# CITY OF MUSKEGO

# URBAN FORESTRY STRATEGIC PLAN

**Prepared By: Ranger Services Inc.**
**December, 1999**

**CITY OF MUSKEGO**
**URBAN FORESTRY STRATEGIC PLAN**

**Table of Contents**

**<u>Funding Statement</u>**

The City of Muskego is located in Waukesha County, Wisconsin.  It has a population of 20,816.

## Executive Summary

## Strategic Plan

The Urban Forestry Strategic Plan establishes the overall goals and objectives of the City of Muskego community forestry efforts.

The purpose of the Strategic Plan is to lay the foundation for the development and operation of a comprehensive Urban Forestry program. The outcome will result in an improved street and public tree population in health, condition, sustainability and public awareness.

A summation of data from the Muskego Urban Forestry Management Plan is included. An Urban Forestry Management Plan is specific to the field operations of the Community Tree program. Urban forestry needs of the community are identified, followed by recommended goals, strategies, and actions necessary to accomplish them. An implementation table with estimated budgets, when applicable, is included for these procedures. Additional maintenance costs can be found in the Muskego Urban Forestry Management Plan.

The plan establishes Urban Forestry program recommendations based upon identified needs. Six recommendations have been identified:

Recommendations

1. Conduct a public tree inventory to base management decisions from, on an ongoing basis.

2. Manage and maintain street and public trees at optimum levels of stocking, health, age, species diversity and prioritize planting sites.

3. Increase public awareness on proper tree planting and care.

4. Establish trees as an active component in all community planning decisions. (Create subdivider tree planting policy and procedures in that they can become an ordinance).

5. Develop community and political support of the Urban Forestry program based upon recognizing the value and benefits provided by the urban forest.

6. Initiate a volunteer program for caretakers of the Muskego Community Forest to promote proper tree care, invasive species education and management and support of the Urban Forestry program.

The actions and strategies necessary to achieve the recommendations of the plan can be accomplished by using the Urban Forestry Committee, City staff, contracted services, and volunteers. Time tables for accomplishing strategies and actions are dependent upon the level of commitment politically and publicly. The necessary

support both in administration and funding is required in order to successfully operate on a time table.  This Strategic Plan should be reviewed annually (at a minimum) and updated to reflect alterations and to ensure program quality.

# Introduction

The community forest provides a wide range of net benefits that are essential to the current and future health of the City and its residents.  The benefits are both direct and indirect and are best provided as goods and services that exceed the cost of care.  The community forest cannot be sustained by nature and requires the intervention and management by people.  The benefits can only occur when adequate and reasonable care is provided.

**Purpose**: The purpose of the City of Muskego Urban Forestry Strategic Plan is to lay the foundation for the development and operation of a comprehensive Urban Forestry program.

**Scope**: This long term plan is to provide focus and direction for a basis of program implementation in the management and administration of the Muskego street and public tree population.  The identification of needs and recommendations and the strategies and actions to achieve them are addressed.  The plan includes a time table to address and achieve the recommendations and estimated costs when possible.  The plan encompasses all of the Muskego street and public trees with an emphasis on public education.

Urban forestry planning occurs on several levels.  **An Urban Forestry Strategic Plan** is the broadest level and establishes overall goals and objectives of the urban forestry effort.  Strategic Plans create a blueprint for administration and management of a community tree program.

**Urban Forest Management Plans** are specific to the field operations of the Community Tree program.  Management Plans are based upon a tree inventory.  They identify and prioritize site-specific tree planting, maintenance, and removal activities within a multi-year time frame.

The components of an urban or community forest include street trees, green spaces, forested areas, park trees and vegetation on residential, institutional, commercial and public buildings within the entire City boundaries.  Trees are managed to provide a continuing level of economic, social, and environmental benefits at the present and into the future.

**The primary objective of urban forestry planning is to maximize public benefits from community trees while minimizing public expense in achieving these benefits.**

Values and Benefits of Urban Forestry Management

- Environmental quality
- Economic Development Land Stability
- Psychological health
- Aesthetic quality
- Resource conservation
- Wildlife habitat and diversity
- Enhance social and community well-being
- Rain water runoff control
- Improved water quality
- Reduced dust and air pollution
- Climate control, heat and wind
- Reduced energy consumption
- Enhanced property values
- Historic value
- Noise pollution control
- Enhances architecture
- Reduction of soil erosion

Many of the above are closely related and overlap in values and benefits. The community forest needs to be viewed as a resource, a component of Muskego, connected and related to all of the other ingredients of a community. The costs of removing and replanting trees exceeds that of maintaining them.

## TERMS

**City Building Trees:** Trees located on the grounds of City Buildings (i.e., City Hall, Police Department).

**Condition Class:** A rating given to a tree that evaluates the overall health of the tree. The higher the rating, the healthier the tree. It is recorded in percentages of 0-100%.

**Cover Type:** The identification of dominant vegetation in an area based upon species and size.

**Cul de Sac Planting Islands:** Landscaped areas in the center of street cul de sacs typically protected by curb and gutter.

**Diameter Breast Height (dbh):** The diameter of a tree's trunk at 4.5'. Is a universal forestry measurement for tree size.

**Group Planting:** Planting design where trees are clustered together for greater impact. Best if used in conjunction with mulch beds.

**Hazard Tree/Condition:** A tree with a structural defect that may cause the tree or a portion of the tree to fall on someone or something else of value (a target). These trees should be either removed or safely pruned to eliminate the hazard.

**Hazard Tree Survey:** Inspection performed to identify problem trees prior to damage occurring to people or property.

**Live Crown Ratio:** The relative proportion of green crown to overall height. Most easily measured during leaf out and recorded in percent. Generally, healthy trees will have 50% or greater live crown ratios.

**Maintenance Pruning:** Any pruning performed on a tree to increase its health, vigor, strength, structure (training), clearance and aesthetics. This is accomplished through the pruning of dead, dying, diseased, poorly structured and interfering limbs.

Types of Maintenance Pruning:
- Maintenance Clearance Pruning - pruning of trees for vehicle and pedestrian traffic.
- Maintenance Routine Pruning - pruning done usually on a set cycle or rotation to establish and maintain tree health and structure.
- Maintenance Training Pruning - pruning done generally to younger trees (<8" dbh) to establish good structure, health and increase longevity. Often done more frequently than other types of pruning.

**Management Plan:** A community and urban forestry plan specific to field operations of the Community Tree program.  They are based upon tree inventory and identify and prioritize specific tree planting and care activities.

**Naturalized Park Areas:** Park lands left in their natural state (i.e., woodlands, field, wetlands that receive little or no maintenance.)

**Park Tree:** Trees located in public parks in high use, maintained areas.  Does not include trees in naturalized park areas.

**Planting Site:** An area designated by size and location where a tree may be planted.

**Pruning Cycle:** The length of time required to prune an entire designated tree population as needed.

**Routine Tree Removal:** Non-hazard trees that should be removed for health, insect, disease, aesthetic and their potential to become a hazard.

**ROW Road Trees:** Trees located within the rights-of-way along the streets of Muskego that are not in a typical street tree site.  They are inventoried for the following reasons:

1.  over time, with growth, could heave or damage the street surface.
2.  interfere with vehicular or pedestrian traffic or street maintenance.
3.  upon tree health decline or structural failure, will become a hazard tree.  These trees are volunteer trees and mainly existed prior to development in these areas.

**Safety Pruning:** Pruning of large deadwood or hazardous limbs to eliminate a hazard tree condition.

**Strategic Plan:** A community or urban forestry plan that establishes overall goals and objectives of a community's urban forestry efforts.  Also known as a long-range plan.  It is designed as a blueprint for administration and management of a Community Tree program.

**Street Tree:** Typically a tree located within a City terrace or boulevard.  Muskego street trees also exist on private property along the street resulting from subdivider planting requirements during new developments.

**Terrace:** The area located between the curb or proposed curb line and city sidewalk.  Where no sidewalk exists, the terrace is the area between the street and right of way boundary.  This is the typical planting area for street trees but is not the norm for existing streets in Muskego due to the storm water conveyance system of ditches and culverts.

**Tree Repair:** Any care given to a tree to improve its condition other than pruning  (i.e., cabling, bracing, staking, etc.)

**Volunteer Tree:** Any natural (non-planted) tree occurring from seed or root or stump sprouts.

**Windshield Survey:** A driving survey used to gather large amounts of data quickly.

**Background**

The City of Muskego is located in the Milwaukee Metropolitan area and encompasses 35.8 square miles.  The City has a 1999 population of 20,816.  Urban uses occupy approximately 33% of the area of the City.  Open lands and rural uses occupy the remaining 67% of the City's area.  There are three lakes within the City which collectively cover approximately 2,800 acres.  There are 17 park sites within the City covering approximately 275 acres.  Muskego contains the rare appeal of country environment within an urban area.  Natural resources, open spaces and a rural atmosphere are what separates Muskego from many other suburban Milwaukee communities.

