAL PARK

Memorial Park has a total of 50 trees and is Belleville's oldest park. The average diameter is just over 21" and as the size of the trees indicates, this park has an older more mature tree population. Memorial Park suffered many downed trees and canopy damage due to a severe storm a few years ago and is some of the trees still need pruning as a result of storm damage. There are 12 bur oak and one Northern red oak in this park. Oaks are a high quality species due to their longevity and strong wood characteristics. Oaks should be planted throughout the Village, but especially in Memorial Park to preserve the integrity of the forest canopy.

BLASER PARK

Blaser Park can be found in a newly developed area of Belleville off on Jon Street. It has 83 trees, which makes it the second largest park for forest population in Belleville. Because this is a

relatively new park, the tree conditions are better than the overall average. Nearly 30% of the trees have a condition rating of excellent. 87.6% of the population is in excellent, good or fair condition. There are only two trees that were identified as removals and they are both only 6" in diameter. The average diameter is 11" which indicates a young forest. There are only twelve species of trees in Blaser Park. The Village is encouraged to plant trees for increased diversity in Blaser Park.

Maps of all parks with park tree locations can be found as attachment 13.

STAFFING AND EQUIPMENT

The tree inventory is used to determine how to properly manage Belleville's urban forest. Two distinct groups of activities are identified through the inventory. First, tree maintenance that needs to be completed immediately or quickly is identified. These types of activities are removals and prunings due to some significant defect. After these activities are completed, the Village needs to establish activities that need to be completed on an annual basis to maintain a healthy and thriving urban forest. These are referred to as 'routine' activities. The following discussion pertains to the routine activities that need to be completed annually to maintain a healthy forest.

To properly maintain Belleville's forest, approximately 244 man-hours will be required. Projected *Routine* annual activities (based on a seven year work cycle) are:

Projected Routine Activities

<i>Activity</i>	<i>Projected</i>
Routine removals	10
Routine Pruning (6"+ dbh)	133
Tree Planting	43
Tree Monitoring	78
Training Pruning (1-6" dbh)	38

Belleville does not have a designated forestry department. All forestry related work is completed by the Department of Public Works. This department is staffed by the Director of Public Works (DPW) and four other full time employees. Public works employees are responsible for all areas of street and park maintenance in Belleville, not merely forestry. The DPW is very interested in the health of Belleville's trees and does all that is possible with the existing park tree resources. This is Belleville's first street and park tree inventory and is the first time the extent and needs of the forest have been identified.

Typically, forestry work is performed periodically throughout the year with busy seasons including winter (pruning and removal) and fall (planting). Additionally, for safety and effectiveness most activities necessitate a minimum three person crew. One employee should be an ISA (International Society of Arboriculture) certified arborist. With this qualification he/she can effectively serve as Village forester. This certification is an industry standard and requires a solid framework of forestry knowledge and continuing education is required to maintain status as a certified arborist. While this employee will be completing many forestry duties, they will most likely be used during the off-season for other street department activities.

While staffing is potentially adequate to manage Belleville's urban forest, equipment is the primary limiting factor. Belleville's existing equipment includes:

- 2007 Vermeer chipper (primarily used for brush pickup)
- 2 chainsaws

Trucks for hauling
Pole saw
Safety equipment (chaps, goggles, hardhats, etc)

The most significant piece of equipment missing from the forestry arsenal is a bucket truck. Without an aerial lift or 'bucket' truck, forestry work is limited to that which can be reached from the ground. This limits the size of trees that can be maintained by in-house staff to those no larger than approximately 6" in diameter. Taking into consideration that most lift trucks cost an average of \$100,000 for a used truck to \$160,000 for new and have an average delivery time of 18 months and that most street trees in Belleville have never been pruned and will need a significant initial pruning, it seems reasonable to contract larger prunings and removals. The Village does not have a stump grinder either, and again based on the Village need and the cost, it is reasonable to contract this service.

With existing equipment, the following work can be completed in-house with a 2-3 person crew:

Removal of trees 6" dbh and under (larger trees can be evaluated individually)
All tree plantings
Training prunes (trees easily pruned from the ground, usually under 6" dbh)
Removals that have been topped by Alliant Energy (Alliant tops to below power lines)

The following work will need to be contracted to a qualified forestry firm:

Removals and prunings over 6" dbh
Stump grinding over 6" diameter (under 6" can be hand dug)

As always, each tree pruning and removal will need to be evaluated by the Director of Public Works or new employee to determine if the crew can safely complete the activity.

A complete listing of activities and who is responsible can be found as attachment 1.

A seven year pruning cycle has been established for the Village of Belleville. The Village has been divided into seven zones that are roughly equivalent to one another. The following zones can be used:

South Harrison to the west, bound by city limits on west and south and Lake Bellevue to the north
South Park to South Harrison, bound by city limits to the south and Lake Bellevue to the north
South Park to the east, bound by city limits on east and south and Sugar River to the north
Community Park
Sugar River Park, Greenview Park, Memorial Park, Veterans Park
Sugar River north to include Karl Avenue, bound by city limits on east and west
Karl Avenue north, including Blaser Park, bound by city limits on east and west

Pruning guidelines recommend establishing a pruning cycle of 5-8 years, and Belleville will be meeting this guideline.

To offset the high initial cost of implementing a forestry program, Belleville could apply for a WI DNR grant that would assist with some activities. This is not a long term solution, but may help with program start-up for 1-2 years. Also, the idea of an urban forestry cooperative is an option. Combining similar communities with like problems to bargain as a unit when hiring out contract work such as tree removals or planting would most likely assure a lower rate from the forester or contractor.

STORMWATER RETENTION AND TREES

Stormwater runoff is a concern in every urban forest across the country. Stormwater runoff describes the water that flows overland during a rainstorm. As a rainstorm occurs, the water that reaches the lower atmosphere is either absorbed by trees and plants, infiltrates into the ground or flows overland. The portion of the water that flows overland is stormwater runoff. Stormwater runoff is an especially important concern in Belleville which has the Sugar River running throughout the Village.

As we build our communities, considerable natural landscape is converted to impervious surfaces such as roads, parking lots, driveways and buildings. Man-made drainage surfaces such as sewers and storm drains are used to accelerate water movement through communities into drainages and natural waterways. However, water quality suffers when runoff carries contaminants such as oil, metals or pesticides into streams and wetlands.

Trees protect water and soil resources. Healthy trees can reduce the amount of runoff and pollutants in water in three ways:

- Leaves, branch surfaces and trunk bark intercept and store rainfall, thereby reducing runoff volumes and delaying the onset of peak flows;
- Root growth and decomposition increase the capacity and rate of soil infiltration by rainfall and reduce overland flow;
- Tree canopies reduce soil erosion by diminishing the impact of raindrops on barren surfaces.

Some simple, effective ways to maximize stormwater retention include:

- Select tree species with architectural features that maximize interception, such as large leaf surface area and rough surfaces that store water. Examples include: catalpa (large leaf area), basswood (large leaf area), bur oak (rough, furrowed bark) and evergreens (intercept rainwater year round).
- Plant trees in groves or small groupings where possible.
- Increase tree canopy by planting as many large-crowning trees as possible.
- Plant evergreens where appropriate. Trees with evergreen foliage contribute to greater interception than deciduous trees particularly in regions that receive most of their precipitation in the winter months.
- Improve the maintenance of existing trees.
- Plant more trees in appropriate areas such as parkways, boulevards, parking lots, traffic islands and median strips. This aids in the retention and infiltration processes.
- Creating larger rooting spaces in downtown plantings and on new or reconstructed roads will help the trees thrive instead of just survive.

Sources include Dr. Xiao's research published in the *Journal of Arboriculture* in 1998 and Hartford, Maryland Country Government publications.

URBAN FORESTRY GOALS

The inventory was the first step towards establishing a defined, efficient forestry program for the Village of Belleville. The next step is to identify goals and begin the process of implementation. The two primary goals that have been identified to establish a management program in order of priority are:

GOAL 1: ELIMINATE HIGH RISK SITUATIONS.

Objective A: Remove high-risk trees.

Objective B: Prune high risk trees.

Objective C: Grind existing stumps.

GOAL 2: ESTABLISH A ROUTINE, COMPREHENSIVE URBAN FORESTRY PROGRAM.

Objective A: Perform yearly tree inspections/Evaluate Risk Management Program.

Objective B: Perform training prunes.

Objective C: Perform routine pruning and removals.

Objective D: Plant high quality trees with low maintenance requirements.

Objective E: Ensure an adequate budget.

Objective F: Inventory updating.

Objective G: Community education.

Objective H: Wood residue.

GOAL 1: Eliminate high-risk situations.

The first and foremost objective of any municipality entrusted with the responsibility of an urban forest is the safety of its residents and visitors. Until a safe environment has been attained, no other objectives can be tackled. The following is a prioritized list of actions that need to be taken to eliminate the high-risk situations identified during the inventory:

- A. Remove trees identified as Removals.
- B. Prune trees identified as Prune Priority.

Objective A: Remove High Risk Trees.

Tree removals are an integral part of a good forest management program. Removals are as necessary to the urban forest's life cycle as are tree plantings and maintenance. Removals do, at times, stimulate a public reaction because people grow attached to the trees in the vicinity of their homes. Nevertheless, a successful urban forestry program demands that a removal policy be adopted and applied uniformly throughout the Village. A clear policy provides coherent guidelines to enable Village officials and crews to make informed removal decisions. Furthermore, such a policy can help allay public concerns about tree removals. The Village's potential losses from liability claims are also greatly reduced due to healthier and lower risk trees.

The goal of a removal plan is to develop a comprehensive risk reduction program that will guarantee the timely removal of high risk or potentially high risk trees as well as to heighten staff awareness of hazard abatement procedures.

There are three important reasons for establishing a strong removal policy. The first is to maintain safe public areas by reducing potentially high-risk trees and the liability associated with them. Secondly, the removal of dead and declining trees allows the urban forest manager to make room for new diverse planting which in turn increases the overall health of the community forest. Thirdly, it is more reasonable to maintain healthy trees rather than decadent, declining, over mature trees.

In Wisconsin, municipal governments have a legal duty to exercise reasonable care to protect the general public from foreseeable hazards. To minimize the liability associated with trees in high use areas, such as urban streets and parks, land managers must demonstrate that they are exhibiting reasonable care in maintaining these trees. Not removing unsafe trees due to political pressure is unacceptable and may potentially leave the Village liable should there be no designated risk tree removal program showing the effort to reduce the number of these trees.

The initial cost and time to start a risk reduction program is high because of the large number of high-risk trees found in a thorough assessment and lack of past maintenance. Based on the inventory data, Bluestem estimates that 127 trees should be removed from the existing tree population in streets and parks/cemetery. Once this initial group of trees is removed, the Village's removal program should stabilize at approximately 10 removals per year (1-2% of the total population).

It is important to stress that trees can become a safety issue and potentially affect the health and safety of residents in Belleville. Several factors can be considered when choosing which trees to remove first within the removal lists and ways to reduce the costs associated with these activities.