With a large area occupied by lakes and wetlands within the Community, watershed management is very significant for the City.  Culverts and drainage ditches comprise a significant portion of the storm water conveyance system within the City.  This greatly limits the existence and available space for traditional type street trees.  Park land sites provide the most valuable tree resource on public property.  Many of the park sites are in a natural condition of woodlands, fields and wetlands.

**Current Management**

Elected officials and residents have expressed an interest in public tree management.  In 1999 an Urban Forestry Committee was formed to oversee the development of an Urban Forestry Strategic Plan, Management Plan and public tree inventory.  The Citys' Lake Projects Coordinator serves as staff to the committee.  A valuable resource in park land sites provides a basis for urban forestry management.  Traditional street tree management is limited due to the lack of typical street trees and planting sites.

The City of Muskego can make advances in urban forestry management in their subdivider tree planting policies.  Presently, Subdividers are required (not by ordinance) to plant "street" trees on private property near the ROW.  While this policy relieves the City of the financial burden of tree planting and care, there are some drawbacks.  There is a lack of City influence and control of planting standards, species selection and follow up.  The trees planted in subdivisions become the homeowners responsibility for maintenance.

The City residents have done an outstanding job on tree planting and landscaping on private property.  These are all components and benefits of the community forest that do not contribute directly to City expense.  The lack of typical street tree sites are not a major detail in most areas due to private landscaping and where subdivision tree planting policies have been successful.

Public tree responsibility is shared between Public Works and the Parks Department.  The Parks Department has performed tree clearance, brushing and dead tree removal through the parks on an as needed or request oriented basis.  The removal of dead or hazardous trees in the parks has, for the most part, been adequately maintained by the Parks Department.  Public Works is responsible for brush cleanup, tree clearance, or tree removal along City streets.  The removal of hazardous trees in/or along the ROW has also been, for the most part, adequately maintained by the Public Works Department.   Some equipment to perform these tasks has been shared among

departments. City owned Lake access sites are maintained by the Parks Department. Maintenance of vegetation along the WEPCO bike/foot trail is the responsibility of the Parks Department.

There is concern among select residents regarding invasive species and their impact on the native plant community. Some volunteer efforts have attempted to provide public education and management of invasive species. The presence of invasive species appears to be equal to that of communities of similar characteristics in this portion of the State.

A City tree inventory was prepared to direct the Strategic Plan and the Management Plan. City trees, naturalized areas and desirable planting sites were inspected and data collected for:

- City Street and Boulevard Trees
- ROW Road Trees
- Cul de sac Planting Island Trees
- City Hall/Police Department Trees
- 17 Parks and Naturalized Areas
- Industrial Park Planting sites
- WEPCO Bike/Foot Trail

The Park sites were inspected several times during the inventory process, during different week days and times. Observations were of little Park use by people during those times. This may be indicative to days and times of the inspections. Vast open areas of mowed turf grass unrelated to athletic fields were also noted.

The most valuable public tree resources are within the park lands. These areas will provide the greatest amount of long term benefits especially with early young tree maintenance. Traditional street trees are limited due to available locations. The trees at City Hall and the Police Department provide landscape benefits but not the same overall resource value as the park lands. The WEPCO trail is surrounded by scrub trees and wild land shrubs but provides very high recreational use. Trail maintenance for shrub clearance has been adequate. The ROW road trees and cul de sac plantings require care only upon public safety for hazards, clearance or street maintenance.

Many Industrial Park properties are nicely landscaped with trees, but many available planting sites exist. The overall visual impact of these landscapes is low due to the trees' young age and the size of many of the buildings and properties. As this area ages the impact of the existing trees and future plantings will increase.

## Urban Forestry Needs

Community Needs

- increased public awareness on value and benefits of trees and the Muskego Urban Forestry program.

- increased public awareness/knowledge on proper tree care and planting and the community forest concept.

- increased support of Urban Forestry program among residents, community groups, service organizations and local businesses.

- increased public awareness and concern, and recommend management tactics for damaging and potentially damaging invasive species on public and private lands.

Administration and Management Needs

- identify tree maintenance, removal and planting needs through a public tree inventory.

- establish City commitment to the Urban Forestry program for administrators and staff to manage the program and achieve goals.

- maintain an active, full member Urban Forestry Committee comprised of interested and competent persons concerned with trees.

- develop management strategies to allow for the scheduled maintenance of public trees.

- explore alternate and creative sources of funding for the Urban Forestry program.

- involve trees in community development and City construction projects, directed by tree planting and care policies and ordinances.

Tree Needs

- initiate tree maintenance and removal needs with the establishment of a pruning cycle.

- prioritize City wide planting sites, concentrating on planting plans for the Industrial Park, Park lands and Commercial lands.  (Janesville Road)

- inspect, remove, and prevent hazard trees and hazard situations on public lands caused by trees.

## Recommendations

**Recommendation 1**

**Conduct a City tree inventory upon which to base management decisions, on an ongoing basis.**

Muskego is limited in typical street trees due to available locations with only 98 street trees within a conventional ROW location.  Street tree inventory software programs would be of limited benefit at this stage of the forestry program.  General database software is sufficient at this time.  Complete tree inventory results are located in the Management Plan.

Implementation Strategy 1: Identify data necessary for tree management decisions.

- Action 1: Identify City tree locations.
- Action 2: Collect necessary data.
- Action 3: Analyze and record data in report.
- Action 4: Base management needs from data.
- Action 5: Record locations of hazard trees and conditions and tree maintenance needs.  Schedule appropriate remedy.

Completed Fall 1999.  Inventory Executive Summary located in Appendix A.

Implementation Strategy 2: Inspect City trees annually.  Update Inventory.

- Action 1: Decide who will do annual tree inspection.  (In-house or contractual.)
- Action 2: Review past years inventory, maintenance and plantings.
- Action 3: Inspect City trees through windshield and walking surveys for tree maintenance needs (i.e., deadwood or clearance pruning.)  Inspect also for hazard trees or conditions and tree health.  Can be performed during regular Park or street maintenance stops.  Mid summer through autumn inspection time.
- Action 4: Keep documentation log to reveal inspection findings.  Log to contain date, name, site, details/comments.
- Action 5: Record locations of hazard tree conditions and any new maintenance.  Schedule appropriate remedy.
- Action 6: Update data to reveal inspection results (trees removed, planted, pruned, etc.)

**Recommendation 2**

**Manage and maintain street and public trees at optimum levels of stocking, health, age, and species diversity.  Prioritize planting sites.**

The components of a Management Plan are specific to the field operations of the forestry program.  Tree management specifics, schedules, and budgets can be found in the appropriate sections of the Management Plan.

Long range maintenance training pruning is necessary for all existing younger Park trees and new plantings.  If this maintenance training pruning cannot be made available, new plantings should not be encouraged.  A simplified standard for a community forest is do not plant more than you can take care of.  Providing resources for new plantings without providing for long term maintenance and care for what is already present, is a course toward an increase in maintenance and removal costs.  (A 20" diameter tree is more valuable than a 2" diameter tree.)  Long range maintenance protects the original investment in planting and reduces the investment for re-planting.

Implementation Strategy 1: Develop an Urban Forestry Management Plan from the inventory.  Include in the plan maintenance and planting site priorities and tree locations.  **Completed 1999, see Management Plan for field operation details and budgets.**

- Action 1: Create outline for plan based upon urban forestry needs.  Review DNR Guide for Developing Urban Forestry Management Plans.
- Action 2: Review inventory data and summarize.  Write Management Plan.
- Action 3: Prioritize care/removal for hazard trees and "care within1st year" of action trees.
- Action 4: Prioritize tree management by management unit designations: Park trees (includes City Building trees), Street trees, ROW road trees, Cul de sac planting island trees, and Industrial Park planting sites.
- Action 5: Prioritize Park and Industrial Park planting sites and develop planting plan.
- Action 6: Set Management Plan schedule and estimated budgets.

<u>Implementation Strategy 2</u>: Schedule priority tree removal and maintenance in the Urban Forestry Management Plan.

- Action 1: Schedule all hazard trees for removal/maintenance.  Complete removals with in-house staff.  (Can contract if desired)
- Action 2: Plan routine tree removals.  Complete as scheduling allows.
- Action 3: Plan Park tree maintenance training pruning on 3 year pruning cycle.  Determine personnel, tools, equipment.
- Action 4: Schedule Year 1 Park tree maintenance.
- Action 5: Have City staff trained, or contract qualified service for Park tree pruning (continuing each year).  In-house staff preferred.
- Action 6: Schedule Year 2 Park tree maintenance and routine removals.
- Action 7: Schedule Year 3 Park, City Building and street tree maintenance and routine removals.
- Action 8: Add into maintenance training pruning cycle any new tree plantings in their third year.
- Action 9: Repeat Actions 1,2,4,7,8 annually.  Repeat Actions 3,5,6 on a 3 year cycle.  Can lessen or extend pruning cycle if necessary due to budgets, time constraints, etc.  Pruning cycles beyond 5 years can be counter productive regarding tree benefits.

<u>Implementation Strategy 3</u>: Develop Park tree planting campaign.

- Action 1: Assure that maintenance on existing trees has been performed or scheduled prior to planting additional trees.
- Action 2: Review planting priority locations from Management Plan.  Plan tree planting campaign around available funding.
- Action 3: Project costs of 50 trees/year for proposed 5 year planting campaign.
- Action 4: Recruit volunteer assistance, financial assistance and donations of goods and services from individuals, civic groups, businesses, etc., for planting campaign and memorial or ceremonial trees.
- Action 5: Select species and planting sites within first priority (Park sites Year 1).  Contact Diggers Hotline. Continue for next 4 years.  See Management Plan for further details.
- Action 6: Plant trees through volunteers, workshops, City staff.  Use volunteers to assist in programs (i.e., Friends of the Park, Caretakers of Trees, etc.) for planting (and possible aftercare).
- Action 7: Maintain a public "scorecard" of trees being planted in Parks.  Display it at City Hall.  Publicize with City newsletter, cable access, etc.
- Action 8: Plan for necessary after care.  Solicit volunteers for watering and inspection.
- Action 9: Continual media coverage will build recognition and support of the program.  Design recognition reward for supportive individuals, groups, businesses, etc.
- Action 10: Build each year on planting campaign through community promotion and support.  Use media, City literature, local sources, etc., to list past accomplishments, and future plans, and the virtues of Muskego Parks

and Urban Forestry Program.

<u>Implementation Strategy 4</u>: Evaluate and Update Management Plan.

- Action 1: Evaluate pruning cycle progress and make recommendations as it continues.
- Action 2: Evaluate all components of Management Plan and alter plan for tree condition, new plantings, budgets, staffing and administration as needed. Update inventory data.
- Action 3: Apply for Urban Forestry Assistance Grant, research other funding sources.

**Recommendation 3**

**Increase public awareness and education on proper tree planting and care.**

Keeping residents informed regarding Muskego's Urban Forestry program will build support and participation. The more positive information that can be provided, even if it only assists private trees, will benefit the entire community forest. Involving volunteers and workshop participants in Park plantings will not only increase public education on trees it also builds support and appeal for the Urban Forestry program. The greater the amount of tree care information that is made readily available to the public, the greater the chance is for proper tree care for the private street trees of Muskego.

Implementation Strategy 1: Develop community educational and awareness programs.

- Action 1: Involve schools, educators and civic groups in Arbor Day and Earth Day events.
- Action 2: Submit articles and inform media on all Arbor Day and Earth Day activities and achievements of Muskego Urban Forestry program.
- Action 3: Publicize and solicit donations for memorial and commemorative park tree plantings from individuals, civic groups, business, etc.
- Action 4: Conduct Tree City USA certification process and publicize.
- Action 5: Offer and publicize tree care/planting workshops available to the public. Can use consultants and Urban Forestry Committee members to conduct the workshops.

Implementation Strategy 2: Devise tree care information display at City Hall.

- Action 1: Purchase ISA Tree Care Consumer Brochures.
- Action 2: Display Tree Care Brochures for public use at no charge.
- Action 3: Interact related and local Urban Forestry program activities with display, i.e., photos of Park plantings, invasive species, volunteer recruitments, etc.
- Action 4: Assign task to Urban Forestry Committee/Volunteer of updating/changing display on 2 - 4 week interval.

**Recommendation 4**

**Establish that trees are recognized and addressed as an active component in all community planning decisions.**

In order for trees to thrive in the urban environment they need to adapt to urban conditions.  The greater the difference a site is from a trees natural habitat the more difficulty it will have in surviving.  An objective in urban forestry is to have trees thrive not just survive.  Trees need to be involved in the initial plans during construction and development to allow them the best opportunity to adapt to the urban environment.

Implementation Strategy 1: Trees are included on the agenda during all community planning and development.

- Action 1: Create City policy for all departments (where applicable) to address/acknowledge trees during their planning process.
- Action 2: Determine if tree preservation, planting, maintenance or removal is a component of community projects.  This should occur at the initial stage of all projects.  It is a site assessment for trees.

Implementation Strategy 2: Establish Subdivider tree planting polices and procedures based upon proper tree selection, site requirements and planting techniques that can become ordinance (Appendix B).

- Action 1: Establish criteria for developers of new subdivisions requiring tree planting.  Criteria can be established into an ordinance.
- Action 2: Develop street tree species list from which Subdivider shall select.
- Action 3: Develop Street Tree Planting Guide based upon tree requirements and proper planting techniques.
- Action 4: Develop street tree ordinance.
- Action 5: Allow for ordinance enforcement.

Implementation Strategy 3: Trees are addressed during planning stage in all City construction projects.

- Action 1: City construction projects are evaluated for their impact on existing trees prior to beginning.  This can be made policy.
- Action 2: Decision on tree preservation, removal, or project altering is determined from the onset of the project.  (Construction damage is the number one cause of urban tree mortality.  Preplanning with trees in mind can reduce costs and preserve trees over subsequent years).  This can be made policy.
- Action 3: Documentation of tree preservation/removal decision and justification should occur on all construction projects.  This can be made policy (Tree removal evaluation reference is located in Appendix C).

**Recommendation 5**

**Develop community and political support of the Urban Forestry program based upon recognizing the value and benefits provided by the urban forest.**

The majority of the benefits of Urban Forestry management are provided as goods and services.  The success of a City Urban Forestry program will depend upon public and political support for these benefits.

Implementation Strategy 1: Keep City administrators and officials informed on Urban Forestry program issues.

- Action 1: Urban Forestry program progress reports and successes should be provided to City administrators and officials.  Reports should include information on the public safety, benefits, and tree maintenance being provided to City residents from managed tree care.  Comparisons of scheduled tree maintenance being more cost effective than crisis management are also helpful.
- Action 2: City officials are involved in commemorative tree plantings, and tree dedications.

Implementation Strategy 2: Keep Muskego residents informed on the Urban Forestry program.

- Action 1: Recruit and solicit volunteers to assist in the Urban Forestry program.   People enjoy trees, and can assist in plantings, planning specific projects, funding, etc. (See Goal 6).
- Action 2: Create (i.e., quarterly) Muskego Urban Forestry newsletter to inform residents on tree care and the Community Forestry program.  Newsletter can be as detailed or basic as desired and included with other City mailings to minimize postage expense.  Can be associated with Action 1, Strategy 1 above.

Implementation Strategy 3: Keep media informed on Muskego Forestry program.

- Action 1: Inform the media on all aspects of the City Urban Forestry program on an ongoing basis.
- Action 2: Provide media with general tree care references/articles/information courtesy of the Muskego Urban Forestry program.

**Recommendation 6**

**Initiate a volunteer program.**

Volunteer programs can accomplish a great deal when they are organized and efficiently run.  Volunteer programs can provide sound tree care at a cost savings but are not cost free.  These types of programs are not only effective in providing a work force for the community forest, they also are tremendous avenues of public education. (Recommendation 3.)

Volunteer program topics need to be what cannot be effectively provided by other sources either due to costs or personnel.  Topics need to be correlated to the seasons and interests of the volunteers.  Tree planting topics need addressing prior to the aftercare of a new tree or invasive species management.

Implementation Strategy 1: Recruit interested residents for volunteer program of community forest caretakers.

- Action 1: Assign a desirable title to the volunteer program, i.e., Tree Caretaker, Friends of the Park, A Treekeeper, May the Forest Be With You, etc.
- Action 2: Develop mailing list of potential volunteers from attendees of tree care workshops and any other interested people.
- Action 3: Publicize with local sources how to become a volunteer.  Use all avenues available, i.e., cable access, web site, newspaper, mailings, notices, etc. Continue prior to each program/event.  Generate interest and enthusiasm in the volunteer program.

Implementation Strategy 2: Initiate volunteer programs.

- Action 1:  Organize volunteers, include their input through meetings, mailings, park tours, education/training, etc.
- Action 2: Decide on tasks, programs and topics to accomplish, i.e., tree planting, pruning, etc.
- Action 3: Decide on location/site and operational details of tasks/programs.  (See Management Plan for specific priority listings).
- Action 4: Begin project(s).  Maintain records of tasks performed, site, schedules and dates, and attendees.  Put in Urban Forestry Log.
- Action 5: Encourage volunteers to bring others.  Keep activities productive, resource related, educational and enjoyable!
- Action 6: Reward volunteer program success.  Show gratitude, i.e., commemorative tree plantings with plaque, park sign, etc.

## Implementation Schedule

Schedules and time tables will be contingent on many factors. It should be noted when reviewing an implementation schedule that some actions and tasks may correspond with a growing season rather than a calendar year.  This is not always possible due to growing season variables, tree growth, and the planning process.  In some cases, schedules may follow a November - October time frame, overlapping the calendar year.

When a deadline is changed for whatever reason, be aware that it may also alter future actions that were dependent upon its completion.  If a completion date is not achieved for an action, the planning process should continue with the necessary modifications made.  Many actions and strategies require the necessary funding to be accomplished.  When faced with budget restrictions, whatever prioritized portion or level of completion that is possible should be accomplished.