1. Utilize the Risk Management Guide (attachment 11). This guide is a step-by-step system for evaluating risk within the population. For example, under the 'Evaluate the Natural Resources Being Managed' category in the guide, several steps are listed for evaluation. One step is to 'Identify Problematic Conditions'. The inventory identified a condition rating for each tree inventoried. A tree was assigned one of six ratings: excellent, good, fair, poor, very poor or dead. Trees in the last two categories are in the worst health and need to be prioritized for removal. Other steps include identifying problematic species, diameters and defects. Some problematic species include willow and boxelder. These trees are typically weak wooded and tend to fail more often than other species such as oak. Problematic diameters include larger diameter trees. A 2" dbh dead tree poses minimal risk, while a 35" dead or very poor condition tree poses a very high risk. Additionally, certain defects should be red-flagged for action. Cavities, decay and excessive dieback are some of the more severe defects noted during the inventory. All of this information can be found within the inventory data. Target and location are also important factors to consider when prioritizing removals. Playgrounds and busy streets where pedestrians and vehicles frequent should receive higher priority than street with little traffic and no homes. The combination of these factors should be used to determine the order in which trees need to be removed.

2. Prioritizing Staff Duties and Time. The safety risk of failing trees cannot be over-stressed. Staff time needs to be prioritized. The Village needs to consider whether certain activities are more important than others. Is it necessary to mow every park every week or can a park be mowed every-other week so that staff can dedicate more time to pruning and removals? Will grass that is 4" in height rather than 2" endanger residents? Will a large silver maple with trunk decay endanger walkers? These are important questions the Village needs to address when resident safety is involved.

These are all difficult questions and decisions that the Village council and staff will need to address quickly to eliminate safety risks. One of the primary purposes of the inventory was to identify risks so that the Village can eliminate these risks and increase safety for its residents. The inventory data and findings should be utilized to assist the Village with the answers to these questions.

A "high risk" is any tree or tree part that demonstrates a high risk of failure or fractures which would result in damage or injury to people or property. Usually, high-risk trees demonstrate visible defects.

There are two distinct factors to the definition of a high risk tree: 1) a physical defect within a tree that increases its potential for failure, and 2) the proximity of the tree to people or property that increases the likelihood of personal injury or property damage. A decaying tree in the middle of the Chequamegon National Forest may have a potential for failure, but the chance that tree will cause personal injury is remote. However, that same tree located on Church Street or anywhere in Belleville, should be considered a high risk because of its urban location.

One task of the urban forest manager is to anticipate tree failures before they occur. There are no

absolutes in determining risks - only sound judgment based on experience at recognizing structurally unsound trees.

The number of trees marked for removal within a given year further describes a forest system's health, although in some instances trees need to be removed for reasons unrelated to health. The objective is to eventually have no Village trees with a condition rating lower than fair.

The risk assessment that Belleville should use to evaluate trees was created by the International Society of Arboriculture. It is titled A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas, 2nd Edition by Nelda Matheny and James R. Clark. This can be purchased for \$45.00 at 1-888-472-8733.

Again, during the inventory 127 trees were identified as a 'removal' (attachment 2). These trees have large areas of decay in the trunk, extensive splitting, root damage, extensive dieback or other such problems.

When a tree has been labeled as in need of removal or priority pruning, it may indicate an underlying deficiency. For this reason, all trees labeled as removals along with trees in need of priority pruning need to receive a thorough hazard inspection twice a year (once with the leaves on and once without the leaves) and after storm events until the tree has been removed or the hazard has been eliminated. Likewise, all trees identified as in need of monitoring (attachment 6), poor or very poor or dead should also receive a similar inspection. A schedule of all activities including removals can be found as attachment 1.

Trees that need to be regularly and frequently inspected were identified as 'Monitors.' These trees may have a problem developing such as dieback or may have old storm damage that warrants attention. There are 78 trees identified as in need of monitoring. A list of these trees can be found as attachment 6.

Certain policies regarding the removal and pruning of trees need to be adopted by the Village. Standards and specifications provide detailed guidance regarding management practices. They are commonly used when municipalities hire a contractor or purchases materials, but should also be applied to all work completed by staff. Industry standards and specifications to reference should include:

- ~ American National Standard for Safety in Tree Care Operations, ANSI Z133 (current revision)
- ~ American National Standard for Tree Care Operations - Tree, Shrub and Other Woody Plant Maintenance - Standard Practices, ANSI A300 (current revision)

A notification procedure should be enacted to alert nearby residents of the impending removal. Not only does this alert them to the high risk situation, it helps residents feel involved in the decision and gives them time to adjust to the loss of the adjacent tree. The ISA Certified Arborist can "mark" the tree and give the nearby homeowner written notification explaining why the tree is being removed, how the removal will be performed, when the removal will begin and if replanting will occur. Include a phone number where the ISA Certified Arborist can be contacted for any

additional questions or concerns.

Objective B: Prune high-risk trees.

A total of 101 trees were identified as in need of priority pruning. Prune Priority are trees with obvious risks such as branch cavities, hangers or significantly sized deadwood. These trees should be pruned immediately as they present a considerable risk.

The tree inventory was a ground visual only survey and was not intended to substitute a thorough hazard tree survey and as such the trees have not been aurally inspected. A new and more severe set of circumstances may be noted from an aerial inspection. It is important that while trees are being pruned from an aerial bucket truck that their condition be re-evaluated. If the pruner feels they would not benefit from being pruned, they should be removed.

Objective C: Grind out existing stumps.

Twelve existing stumps were found during the inventory process. These stumps need to be ground out to avoid trips and stumbles. Complete these stump removals after the initial removals and priority prunes have been completed, but prior to starting routine activities.

GOAL 2: Establish a routine, comprehensive urban forestry program.

Systematic maintenance of existing trees is important for three reasons: safety, cost savings and aesthetics. Maintained trees have a greater lifespan than trees that are not maintained and proper maintenance can reduce removal and replanting costs. On a limited budget, it is necessary to prioritize actions. High-risk tree situations should always be eliminated first (Goal 1) and then routine maintenance should proceed. The following routine objectives are listed from highest to lowest priority.