Each action is to be carried out by a particular person or body.  There is flexibility in this dependent upon the administration/operation of the Urban Forestry program.  The following titles are used in this category:

- Consultant:                            contracted to perform task
- Coordinator:                          lead position of Urban Forestry program
- Committee:                           Urban Forestry Committee
- Staff:                                    staff of responsibility (e.g., Parks or Public Works)
- Contractor:                           contracted services to perform task
- Volunteers:                          volunteer tree care providers
- City Common Council:          official ratification

## CITY OF MUSKEGO STRATEGIC URBAN FORESTRY
## IMPLEMENTATION SCHEDULE

**Recommendation #1: Conduct a City Tree Inventory upon which to base management decisions on an ongoing basis.**

Implementation Strategy 1: Identify data necessary for tree management decisions.  Priority 1

| | Actions | Performed By | Completion Date/status | Cost/Budget |
|---|---|---|---|---|
| 1 | Identify City tree locations. | Coord./Consultant | 1999/Completed | -- |
| 2 | Collect necessary data. | Consultant | 1999/Completed | -- |
| 3 | Analyze and record data in report. | Consultant | | -- |
| 4 | Base management needs from data. | Consultant | 1999/Completed | -- |
| 5 | Record locations of hazard trees and conditions and schedule action. | Consultant | 1999/Completed | -- |
| | | | | Implementation Strategy 1: $4,300 Total |

Implementation Strategy 2: Inspect City trees annually.  Priority 2

| | Actions | Performed By | Completion Date/status | Cost/Budget |
|---|---|---|---|---|
| 1 | Decide who will conduct tree inspection. | Coordinator/Staff | Spring annually | -- |
| 2 | Review past year's inventory and maintenance. | Staff/Consultant | Spring/Summer | -- |
| 3 | Windshield/walking survey and inspection of City trees. | Staff/Consultant | Mid Summer/Fall | -- |
| 4 | Maintain documentation forestry log. | Staff/Consultant | Mid Summer/Fall | -- |
| 5 | Record locations of hazard trees/conditions. Schedule appropriate actions. | Staff/Consultant | Mid Summer/Fall | -- |
| 6 | Update data. | Staff/Consultant | Following Inspection, by November annually | Implementation Strategy 2: Estimated time to complete each inspection: 20 hours.  Can be performed during normal operating procedures. Contracted estimate: $1,400 |

**Recommendation #2: Manage and maintain street and public trees at optimum levels of stocking, health, age, and species diversity. Prioitize planting sites**

Implementation Strategy 1: Develop an Urban Forestry Management Plan.

| | Actions | Performed By | Completion Date/status | Cost/Budget |
|---|---|---|---|---|
| 1 | Create outline of plan based on needs. | Committee/Consultant | Completed 1999 | -- |
| 2 | Review inventory; write plan. | Consultant | 2/00 | -- |
| 3 | Prioritize hazard trees and 1st year maintenance. | Consultant | 2/00 | -- |
| 4 | Prioritize maintenance tree management work units. | Consultant | 2/00 | -- |
| 5 | Prioritize Parks/Industrial Park planting sites | Consultant | 2/00 | -- |
| 6 | Review Management Plan schedule annually. | Coord./Committee/ Staff/Consultant | November annually | Management Plan is the field operations of program. Total cost: $2,900 |

Implementation Strategy 2: Schedule priority tree removal and maintenance from management plan. Priority 2

| | Actions | Performed By | Completion Date/status | Cost/Budget |
|---|---|---|---|---|
| 1 | Schedule all hazard trees for removal/maintenance. | Coord./Staff/ Contractor | Schedule: 4/00 Complete: 6/00 | 5 street trees, 2 ROW trees, 4 park trees. Contractor estimate: $6,700 |
| 2 | Plan routine tree removals. Complete scheduling as follows | Staff | Perform anytime | 5 park trees year 1, contractor estimate: $720 |
| 3 | Park tree maintenance pruning cycle (3 year cycle). | Coordinator/Staff | Annually by April | -- |
| 4 | Schedule Year 1 park tree maintenance. | Coordinator/Staff | 5/00 | -- |
| 5 | Complete pruning. | Staff (can contract if desired) | perform anytime June - March annually | Contractor estimate: $3,840 |
| 6 | Schedule and complete Year 2 park sites pruning and removals. | Coordinator/Staff | June - March | Contractor estimate: $3,640 |
| 7 | Schedule and complete Year 3 Park sites, City Building, Street trees pruning and routine removals | Coord./Staff | June - March | Contractor estimate: $3,780 |

| 8 | Evaluate Management Plan. Add new plantings in their third year. | Coord./Staff/Committee | November annually | -- |
| 9 | Repeat Actions 1,2,4,7,8 annually, Actions 3,5,6 on a 3 tear cycle. | Coord./Staff | Annual & 3-year cycle | Can also be done in-house: Parks/Public Works |

| Implementation Strategy #: Develop Park Tree Planting Campaign  Priority 2 | | | |
|---|---|---|---|
| Actions | Performed By | Completion Date/status | Cost/Budget |
| 1  Confirm that tree maintenance has been performed or scheduled on existing trees. | Coordinator/Staff | June annually | -- |
| 2  Review park tree planting locations. | Coordinator/Staff | Spring annually | -- |
| 3  Project cost for planting plan. | Coordinator/Staff | Winter annually | -- |
| 4  Recruit volunteers and donations. | Coord./Committee/ Staff/Volunteers | On-going | -- |
| 5  Select species and exact planting sites following the park location priorities of Management Plan.  Contact Diggers Hotline | Coord. Staff/Committee | Winter-Spring annually | -- |
| 6  Plant trees through volunteers, workshops, Staff | Volunteers/Staff | Spring/Fall | -- |
| 7  Maintain public "scorecard" of trees planted; display and promote | Volunteers/Staff | Begin Spring 2000, Continue through year | -- |
| 8  Plan for necessary aftercare of new trees (i.e. watering). | Volunteers/Staff | Following planting completion | -- |
| 9  Continual media involvement and recognition. | All, including volunteers | On-going | -- |
| 10  Building of planting campaign through community promotion and support.  Publicize. | All, including volunteers | On-going | Total costs for campaign will vary tremendously with volunteer and community support.  Without any outside support, a campaign of this size is estimatedat $7,0000 - $8,000 for the planting of 50 trees annually. |

| | Implementation Strategy 4: Evaluate and Update Management Plan | | | |
|---|---|---|---|---|
| | Actions | Performed By | Completion Date/status | Cost/Budget |
| 1 | Evaluate pruning cycle progress. | Coordinator/Staff/ Committee | Annually following completion | -- |
| 2 | Evaluate Management Plan, adjust as needed. Update inventory as needed. | Coordinator/Staff/ Committee | November annually | -- |
| 3 | Apply for Urban Forestry Grant and research alternative funding sources. | Coordinator/ Committee | On-going | -- |

**Recommendation #3: Increase public awareness and education on proper tree planting and care.**

Implementation Strategy 1: Develop community educational and awareness programs.  Priority 1

| | Actions | Performed By | Completion Date/status | Cost/Budget |
|---|---|---|---|---|
| 1 | Involve schools and civic groups in Arbor Day and Earth Day events. | Staff/Volunteers | April/May annually | -- |
| 2 | Submit articles and inform media on Urban Forestry program and Arbor and Earth Day events. | Coord./Committee/ Staff/Volunteers | On-going | -- |
| 3 | Publicize and solicit donations for memorial and commemorative trees for planting. | Committee/ Volunteers | On-going | -- |
| 4 | conduct Tree City USA certification and publicize. | Coordinator | Annually | -- |
| 5 | Offer and publicize tree care/planting workshops throughout the year. | Coord./Consultant/ Committee/ Volunteers | Annually | Strategy 1 cost contingent on tree plantings involved with events.  Workshop estimate: $350/session if consultant used. |

Implementation Strategy 2: Devise Tree Care Information Display  Priority 1

| | Actions | Performed By | Completion Date/status | Cost/Budget |
|---|---|---|---|---|
| 1 | Purchase ISA Tree Care Consumer brochures. | Coord./Committee | Spring 2000 | $300 - $400 |
| 2 | Display brochures at Library | Volunteers/Staff | Spring 2000 | -- |
| 3 | Interact Urban Forestry program activities with display. | Volunteers/ Committee | On-going | $100 - $200 (photo costs annually) |
| 4 | Change display of Urban Forestry program on 2-4 week interval.  (April - October). | Volunteers | On-going | Strategy 2 estimate: $400 - $600 |

**Recommendation #4: Establish that trees are recognized and addressed as an active component in all community planning decisions.**

Implementation Strategy 1: Trees are included on the agenda during all community planning and development.  Priority 1

| | Actions | Performed By | Completion Date/status | Cost/Budget |
|---|---|---|---|---|
| 1 | Create policy for all Departments (where applicable) to address trees in planning process. | Committee/ Coordinator/Common Council | Dec. 2000 | -- |
| 2 | Determine if tree preservation, planting, maintenance, etc. are components of community projects. | Committee/Staff Coordinator/Common Council | On-going | Implementation Strategy 1 costs: $300 - $1,000 if consultant used. |

Implementation Strategy 2: Create Subdivider tree planting policy and procedures that can become ordinance based upon proper tree selection, site requirements and planting techniques.  Priority 1

| | Actions | Performed By | Completion Date/status | Cost/Budget |
|---|---|---|---|---|
| 1 | Establish criteria for developers requiring tree planting. | Consultant/Coord. | 12/99 | -- |
| 2 | Develop street tree species list for developers to use. | Consultant/ Committee | 12/99 | -- |
| 3 | Develop Street Tree Planting Guide | Consultant/ Committee | 12/99 | -- |
| 4 | Develop Tree ordinance | Coord./Staff/Common Council | On-going | -- |
| 5 | Allow for ordinance enforcement. | Common Council/Coord. | On-going | Consultant portion included in Strategic Plan costs. |

Implementation Strategy 3: Trees are addressed during Planning stage in all City development/construction projects  Priority 2

| | Actions | Performed By | Completion Date/status | Cost/Budget |
|---|---|---|---|---|
| 1 | City construction projects are evaluated for their impact on existing trees - Policy. | Coord./Consultant/ Staff | 12/2000 | -- |
| 2 | Decisions on tree preservation/removal or project altering pre-planned - Policy. | Coord./Consultant/ Staff | 12/2000 | -- |
| 3 | Documentation of tree preservation/removal decision - Policy. | Coord./Consultant/ Staff | 12/2000 | Implementation Strategy 2 costs will be determined if Consultant is required for each project. |

**Recommendation #5: Develop community and political support of the Urban Forestry program and recognition of the values and benefits 0f trees.**

Implementation Strategy 1: Keep City officials informed on Urban Forestry program.  Priority 1

| | Actions | Performed By | Completion Date/status | Cost/Budget |
|---|---|---|---|---|
| 1 | Forestry Program issues progress newsletter/report etc. to City officials. | Coord./Committee | Quarterly | -- |
| 2 | Involve City officials in commemorative tree plantings and dedications. | Coord./Committee | On-going | -- |

Implementation Strategy 2: Keep Muskego residents informed on Urban Forestry program.  Priority 2

| | | | | |
|---|---|---|---|---|
| 1 | Recruit and solicit volunteers to assist in Urban Forestry program. | Coord./Committee | On-going | -- |
| 2 | Create Muskego Urban Forestry Program Newsletter for citizens (coordinate with action 1, Implementation Strategy 1). | Coord./Committee/ Volunteers | Quarterly | Newsletter printing and distributing costs. |

Implementation Strategy 3: Keep media informed on Muskego Urban Forestry Program.  Priority 2

| | | | | |
|---|---|---|---|---|
| 1 | Inform media on all aspects of Urban Forestry Program | Coord./Committee | On-going | -- |
| 2 | Provide media with general tree care references/articles/information | Coord./Committee | On-going | -- |

**Recommendation #6: Initiate a volunteer program.**

Implementation Strategy 1: Recruit interested residents for volunteer program.  Priority 2

| | Actions | Performed By | Completion Date/status | Cost/Budget |
|---|---|---|---|---|
| 1 | Assign a desirable title to volunteer program. | Committee | 5/2000 | -- |
| 2 | Develop mailing list of potential volunteers from tree care workshops and interested residents. | Committee/Coord. | During workshop dates (Recommendation 3) | -- |
| 3 | Publicize volunteer program | Committee/ Coord./Volunteers | Prior to projects | -- |

Implementation Strategy 2: Initiate Volunteer Programs  Priority 3

| | Actions | Performed By | Completion Date/status | Cost/Budget |
|---|---|---|---|---|
| 1 | Decide on program topics. | Committee | Spring annually | -- |
| 2 | Decide on site/operations of programs. | Committee | Spring annually | -- |
| 3 | Begin tasks; document. | Volunteers/ Consultant/ Committee | On-going | -- |
| 4 | Encourage volunteers to bring others.  Build enthusiasm | Volunteers/ Consultant/ Committee | On-going | -- |
| 5 | Reward volunteer program with commemorative tree plantings, plaques, etc. | Coordinator/ Committee/Staff | Fall annually | Volunteer programs can provide cost savings but are not free. Expect costs associated with workshop expense.  Annual estimated volunteer program expense: $500. |

**Discussion**

The City of Muskego has made a commitment in recognizing the value, managing, and improving its community forest.  This Strategic Plan allows for direction in this program.  Many of the actions and strategies of this plan overlap each other.  It is the intent to connect all aspects of an Urban Forestry program into an interlocking network.  One portion failing can affect all other components.

Community Forestry programs succeed when they receive strong political and public support.  The key to a successful program is to have both political and public groups understand that trees have value and require care.

The Strategic Plan should be reviewed annually and evaluated by the Urban Forestry Coordinator and Committee.  This review will allow for recognizing goal achievements, additions and deletions.  Ideas and direction can change as Committee and Council members, policies and personnel do.  As goals are achieved they can be expanded or new ones can be developed through the growth of the program.

The review should evaluate the progress made toward achieving the goals recognizing that many goals are on-going.  As goals, strategies, and actions are accomplished throughout the year they should be documented.  This documentation can be as simple as an Urban Forestry Log or a very detailed itemized record.  The documentation would be part of the review and discussed at a Committee meeting.  Documenting allows for an assessment of the program by comparing designated strategies and actions to achievements.  If goals are not being attained or strived for then corrective actions need to occur.  These can include modifying the actions and strategies to achieve the goals to modifying the goal itself.

Public evaluation through questionnaires and surveys can be very helpful in assessing the urban forestry program.  If these are used, it is recommended that they begin following the second year of action after the program has had public exposure.

Funding Sources

The City of Muskego has utilized DNR Urban Forestry Assistance grants to fund the Urban Forestry program. Efforts should be made to explore other additional sources of funding to supplement the Urban Forestry program. Project labor costs. Outside assistance should not only be viewed as a potential source of funds but also a source of goods and services. The use of volunteers can reduce project labor costs. It is usually easier to obtain assistance (in whatever form) in tree planting projects than in tree maintenance.

Potential Sources:

- DNR grants
- Small Business Administration tree planting and maintenance grants have been available in the past
- Utility assistance (i.e., WEPCO) programs
- National Tree Trust
- Civic and service organizations
- Private contributions (business and private)
- Foundations
- Establish endowment fund for shade trees
- Interested citizens to volunteer
- Youth groups
- School projects
- Grocery/Hardware store round up programs for the Urban Forestry program
- Cost sharing planting programs
- Initiate tree care or planting fund that collects off assessments to new developments or frontage tax
- Surcharges for various City services or fees
- Require developers (through ordinance) to meet specifications for tree planting and preservation in new subdivisions
- The Dept. of Transportation has been involved in tree planting with some of its projects
- Establish Shade Tree Trust Fund that guarantees contributors that funds go to the planting and preservation of Muskegos' trees.
- A "Change for Muskego" - coin collectors at interested businesses, City Hall, etc., where people can put spare change to support the Muskego Community Forest or "Friends of the Parks," etc.

Public Awareness Ideas

Many ideas exist that can be implemented to increase the public awareness and concern for the community forest and its management. Programs that demonstrate the benefits of planting and maintaining Muskego's trees will enhance public support and interest. The key is to be creative and involve as many interested people as possible in all phases of the Strategic and Management Plans as often as possible.

It should be noted in all Urban Forestry education and awareness programs that **properly managed and maintained trees appreciate in value for the majority of their lives. Many other community investment projects cannot make this claim.** The following is a list of possible public awareness tactics that can be used as actions to achieve the strategies and goals. Remember that any creativity in designing education and awareness programs is encouraged.

- Initiate Arbor Day programs with local schools, civic groups, churches, etc.    and planting may be able to be donated by local landscapers, nurseries,    garden centers, etc. Media coverage and recognition are very beneficial    during special events. Arbor Day is the last Friday in April.

- Make firewood and wood chip mulch available at no cost or for a nominal    fee to residents of Muskego. The wood and mulch are by-products of a    City tree maintenance program. If a nominal fee is charged, income can be    designated to a particular portion of the Urban Forestry program (i.e.,    plantings) or to help subsidize the entire operation. If wood/mulch is made    available at no cost, it is a very positive public relations move. Signs at the    pickup site can indicate "Compliments of The Muskego Urban Forestry    Program."

- Solicit and encourage participation and financial contributions for community tree plantings and maintenance. Dedication tree plantings with appropriate recognition for those contributors can occur at City buildings, parks, and schools. These can recognize past and new events, accomplishments and individuals important to Muskego.

- Provide practical tree maintenance and planting technique programs for City residents. These can be sponsored by the private sector, special interest groups or the community.

- Provide Tree Care Fact Sheets for City residents. These can provide information on home tree care and on the Urban Forestry program. These    should be made available at no cost and easy to obtain.

- Establish community pride with the Muskego Urban Forest by issuing the "challenge" to residents to plant trees on private property. The Urban Forest is

made up of all the trees and plants within the City limits.  Encouraging people to plant trees would benefit everyone.