Objective A: Perform Yearly Tree Inspections & Evaluate the Risk Management Program.

It is important that *all* of the trees in the Village receive a yearly hazard inspection. Trees that have been identified during the inventory as needing priority pruning, monitoring or removal need a hazard inspection *twice* yearly. Complete this inspection once with leaf cover and once without until the hazard has been eliminated or the situation resolved. Additionally, all large diameter trees need an extra inspection after storms. These inspections can be completed simultaneously with the inspections discussed previously. If any hazards are identified, the situations need to be corrected immediately, and then continue with the list of routine maintenance.

It is important that an ISA Certified Arborist complete the larger tree inspections (greater than 6" in diameter).

Seven factors should be considered when evaluating the smaller trees in-house and all trees. The factors along with positive and negative considerations are:

1. Crown development
 - ~ characteristic of species and well balanced
 - ~ branching throughout entire upper 2/3 of trunk area
 - ~ lacking full crown
2. Trunk
 - ~ one central leader is desired
 - ~ no defects
 - ~ missing sections of bark
 - ~ extensive decay or hollow
3. Major branch structure
 - ~ evenly distributed branches
 - ~ structurally important branches not dead or broken
4. Twig growth rate
 - ~ typical for species and age
 - ~ growth rate reduced
5. Foliage
 - ~ normal size and color
 - ~ small leaves with deficiencies
6. Insects and disease
 - ~ no apparent problems
 - ~ severe infestation

7. Roots

- ~ extensive root loss
- ~ stem girdling roots present
- ~trunk flare present indicating proper planting depth

To eliminate high-risk situations within Belleville, Director of Public Works and ISA Certified Arborist should evaluate the risk management program annually. This management plan is the first phase of the risk management program. The evaluation can be accomplished by following the Risk Management Guide (attachment 11). This inventory and management plan represents the first comprehensive inventory but is not a substitute for a hazard tree evaluation.

Objective B: Perform Training Prunes.

Training pruning is the structural pruning of all trees 10 years of age or younger (approximately 6" diameter and under that can be reached from the ground). Some benefits of training pruning include:

- *Pruning 2-3 times in the first ten years of a tree's life will reduce 90% of the structural problems the tree will ever have.*
- *This is the easiest pruning to perform due to the small size of the trees.*
- *Training pruning is the most cost effective pruning because it reduces long-term routine pruning costs.*
- *It is the most economical pruning because an in-house crew can complete it quickly and efficiently from the ground.*

Trees that are structurally pruned at this stage require much less care as they mature. It is not necessary that they be pruned every year but an every-other year pruning is a good objective. This equates into 38 training prunes per year or approximately 24 hours of work for one person. The ISA Certified Arborist can complete this task. All of the training prunes can be completed in-house until they reach 10 years old then they will be scheduled for routine pruning.

Objective C: Perform routine pruning & removals.

One of the most beneficial and noticeable activities performed in the urban forest is routine pruning. Routine pruning is the cycle all trees over the age of 10 are placed on. Once all of the safety issues have been addressed, all trees 10 years of age or over (approximately 6" or over) need to be placed on a routine pruning cycle. Some benefits of routine pruning include:

- *Increased health and viability of trees.*
- *Fewer tree mortalities and fewer structural deficiencies.*
- *Reduced liability from potential tree-related injuries or damages to property.*
- *Increased property values.*

- *Enhanced aesthetic value.*
- *Fewer complaints/requests.*
- *Increased longevity of tree.*
- *Reduced future costs associated with hazardous limbs and decay.*
- *Improved cost effectiveness of tree maintenance.*

A feasible routine pruning cycle needs to be established. As previously mentioned, seven zones within the Village have been identified. A seven year pruning cycle is a reasonable goal and will help to ensure the health of Belleville's urban forest.

Completing one cycle, combined with increased emphasis on training prunes, should greatly reduce the cost and time associated with routine pruning. If a tree is pruned properly and is on a routine pruning cycle, no limb over 4" in diameter should need to be removed. The best time of year to prune is when the leaves are off the trees. If pruning does occur while the trees have their leaves on, it should be after the leaves have fully expanded and not when they are in the process of forming. Pruning should also be avoided when the leaves are turning colors in the fall and in the process of dropping. All American elms and oaks should be pruned only during dormancy.

Oak wilt is an increasing problem in the state, particularly near Belleville. Oaks occur frequently both in the street tree population and in private yards. *Do not cut, prune or otherwise wound oaks in the spring and early summer, generally from April 1-July 31.* To be very cautious, avoid wounding oaks from April 1st-October 1st.

Taking into consideration Belleville's current level of stocking, the above mentioned routine pruning cycle of seven years is feasible. This cycle will result in approximately 133 trees pruned annually. Approximately 1/5 of these are likely to be found under power lines and will need to be trimmed by Alliant Energy.

It is important to note that the cost and time needed to prune will likely decline after one complete rotation has been reached. After one rotation has been completed, some of the trees will need less major pruning than in the initial cycle and the cost will be reduced.

Another facet of routine maintenance includes 'routine' tree removals. Any given municipality can expect approximately 1-2% of trees will need to be removed per year due to high-risk situations. In Belleville this calculates into a total of 10 removals per year. This has also been figured into the 'Schedule of Activities' that can be found as attachment 1.

A stronger tree removal policy similar to the one listed below should be instituted. This policy should be applied equally to all residents. The purpose of the tree management program is to maintain trees on public property as long as they are healthy and safe. If an individual would like to remove a tree on public property, he or she should provide the following information to the ISA Certified Arborist:

1. Name of person requesting removal.
2. Description and location of tree.

3. Reason for wanting removal.

Upon receiving such request, the ISA Certified Arborist will take these steps:

1. Evaluate the tree and make a recommendation.
2. Notify the person requesting removal of the decision.

The person requesting removal may hire, at his or her own expense, a forester or arborist to evaluate the tree and submit a report. The Village ISA Certified Arborist needs to approve the qualifications of this forester or arborist hired by the homeowner. The hired forester or arborist should assess the health and safety of the tree and appraise its monetary value.