In all urban forestry education and awareness programs it is vital to involve        the local media.  It is recommended that the media be kept informed on all     appropriate aspects of this plan.

**A successful Urban Forestry operation has built trees into the City infrastructure. Trees are a living, growing entity, a renewable natural resource, and the oldest, largest, living thing on the planet.**

## Appendix A

## City Tree Inventory Executive Summary

The information in this Appendix is a summation of the City Tree Inventory data.  This data was used as a basis in preparation for the Muskego Urban Forestry Strategic and Management Plans.  The data is explained in further detail throughout the Management Plan.

**Recommendation 1, Implementation Strategy 1, Results**

**Inventory Executive Summary**

During the summer of 1999, a City tree inventory was conducted for the City of Muskego, Wisconsin by Ranger Services Inc.  The purpose of the inventory was to collect data on City street and Park trees and to locate available planting sites throughout the City.  All inventory data has been recorded in databases utilizing Paradox software.

City trees were inspected and categorized into management units.  Hazard trees were identified.  Muskego does not have many typical street tree plantings or available street tree planting sites due to the existence of ditches in the Right of Way (ROW).  Typical street trees are trees located in the ROW between the sidewalk and street (or proposed sidewalks) or in boulevards.

**Tree Management Categories**

- City street trees between sidewalk/curb or boulevards - (98 trees).
- Cul de sac trees located in cul de sac center planting islands - (90 trees).
- Potential Hazard ROW road trees, located within the ROW, which upon failure or decline would compromise public safety.  These are volunteer trees which in most cases were present prior to development.  Each individual tree was not noted in wooded or heavily tree lined ROW areas.  In these instances, a location was indicated (92 trees or locations).  These are separate trees from the 98 City street trees.
- Park/Greenspace and City Building trees (17 sites) were evaluated noting individual trees located in maintained areas (referred to as Park trees), or forested or naturalized areas, inventoried as a cover type.
- Individual Park Trees - 500
- Nineteen Lake access sites were inspected for tree maintenance needs and hazards.

**Data**

There are over 45 different species of trees on City property.

Condition Class is a rating (between 0 - 100%) that evaluates overall tree health and structure.

A sound healthy tree rates closer to 100%.

Average condition class values indicate City trees are in fair condition.  Higher condition class values have a direct correlation to healthy, well maintained, structurally sound, long lived trees.  These values are typical for trees that have not received scheduled maintenance.

Average diameters indicate an overall young City tree population.  As these grow and mature, their value and benefits will increase.  Early tree maintenance will extend a tree's useful life and increase the tree's value while decreasing the removal, disposal and replanting costs.
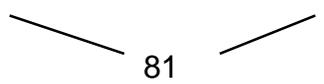
|  | Ave. Condition Class | Ave. Diameter |
|---|---|---|
| Street Trees | 52% | 10" |
| Cul de sacTrees | 64% | 7" |
| Park Trees | 59% | 8" |

**Maintenance & Planting Sites**

ROW Road and Street Tree
- 2 Hazard ROW road trees require removal:
    - W141S8063 Durham Drive, Green Ash, 23" diameter
    - W180S6848 Muskego Drive, Red Oak, 23" diameter
- 5 Hazard street trees require removal.  They are located in the Ryan Road boulevard and Lannon Drive boulevards.
- 75 street trees recommended for maintenance clearance and training pruning over the next 3 - 4 years.
- Pruning needs for ROW road trees will be very minimal and only in the event of hazard conditions, clearance, or unusual situations.

| **Street Tree Planting Site Availability** | | |
|---|---|---|
| | 7'+ Terrace | 4 - 6' Terrace |
| Power Lines Present | 0 | 26 |
| No Power Lines Present | 31 | 24 |
| | 31 | 50 |
| | 81 | |

Available street tree planting sites should be regarded as low planting priority.

Cul de Sac Planting Island Trees

- These trees will require attention only in the event of hazard conditions, street clearance or maintenance problems.

Park Trees

- 3 hazard Park trees requiring removal:
    - Idle Isle Park (2 removals): Black Willow, 19" diameter; Siberian Elm, 24" diameter.
    - Schmidt Park,(1 removal): Black Willow, 25" diameter
    - 1 hazard Park tree requires safety pruning: Idle Isle Park, Weeping Willow, 78" diameter, (twin stem).

- 401 Park trees are recommended for clearance and training pruning over the next 1 - 3 years.

- 3 Trees are recommended for safety pruning in he next 2 - 3 years at the Old Muskego Settlement Center.

- 34 Park trees (non-hazards) are recommended for removal over the next 2 - 3 years. The majority of these trees are in lower use areas and have died from Dutch Elm Disease.

- 390 Prioritized available Park tree planting sites exist within 10 park locations.

- Estimated average tree value for individual Park trees is $369.00.  Total estimated value for all individual Park trees is $184,500.00.

Industrial Park

Data was collected and prioritized on the available planting sites.

Priority #1: an available planting site that will provide the greatest benefit    and impact from having a tree located there.


Priority #2: an available planting site that will provide benefit and impact from having a tree located there.  Priority #1 sites should be filled prior to Priority #2 sites.

Priority #3: an available planting site but of lesser value due to location, than sites #1 or #2.

<div style="border:1px solid black; padding:10px;">

**Industrial Park Planting Site Availability**

| | |
|---|---|
| Priority 1 | 142 |
| Priority 2 | 69 |
| Priority 3 | 44 |
| | ------ |
| Total | 255 |

</div>

Industrial Park planting plan is included as an addendum to the Urban Forestry Management Plan.

**Appendix B**

**Subdivision and Platting Tree Planting
Policies and Procedures**

The information is this Appendix is to provide recommended items to include in a Subdivider Tree Planting Ordinance.  It also offers information that should be considered for all City tree planting programs.

**DRAFT**
**Recommended Items to Include in Subdivision and Platting Tree Planting Ordinance**

**<u>Intent and Purpose</u>:**

It is the policy of the City of Muskego to regulate and establish policy for the management and control of tree planting by the Subdivider in all new residential developments within the City limits for the purpose and intent:

- to promote and enhance the aesthetics, landscape values, and general welfare of the City through the benefits provided by trees.

- to prohibit the planting of undesirable tree species and sites.

- to ensure the compliance of the professional planting guidelines and standards adopted by the City to promote long term tree health, vigor, and survival.

- to enhance and sustain the urban forest as a community resource.

1. The Subdivider shall plant one (1) large tree species for each 50' of frontage, (or one (1) small tree species for each 30' of frontage) on all streets proposed to be dedicated within and adjacent to the subdivision and located outside of the City street right-of-way and within 5' of the front lot line (on the homeowners lot) unless otherwise determined by the Plan Commission on the basis of existing conditions in terms of natural tree coverage.  The homeowner is responsible for all maintenance following tree planting.

2. Tree planting shall be completed in accordance with plans and specifications approved by the Plan Commission.  A bond shall be submitted in an amount determined by the City to cover the costs of trees and planting costs.  This bond will be in effect for 18 months following planting and will not be released until all included trees have been inspected by the City and deemed to be healthy and in a flourishing condition.  Trees determined to be dead or dying within this 18 month period shall be replaced 1 (one) time at the Subdividers full expense; excluding tree loss due to abnormal weather conditions, vandalism, animal damage, insect/disease or maintenance negligence.

3. In lieu of planting the total required number of street trees after it is determined by the Plan Commission on the basis of existing conditions in terms of natural tree coverage, the Subdivider shall, at the time of final plat approval or certified survey map approval, pay a tree fee to the City Treasurer of $250.00 for each tree to be planted.  This individual tree fee amount may be adjusted over time, as determined by the City to adjust for increasing or decreasing tree costs.  Funds collected for tree

planting shall be kept in a special tree planting/care fund, existing solely for that purpose and shall be separate from the general fund of the City. This fund shall be used exclusively for the acquisition and planting of trees elsewhere within the City or for the maintenance and care of trees on public property.

Tree planting shall be completed by the Subdivider in accordance with plans and specifications approved by and at such time as directed by the Plan Commission or Park Board.

# RECOMMENDED STREET TREES - CITY OF MUSKEGO

**Large trees for use in wide planting areas (7'+ width) and where no overhead utilities exist.**

| Scientific Name | Common Name |
| --- | --- |
| Acer x freemanii | Autumn Blaze Maple |
| Acer rubrum** | Red Maple** |
| Acer saccharum** | Sugar Maple** |
| Celtis occidentalis | Hackberry |
| Fraxinus americana** | White Ash** |
| Fraxinus pennsylvanica** | Green Ash** |
| Gingko biloba | Gingko |
| Gleditsia triacanthos inermis** | Honeylocust** |
| Gymnocladus dioicus* | Kentucky Coffeetree* |
| Phellodendron amurense | Amur Corktree |
| Quercus alba* | White Oak* |
| Quercus macrocarpa* | Burr Oak* |
| Quercus robur* | English Oak* |
| Quercus rubra* | Red Oak* |
| Tilia cordata | Little Leaf Linden** |
| Tilia americana cv 'Redmond' | Redmond Linden |
| Ulmus americana cv | American Elm (Disease Resistant) |

* Trees may not be suitable for high traffic areas due to nut and fruit litter.

** Many cultivars exist for these species. Cultivars are used for variety among species and improved performance through characteristics: i.e. shapes, structure, growth habit, insect/disease resistance, absence/persistence of fruit, and color.

cv - abbreviation for cultivar.

**Small trees for use in restricted planting areas (4 - 6' width) or areas where overhead utilities exist.**

| Scientific Name | Common Name |
| --- | --- |
| Amelanchier spp.** | Serviceberry** |
| Carpinus caroliniana | Hornbean, Musclewood |
| Cercis canadensis | Eastern Redbud |
| Crataegus spp.** | Hawthorn** |
| Fraxinus pennsylvanica  var. Leprechaun | Leprechaun Green Ash |
| Malus spp.** | Crabapple** |
| Ostrya virginiana | Ironwood, Hop Hornbean |
| Prunus sp.** | Ornamental Cherry and Plum** |
| Pyrus calleryana** | Callery Pear** |
| Syringa reticulata | Japanese Tree Lilac |

** Many cultivars exist for these species.  Cultivars are used for variety among species and improved performance through characteristics: i.e. shapes, structure, growth habit, insect/disease resistance, absence/persistence of fruit, and color.

spp. - abbreviation for species

**DRAFT**
**City of Muskego Street Tree Specifications**

**Plant Stock Specifications**

**All plant material shall conform to American Standard for Nursery Stock.**

All plants shall be protected during all shipments from sun and drying winds.

All plants shall be true to species and variety specified and nursery grown in accordance with good horticultural practices in hardiness zone 5 or lower for at least 2 years.

All plants shall have been freshly dug and trained in development and appearance as to be good quality in form, compactness and symmetry.

All plants shall be sound, healthy, vigorous, well branched and densely foliated at time of leaf out, and free of disease and insects (eggs, larvae, or adults). They shall have healthy, well developed root systems and free from physical damage.

All plants shall be labeled with plant name and size.

Trees with multiple leaders may be rejected. Trees with pruning cuts over 3/4" in diameter that are not calloused may be rejected.

Trees will have a trunk diameter between 1½" to 2½" unless due to a variance particular to a specific species. Measurement shall be taken at 6" above ground level.

Trees shall be a minimum of 7' in height unless due to a variance particular to a specific species.

Trees root systems shall be balled and burlapped.

Ball sizes should always be of a diameter and depth to encompass enough of the fibrous and feeding root system for the full recovery of the plant.

Root balls shall correspond to the following chart.

| Trunk Diameter | Minimum Diameter Ball | Ball Depth Minimum |
|---|---|---|
| 1½" | 20" | 13.5" |
| 1¾" | 22" | 15.0" |
| 2" | 24" | 16.0" |
| 2½" | 28" | 19.0" |

Burlap shall completely cover the root ball and be tightly bound with rope or twine.  All materials shall be of a biodegradable nature.

Root flares shall be within 3" of the top of the root ball.

Root balls that are dry, cracked, or broken before or during planting may be rejected.

## Species Selection

All tree species shall be selected from the provided City of Muskego Street Tree Species List unless otherwise indicated and approved by the City.

No more than 35% of any one species shall be used on any street.  All trees shall be from the large tree species list unless otherwise determined by the Plan Commission that such species do not have the necessary room to grow and develop on the basis of existing conditions.  At this occurrence trees from the small tree species list shall be selected for planting.

## Plant Certification

All plant material shall comply with State and Federal laws and regulations governing the inspection, shipping, selling and handling of plant stock.  A certificate of inspection for injurious insects, plant diseases and other plant pests shall accompany each shipment of plant material.  The certificate shall bear the name and address of the source of the stock.

## Plant Inspection

Plants shall be subject to inspection for conformity to specifications by the City of Muskego prior to planting.

## Tree Planting Specifications

These specifications shall be followed for planting of all trees regardless if done by the City of Muskego or the Subdivider.

All trees shall be planted using the professional guidelines and standards of the International Society of Arboriculture (ISA) and the Wisconsin Arborist Association State Chapter as adopted by the City of Muskego.

## Planting Hole

Trees shall be planted so that they will not interfere with solar access to south walls, roof tops, underground or overhead utilities, fire hydrants or public street lights.

Diggers Hotline shall be contacted prior to any tree planting procedures.

Planting holes shall be dug in accordance with the attached Planting Diagram.

Planting holes shall be at least 2 - 3 times the diameter of the root ball.

The root ball shall be set to rest on undisturbed soil in the bottom of the planting hole so as to leave the trees root flare at ground level or slightly higher (no more than 1" higher).

Excavated planting holes shall not be left unattended could pose as a safety hazard. Planting holes shall be adequately barricaded.

When soil conditions prove unsatisfactory to the promotion of plant growth, or if underground conflicts exist, an alternate planting location may be selected by the City of Muskego

## Planting Operation

All plants shall be moved, lifted or carried by supporting the root ball.  Plants shall not be carried by supporting the trunk or branches, nor shall they be dragged.  Plants will not be thrown or bounced.

All plants shall be watered daily while in storage.

All plants shall be protected while in transport from sun and drying winds.

All plants shall be planted in the center of the planting hole.

Ropes, strings, baskets, and burlap shall be removed completely from the root ball, unless in so doing will destroy the integrity of the root ball.  In this instance, then as much as possible will be removed with at least the upper half of the ball clear of foreign material.

Planting holes shall be backfilled halfway with excavated soil then watered to settle the soil.  The remainder of the hole will be filled with the excavated soil.

Planting areas shall be finish graded to conform to the Planting Diagram leaving the trees root flare at ground level or slightly higher (no more than 1" higher).

Secondary roots (adventitious roots) located above the root flare shall be pruned off.

Planted trees shall be mulched with aged wood chip/shredded bark mulch to a depth of 2 - 4".  Mulch will be pulled back from against the trunk so as not to exceed 1" in depth.

Trees shall be watered upon completion of mulching.

All planting labels and other foreign objects shall be removed from the trunk, branches, and foliage and removed from the planting site.

Only those trees unable to remain upright after planting shall be staked.  Stakes shall be 8' long and driven through the bottom of the planting holes, outside of the root ball.  The supporting material shall be a minimum of 2" wide  made of a substance which will not injure the bark of the tree (i.e., elastic or webbed strapping).  Unless otherwise determined by the Subdivider or Contractor, the stakes and staking material shall be removed by the Homeowner and they may retain them.

Trees shall not be trunk wrapped when planted in the spring.

Only broken and damaged limbs shall be pruned at time of planting.

Post planting watering shall be the responsibility of the Homeowner.

### Location of Street Trees

Subdivider shall prepare a Master Street Tree Planting Plan per development.  The plan shall be at a scale of 1" = 100', and shall adhere to the following minimum standards:

Trees must be at least:

30' from any street corner
10' from a driveway
20' from a street light or utility pole
10' from a fire hydrant
10' from a gas/water valve or utility laterals
*30' tree spacing between small tree species
*50' spacing between large tree species

* Tree species selected for the City of Muskego Street Tree Species List.

## Clean Up

No debris shall be left at the planting site nor shall any conditions exist after planting as to result in a safety hazard.

## Acceptance

The City of Muskego shall perform an inspection of all plant material at a 1 - 3 week interval after planting.  Any discrepancies will be noted in plant health and vigor and the Subdivider or Contractor will be notified.  Those plants healthy and vigorous will be accepted.  A second inspection shall be performed by the City of Muskego at 12 - 18 months following planting to ensure that the trees are in a healthy and flourishing condition.

## Guarantee

All plants shall be guaranteed to be healthy and in a flourishing condition for a minimum of 18 months from the date of planting if performed by the Subdivider or Contractor. The guarantee excludes loss due to abnormal weather conditions, vandalism, animal damage, insect/disease, or maintenance negligence.  The Subdivider or Contractor shall replace at their cost (one time only) all of those trees found not to be in a healthy, flourishing condition.

INSERT "PROPER TREE PLANTING DIAGRAM" IMAGE (H:\Cityhall\Urban Forestry\plans\PlantingDiagram.jpg) HERE

## Appendix C

### Tree Removal Evaluation

It is often difficult to make a final determination upon when a City tree should be removed.   It is essential that the first priority in all City Forestry operations is public safety.  Public perception is very often incorrect in believing that if a tree has leaves it is safe and sound.  Tree structural soundness is not a direct correlation to tree vigor.

The information in this Appendix is provided to assist in determining when a tree needs removal and is, or is becoming a hazard.  This form and accompanying text is also a means of documentation but should never be used as the sole decision maker.  Experience, common sense, knowledge, and ability will always be the best tools in determining tree removal potential.

**Using the Tree Removal Evaluation**

This form is used in the evaluation process of a tree to determine whether the tree should be removed, repaired, or reinspected at a later date, and is designed to be completed by knowledgeable field personnel.

Site/Address

Generally the house number and street will be used for street trees.  Park trees may require a more descriptive location such as area within the park, proximity and distance from structures, etc.

Tree #

Identify the tree when multiple trees exist at one location.