The final decision rests with the ISA Certified Arborist and the Public Works & Parks Committee. If permission is granted to remove a tree that is not diseased, high risk or dead, the property owner pays the full cost of contracting out the removal, including stump grinding, and makes a contribution to the Village tree program equal to the replacement value of the tree. The Village may wish to plant a tree in a nearby vacant space according to the planting program.

There are trees within the Village that are becoming over-mature and declining, particularly the silver and Norway maples. Mulching and regular fertilizing may help increase the longevity and maintain the health of these older trees. A foliar and soil analysis should be completed prior to fertilizing so that the exact type and amount of fertilizer needed can be determined. Reasons to fertilize include chlorotic leaves (yellow colored leaves during the growing season), heavy foot traffic around the tree and high salt areas.

Mulching is currently used on newly planted trees in Belleville. Mulching may be the single best advantage a young tree can have. Some benefits of mulching include:

- ~ Eliminates lawnmower and weed-whip damage.
- ~ Discourages weed growth.
- ~ Helps to retain moisture in soil.
- ~ Adds nutrients to soil as the mulch decomposes.
- ~ Facilitates increased root growth due to less compacted soil.

Often time's mulch is described as "messy." Lawnmowers scatter it around. Slowing down while mowing around mulch will eliminate this situation. Adding mulch as necessary to maintain a 2-4" depth and spread as widely as possible aids the tree itself and helps the mulch retain a "fresh" color. Mulch should be kept 6" from the trunk to help lesson fungal problems within the trunk flare region.

Objective D: Plant high quality trees with low maintenance needs.

There were 325 planting sites identified during the inventory. Of these 285 are suitable for larger growing trees and 40 are suitable for small growing trees under power lines. No planting should take place until all of the high risk situations identified have been alleviated. Then, the order of

priority for tree planting should be:

1. Trees lost within the past year.
2. Planting sites under utility lines.
3. Appropriate sites within the current work zone.
4. Homeowner requests.

A cycle of planting should be initiated. The easiest and most logical method of planting is to use the same zones identified for routine pruning. To determine the number of trees to be planted each year, the following equation was used:

$$\text{100\% stocking in 14 years (2 rotations) + replacements} = 43 \text{ trees/year}$$

$(325 \text{ planting sites} + 127 \text{ removals})/14 \text{ years} + 10 \text{ routine removals/year} = 43 \text{ plantings annually}$

This equation includes the current number of sites and removals and factors in future tree mortality. The only variable is the number of years to full stocking. Fourteen years was selected because it represents two zone rotations. Due to the long time frame involved, the actual number of years may vary depending on maintenance, insect and disease factors.

Beginning in Year 2011, these 43 plantings have been included in the budget. They should be 1.5-2.0" dbh and planted by the in-house crew. The Village should select and plant a tree at no cost to the adjacent property owner according to the above priority order, the homeowner request replacement policy and funds available. The following is a suggested guideline concerning homeowner requests.

HOMEOWNER REQUEST PLANTING POLICY

To request a replacement tree, individuals should provide the following information to the Village ISA Certified Arborist:

1. Name, address and phone number of person requesting tree planting.
2. If the tree was removed in the past, the location of tree that was removed and the year it was removed.
3. If not due to a removal, the reason for requesting a tree.

Upon receiving such a request, the ISA Certified Arborist should take these steps:

1. Evaluate the site for suitability.
2. If the site is to be planted, make a recommendation about species and location.
3. Notify the person requesting planting of the decision.

The final decision about tree planting on public property lies with the ISA Certified Arborist. If the homeowner's site wasn't chosen for planting within the next few years, he or she may, at their own cost hire a Village approved contractor to plant a tree. The Village must approve the site and species.

The following are general design guidelines for selecting species for planting:

1. Plant trees to define spaces and select species appropriate for the purposes served by each space.
2. Select trees for the community with desirable forms, colors and textures.
3. Use plantings to emphasize major community pattern elements, particularly major streets.
4. Plant the same species or species of similar form and size on both sides of the street.
5. Match tree size to street width and the available space in the planting strip.
6. Space trees an appropriate distance apart:

Small trees (up to 30' tall)	planted at 25' offcenters	planting width min. 5'
Medium trees (30 - 45' tall)	planted at 35 - 40' offcenters	planting width min. 5-8'
Large trees (>45' tall)	planted at 45' - 50' offcenters	planting width min. >8'

7. Complement existing vegetation.
8. Match planting concept, tree size and spacing with the adjacent land use.
9. Do not plant coniferous (spruce, cedar, pine, etc.) trees within boulevard areas, regardless if there are sidewalks and curbs or not.

Partial Source: Urban and Community Forestry, A Guide for the Interior Western United States, USDA Forest Service, 1990

Belleville is a Zone 4 climate and has many options for quality tree plantings. Tree selections that are drought tolerant are in *italic*. Sound choices for **larger** trees include:

- bur oak (Quercus macrocarpa)*
- swamp white oak (Quercus bicolor)*
- white oak (Quercus alba)*
- hackberry (Celtis occidentalis)*
- Ohio buckeye (Aesculus glabra)*
- Catalpa (Catalpa spp.)*
- Lacebark elm (Ulmus parvifolia)*
- Ginkgo (Ginkgo biloba)*
- Austrian pine (Pinus nigra)*

Honeylocust (Gleditsia triacanthos)
American linden (*Tilia americana*) 'Redmond', 'Fastigiata'
Elm (*Ulmus spp.*) 'Accolade', 'New Horizon', 'Discovery'
Kentucky coffeetree (*Gymnocladus dioica*)

Good **medium** selections include:

Hawthorn (*Crataegus spp.*)
Filbert (*Corylus spp.*)
flowering pear (*Pyrus spp.*)
Eastern redcedar (*Juniperus virginiana*)
Amur cork tree (*Phellodendron amurense 'macho'*)
amur chokecherry (*Prunus maackii*)
horsechestnuts (*Aesculus spp.*)

Smaller sites can be filled with:

crabapple (*Malus spp.*)
 white cultivars: 'Spring Snow', 'Snowdrift'
 red/pink cultivars: 'Prairiefire', 'Red Jade', 'Red Barron'
Japanese tree lilac (*Syringa reticulata*)
serviceberry (*Amelanchier arborea*) 'Autumn Brilliance', 'Princess Diana'
hophornbeam (*Ostrya virginiana*)
American hornbeam (*Carpinus caroliniana*)
Nannyberry viburnum (*Viburnum lentago*)

Small trees only should be planted under power lines. Do not plant wide trees, such as the crabapple on narrow boulevards. They will grow out into the street. Additionally, do not plant trees too close to traffic signs and intersections. They will eventually grow and block these areas. Try to stay at least 40' away from these areas. Lastly, be sure not to plant trees too closely together.

A complete evaluation of the site needs to be completed before selecting a species. Additionally, "A Guide to Selecting Landscape Plants" by E.R. Hasselkus (publication number A2865) is an excellent publication to assist with selecting species. It can be purchased from the University of Wisconsin Extension Service.

It is important to diversify the urban forest as much as possible. Every effort should be made to continue diversification. Planting many different species and varieties keeps the urban forest healthy and attractive. Planting a variety of species, including slow-growing and faster-growing species will help to eliminate an age gaps created by large numbers of plantings.

Ideally, no more than 5% of any one species and 20% of any one family should comprise the Village's trees. As an example, bur oak would represent the individual species and all oak types would represent the family. No ash should be planted because of the emerald ash borer. No maple should be planted until the guidelines above are met.

Belleville should create a list of trees not to be planted along boulevards. Some examples of poor species selection include black locust (*Pseudoacacia robinia*), boxelder (*Acer negundo*) and

Siberian elm (*Ulmus pumila*). These deciduous trees are weak wooded causing limbs to “break out” often, are “messy”, dropping leaves and twigs continuously and are not particularly attractive. Conifers can potentially obstruct the view of pedestrians and vehicles when planted to near the street, intersections and driveways. It is important to carefully choose planting sites on streets for any type of tree.

Some planting techniques to utilize include:

- ~ Do not use tree wrap. If it is used, remove all tree wrap after one season. Wrap left on attracts insects and may cause fungal problems due to increased moisture from wrap left on during the growing season.
- ~ Remove stakes, or don't stake trees at all. Wire braces attached to stakes left on the tree will eventually begin to girdle the tree, thus weakening the trunk, predisposing it to wind throw or breakage.
- ~ Do not plant large trees under power lines. They will grow into the lines and need to be removed or trimmed in an unnatural way and become unsightly and unsafe.
- ~ Do not plant wide growing trees in narrow boulevards. The trees will grow into streets and over sidewalks and the available resources simply will not support long-term large tree growth.
- ~ Inspect and reject poor form trees prior to planting. Most trees should have a main leader and be well balanced.
- ~ Trees are often planted too deeply. Frequently, balled & burlapped (B&B) trees are dug at the field and an additional 1-3” of soil is thrown on top. And then, they are planted too deeply.
- ~ Monitor trees for fatalities during the warranty period so they can quickly be replaced.
- ~ Develop planting schemes along Village streets with large numbers of planting sites. For example, plant all one block with elm and the next with linden. This encourages diversity while creating a uniform tree lined look from block to block.

All planting should follow the American National Standard for Nursery Stock; ANSI Z60 (current revision) should be used when purchasing plant material.

Objective E: Ensure an adequate budget for routine activities.

The existing budget is \$7,000 annually. Staff time devoted to tree maintenance is extremely low and will need to increase dramatically to complete the necessary activities. It will take approximately 244 staff hours to complete the work identified in this plan. Another 624 staff hours and nearly \$146,000 will be required to properly manage the EAB crisis.

Trees are an integral part of the infrastructure and must be managed as such. Routine expenses will start in 2012 after all of the removals and priority prunings have occurred. With this funding

and the additional time that will need to be spent by staff, the following items will be completed annually:

1. 10 routine removals
2. 38 training prunes
3. 133 routine prunes
4. Training and small equipment upgrades
5. Monitoring of declining trees
6. 43 tree plantings
7. General supervision and oversight of program

This plan and inventory was completed with a grant from the WI DNR. The purpose of the grant program is to help new programs become self-sufficient. It is reasonable to expect the Village of Belleville to receive more grants to initiate their program. Applying for a grant annually is strongly encouraged. However, the grant program is intended as 'start up' help only. The goal of the program is that the Village has initial funds for operations while it builds its own network and backing within the community and Village structure.

Objective F: Inventory Maintenance and Updating.

The tree inventory data is housed on MS Access at the Department of Public Works and is maintained by in-house staff. The inventory allows for continual updating of the inventory when any work is performed. Whoever completes tree work should complete work orders (Attachment 12). One specifically designated person should input these on a continuing basis. Without continual updating in this way, the inventory quickly becomes obsolete. The ISA Certified Arborist, Public Works & Parks Committee and staff should evaluate this management plan as it is implemented on a yearly basis to assure the goals are being met and new goals are being developed. A report should be submitted to the Village council annually prior to the annual budget being produced.

This management plan contains provisions for five years, beginning in 2010. Typically, a complete re-inventory should be completed every 5 years. When the inventory expires in 2014, a qualified, experienced forester needs to thoroughly evaluate all of the trees on an individual basis again.

Tree risk situations can develop very quickly and certainly within five years, so it is imperative that *all* of the trees receive a hazard inspection yearly by a qualified individual. This inspection should be completed prior to budget negotiations, so that an accurate forestry operations figure can be negotiated and secured in the next year's budget. Special circumstances such as storm damage will require extra inspections.

Objective G: Community Education.

Community Education: Community education will allow for residents to know and understand what proper tree care looks like, how and when to perform it on their own trees and when to anticipate it on Village-maintained trees. Some recommendations include:

- ~ Develop a tree planting recommendations flyer focusing on tree planting under power lines to distribute. It seems logical to distribute these with utility bills in the spring when most people plant trees.
- ~ Host annual tree care seminars. Having a professional or consultant host these seminars is an excellent example of a fundable grant project component.
- ~ Maintain a supply of educational material for distribution to the public. ISA brochures are available at a reasonable cost.
- ~ Use the local newspaper to promote the tree program by periodically preparing a news release on tree topics such as: tree pruning, how to enter the poster contest, and how to winterize trees.
- ~ Distribute flyers when working in neighborhoods. Residents will not be surprised when they hear the buzz of chainsaws and will be more aware of the value of the urban forest.
- ~ Initiate a "Champion Tree Contest". Enlist school children to find Belleville's biggest trees and award the participation and largest trees.

Objective H: Wood Residue Utilization.

Belleville has a solid policy for dealing with wood waste from forestry operations. They should continue with their current policy which includes:

- ~ Chips from removals and prunings used in parks or on Village trees. Surplus made available to residents. When emerald ash borer arrives in Belleville all chips will need to meet the dimension size of less than 1" in two directions. This is the threshold at which EAB and their larvae cannot survive. See 'EAB Readiness Plan' for further information.
- ~ Large wood pieces are made available to residents for firewood usage. When EAB arrives in Belleville, quarantine procedures will need to be followed as established by the Department of Agriculture, Trade and Consumer Protection (DATCP), which means distribution of wood pieces may be limited.

Note: Emerald Ash Borer

An Emerald Ash Borer readiness plan was completed in tandem with this management plan. Please reference that document for specific EAB policies and discussions.

ATTACHMENT 1: *2010-2014 Schedule of Activities*

ATTACHMENT 2:

Removal List

ATTACHMENT 3:

Priority Prune List

ATTACHMENT 4:

Special Action List

ATTACHMENT 5:

Training Prune List

ATTACHMENT 6:

Monitor List

ATTACHMENT 7:

Planting Sites

ATTACHMENT 8

Existing Stump Removal List

ATTACHMENT 9:

Glossary of Terms

TREE CONDITION

A condition rating helps to assess overall forest health and to evaluate a species performance. Bluestem Forestry Consulting Inc. uses criteria adapted from the International Society of Arboriculture Valuation of Landscape Trees, Shrubs and Other Plants: A Guide to the Methods and Procedures for Appraising Amenity Plants (Ninth Edition) as the basis for the field condition rating.

At least seven factors were examined and rated to determine the condition of a tree. These factors are crown development, trunk, major branch structure, twig growth rate, foliage health, insects/diseases and roots. General descriptions of the criteria used to categorize each condition are as follows:

Excellent - A tree in excellent condition has no visible defects and appears to be in perfect health. The tree will exhibit all of the characteristics typical of its species. An excellent tree can be expected to live well into the future.

Good - A tree in good condition has a sound trunk and a full canopy and has only minor mechanical injuries such as minor trunk scarring that will eventually heal. The tree will exhibit most of the characteristics associated with its species and can be expected to live for many years.

Fair - A tree in fair condition will be exhibiting minor to moderate defects. Some situations that would warrant a fair rating include: a thinning canopy, twigs growth may only be 1/2 the expected rate, significant mechanical injury such as scarring on the trunk, insects or disease may be present but are controllable and the crown may be lacking the natural or desired symmetry characteristic to the species. If given routine maintenance such as pruning and mulching a tree that is graded fair will contribute to the forest for many years.

Poor - A poor tree will be expressing low vigor and significant decline as evidenced by branch dieback, abnormal leaf size, early fall coloration, trunk decay due to injury or canker or the production of new branches on the main stem. A tree in poor condition will most likely require removal, but may be improved with priority pruning.

Very Poor - A tree in very poor condition is on the verge of dying. Dieback will be severe or it may be lacking a full crown. Trunk/crown cavities or decay, severe cracks and seams or severe root problems may also be present. Removal for safety will be required.

Dead - A tree in dead condition is simply a dead standing tree. These will most likely occur in wooded or unmaintained areas, but may also occur with smaller new plantings that have failed. These trees will require removal.

TREE MAINTENANCE NEEDS

Each tree inventoried was assigned a maintenance category. Field judgments were made from the ground based on observation and hazard estimation. Criteria was adapted from two sources: A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas (Second Edition) by Nelda Matheny & James Clark and from a Minnesota Department of Natural Resources Publication How to Detect, Assess and Correct Hazard Trees in Recreational Areas.

The following are the definitions of the maintenance categories:

Removal - Trees designated as a removal are either dead or have one or more defects that cannot be remedied. These trees will most likely have a severe trunk defect such as a cavity or extensive decay, have severe cracks associated with weak unions or have a large percentage of crown death and are potential safety hazards. Most of the trees in this category will rate a very poor or dead condition rating.

Special Action - Trees that should be removed, but that pose minimal liability to persons or property will be listed in this category. Examples include new tree planting failures or undesirable species that are beginning to decline and cannot be improved with pruning. The majority of these trees will rate a poor condition.

Prune Priority 1 - These trees have severe deadwood, hangers or broken branches that need to be remedied as soon as possible. Trees with unattached hanging branches or dead attached branches that are over 2 inches in diameter will be listed in this maintenance category. Overall re-evaluation of the tree while pruning may result in removal of the tree if more extensive problems are noted.

Prune Priority 2 - These trees need pruning more quickly than a routine pruning cycle will allow and have dead, dying or weakened branches that are over under 2 inches in diameter. The majority of these defects can be corrected with pruning and the tree can be expected to live for many years.

Routine Prune - All trees need to be placed on a cycle of trimming to correct small structural problems or growth patterns that will eventually effect the tree adversely. Routine pruning will result in a healthier, more vigorous tree and will extend the life of most trees. A routine pruning cycle of once every 5-8 years is idea.

Training Prune - Training pruning is the structural pruning of all trees 10 years of age or younger. Removing poorly attached co-dominant, crossing and competing limbs while the tree is young, resulting in small cuts and wounds will produce a well-balanced mature crown. This is the most cost-effective form of all maintenance.

GROWSPACE DESCRIPTIONS

The size and type of boulevard is noted during the inventory. The following are the categories used to classify the boulevards:

0-4' - This is a boulevard framed by a sidewalk and curb/street and is 0-4' in width. These sites are typically not suited for tree planting or growing due to the limited resources available to the tree.

4-6' - This describes a boulevard that is framed by a sidewalk and street or curb and is at least 4.5' and up to 6' in width. These boulevards are typically ideal for medium sized trees.

6'+ - These boulevards are framed by a sidewalk and street or curb and are over 6' in width. Larger trees are typically planted here.

Unrestricted - These are boulevards that do not have a sidewalk present. These boulevards occur most frequently in "yard" type settings where there is a right-of-way, but there is no sidewalk. They can also occur in wooded or park settings.

Attached sidewalk – The sidewalk is attached to the curb with a tree on the right-of-way growing behind the sidewalk.

Cutout - A tree growing in a concrete cut-out has a boulevard listed a 'well'. These growing situations usually occur in downtown areas.

Median - Medians occur when a growing strip occurs between opposite directions of traffic on a single street.

Park – Trees growing in or along parks will be given this designation

Behind Walk – This describes a formal boulevard, but with the right-of-way extending beyond the sidewalk area.

Island – An island can often be found in cul de sacs and describes the circular area at the end of the street.

ATTACHMENT 10:
*Village of Stevens Point Construction Permits
and Standards*

ATTACHMENT 11:

Risk Management Guide

RISK MANAGEMENT

Risk: is the potential for suffering harm or loss

Risk Management: is the ability to minimize the potential for harm or loss from occurring by implementing a sound risk reduction strategy.

Types of Risk

- Financial
- Physical harm

A Risk-Reduction Strategy for Trees

- Evaluate the natural resource being managed
- Evaluate the resources available to you (fiscal, staff, equipment, etc.)
- Develop a policy statement
- Develop an action plan
- Periodic review of all four components

EVALUATE THE NATURAL RESOURCES BEING MANAGED

Evaluate the Entire Population

An understanding of the entire population allows you to identify the key problem areas within the population.

- Species distribution
- Diameter distribution
- Condition distribution
- Defects
- Locations and targets

Identify Problematic Species

Identify the species that, based on your knowledge and experience, pose the greatest physical threat.

- High history of failure
- High storm damage potential
- Prone to high-risk structural defects

Identify Problematic Diameters

Identify the diameters that, based on your knowledge and experience, pose the greatest problem in your population.

- Large diameter trees

Identify Problematic Conditions

Identify the conditions that, based on your knowledge and experience, pose the greatest problem in your population.

- Very poor trees
- Poor trees

Identify Problematic Defects

Identify the defects that, based on your knowledge and experience, pose the greatest problem in your population.

- Basal decay and cavities
- Major dieback
- Poor branch attachments

Identify Locations and Targets

Identify the locations and targets that, based on your knowledge and experience, pose the greatest physical threat in your population.

- Busy streets
- Playground areas

EVALUATE THE RESOURCES AVAILABLE TO MANAGE

Staffing

- Number
- Training
- Work load

Equipment

- Diagnostic
- Capabilities/limitations
- Availability

Fiscal

CREATE A TREE RISK MANAGEMENT POLICY STATEMENT

Components of a Policy Statement

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

The following is an example of a Hazard Tree Policy Statement:

The City of Metropolis has an active policy to maintain the safety of public lands from potentially hazardous trees. The City will strive to eliminate, in a timely fashion, any tree deemed hazardous. When available fiscal and human resources limit the ability of the City to remove high-risk trees, priority shall be placed on trees deemed to carry the highest risk. The standard for rating the potential risk of a tree will be the International Society of Arboriculture's twelve point hazard evaluation system. The Director of Parks, Recreation and Forestry will administer

this program and have final judgment in all matters concerning the mitigation measures taken for any tree deemed hazardous.

Benefits of a Policy Statement

- It defines for staff the overall mission of the company or agency as it relates to high-risk trees.
- Minimizes political influence
- Allows staff to do their job

DEVELOP AND IMPLEMENT AN ACTION PLAN

Goal

After evaluating your resources, define problem areas and broad solutions to those problems. View this as a wish list.

Objectives

Define clear objectives that address the general goals you have established. The details should be more specific. A good objective defines what is going to be done and in what timeline.

Actions

A series of actions should be identified that address each objective defined

PERIODIC REVIEW OF ALL FOUR COMPONENTS

Review all four components of your risk management plan frequently.

ATTACHMENT 12:

Sample Work Order

ATTACHMENT 13:

Park Maps