Date

Date of inspection

Inspector

Name of qualified Inspector

Map

A layout sketch of the tree and its relationship to other fixed objects, streets, walks, structures, other trees, utilities, signs, etc  . . .
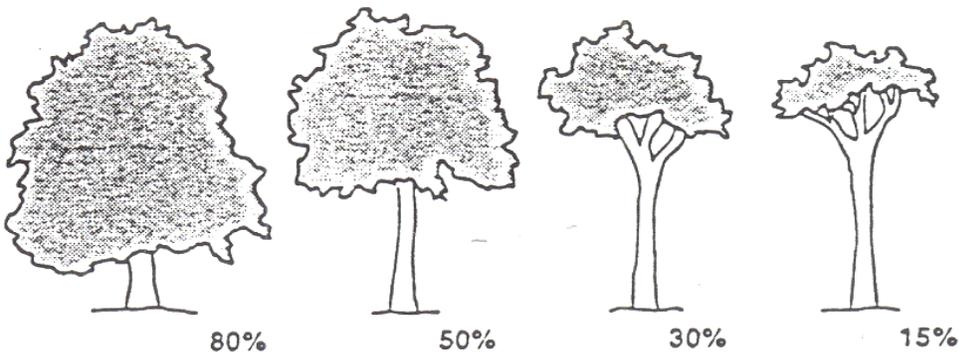
Species

Tree Species

<u>dbh</u>

Diameter breast height, trunk diameter measured at 4.5 feet above ground.

<u>Live Crown Ratio</u>

The relative proportion of green crown to overall height.  Most easily measured during leaf out and recorded in percent.  Generally, healthy trees will have 50% or greater live crown ratios.



| 80% | 50% | 30% | 15% |

<u>Age</u>

Circle the age that corresponds best with the individual tree.

<u>Site</u>

Circle the site that corresponds best with the individual tree.

<u>Tree Health Rating</u>

Comprised of 3 separate evaluations of the tree.  Circle the score between 1 and 5 that best represents each component of the tree; Crown Evaluation, Stem Evaluation, and Root System and Basal Evaluation.  **A score of 1 in any category may warrant tree removal.**

<u>Tree Health Rating Total</u>

The sum of the Crown, Stem, and Root System and Basal Evaluation.

## Tree Hazard Rating

A rating system to assist in hazard tree determination.  It is comprised of 3 separate evaluations.

Failure Potential: Circle the approximate score between 1 and 3.  Failure potential identifies the most likely failure and rates the likelihood that the structural defect will fail.

1. Low: defects are minor
2. Medium: defects are numerous and/or significant
3. High: defects are severe

Size of Part: Circle the appropriate score between 1 and 3.  Size of part rates the size of the part or parts most likely to fail.  The size of the failure affects the severity of potential failure.

1. Small: limbs less that 2 - 3" in diameter
2. Medium: limbs greater than 2 - 3" in diameter
3. Large: large sections of crown or entire tree

Target: Circle the appropriate score between 0 and 3.  Target rates the use and occupancy of the area that would be struck by the failing part. **A zero rating in Target eliminates the tree from being a hazard.**

0. Extreme low use: Wild and Natural Areas
1. Low use: occasional use, trails
2. Medium use: intermittent use, picnic area, part time parking
3. High use: structures, homes, sidewalks, streets

## Hazard Rating Total

The sum of Failure Potential, Size of Part, and Target.

## Hazard Abatement

Indicate if tree defects can be repaired and if yes, how.

## Comments

Record pertinent comments in regard to the individual tree being inspected.

<u>Recommendations</u>

Check the box which has been determined as the best management practice for the individual tree. The Health/Hazard Rating Sheet combines both the Health Rating and the Hazard Rating and identifies a potential management action. **Each individual situation must be evaluated independently. Experience, common sense, knowledge, and ability will always be the best tools in determining tree removal potential.**

Any street or park tree determined to be a hazard (hazard rating high) is in need of removal. Maintaining public safety is the number one priority for any community forestry program.

# Tree Removal Evaluation

Site/Address: _____     Tree #: _____

Date:_____     Inspector:_____

Map:

## Tree Characteristics

Species: _____

dbh: _____     Live crown ratio: _____%

Age:            *young*          *intermediate*          *mature*          *over mature*

Site:            *street tree*          *park tree*          *other:* _____

**Tree Health Rating**: A rating of 1 in any category may warrant tree removal

**Crown Evaluation**: (leaf color and size, growth increments, callus growth, branch attachment, branch structure, crown density, included bark, epicormic sprouts, dieback, decline, defects, wounds, deadwood, live crown ratio, insects, disease, exterior fungal bodies)

very poor          *1*          *2*          *3*          *4*          *5*          excellent

**Stem Evaluation**: (bark intact, cracks, decay, wounds, callus growth, included bark, exterior fungal bodies, lean, canker, multiple stems, epicormic sprouts, cavity)

very poor          *1*          *2*          *3*          *4*          *5*          excellent

**Root System and Basal Evaluation**: (root flare, girdling roots, surface roots, basal wounds, decay, cavity, root pruning, root zone area, basal sprouts, exterior fungal bodies, canker, grade change)

very poor          *1*          *2*          *3*          *4*          *5*          excellent

**Tree Health Rating Total**:          *1  2  3  4  /  5  6  7  /  8  9  10  /  11  12  13  /  14  15*
(total of 3 categories above)          *very poor          poor          fair          good      excellent*

# Tree Hazard Rating

**Failure Potential**: identifies the most likely part to fail and rates the likelihood that the structural defects will result in the failure.

low            *1*          *2*          *3*        high

**Size of Part**: small       *1*        *2*        *3*       large
(<2-3" diameter)  (>2-3" diameter)  (large limbs/section of crown)

**Target**:     low use     *0*   *1*      *2*        *3*      high use
a zero rating in Target eliminates a tree from being a hazard

**Hazard Rating Total**:     *1*   *2*   *3*   *4*   */*   *5*   *6*   *7*   */*   *8*   *9*
(total of 3 categories above)         *low*           *medium*      *high*

# Hazard Abatement

Are tree defects and hazards repairable?:      *yes*          *no*

If yes, how:_____

_____

_____

_____

Comments:_____

_____

_____

_____

# Recommendations: Consult Health/Hazard Rating Sheet

o Remove tree - tree is hazard
o Remove tree - poor health/decline - potential future hazard
o Repair tree - alleviate hazard or defect
o Reinspect tree in future - _____ months
o No special action needed
o Other_____

Inspector: _____    Date:_____

# Health /Hazard Rating Sheet

| Health Rating | Hazard Rating | Comments |
|---|---|---|
| Very Poor | Low | Tree may need removal due to health or aesthetics.  Size of tree may not warrant it a hazard.  Probable removal |
| Poor | Low | Young tree or tree possibly in decline.  May eventually need removal due to health or aesthetics.  Eventual removal if health doesn't improve.  Re-inspect tree. |
| Fair | Low | Care may be possible to improve tree health.  Should not be an immediate removal concern.  Re-inspect tree. |
| Excellect or Good | Low | Best situation.  Tree does not warrant removal. |
| Very Poor | Medium | Tree is candidate for removal.  May not be immediate removal concern.  Probable removal. |
| Poor | Medium | Tree is eventual removal if health cannot be improved.  Re-inspect tree. |
| Fair | Medium | Tree is eventual removal if health declines |
| Excellent or Good | Medium | Tree should not need removal unless health declines.  Care to alleviate hazard. Re-inspect tree. |

**All trees rated as a high hazard need in-depth, detailed evaluation as to removal needs and time frame.**

| | | |
|---|---|---|
| Very Poor | High | Hazard tree.  Removal necessary. |
| Poor | High | Removal may not be immediate.  Hazard tree.  Care to alleviate hazard.  Removal probable. |
| Fair | High | Care to improve health or decrease hazard.  Removal probable, though may not be immediate.  Possible removal or re-inspection. |
| Good or Excellent | High | Few trees will fit this category.  Decline in health could warrant removal.  Care to improve health or lower hazard.  Possible removal or re-inspection. |

**References**

# References

Clark, James R.; Nelda Matheny, Genni Cross, Victoria Wake.  1997.  *A Model of Urban Forestry Sustainability.*  J. Of Arbor.  23 (1) 17-30.

Dwyer, John F.; Gregory McPherson, Herbert Schroeder, Rowan Rountree.  1992.  *Assessing the Benefits and Costs Of The Urban Forest.*  J. Of Arboriculture.  18 (5). 227-234.

Flatley Forestry Service.  1996.  Village of Paddock Lake, Wisconsin.  *Urban and Community Forestry Strategic Plan.*

Majerus, Kimberly Ann.  1988.  *Urban Forest Management, Guidelines for Planning and Administration.*  University Illinois.  Urbana, Illinois.

Miller, Robert W. Ph.D..  1988.  *Urban Forestry: Planning and Managing Urban Greenspaces.*  Prentice Hall, Englewood Cliffs, New Jersey.

Municipal Tree Restoration Program.  1989.  Street Tree Fact Sheets.  Pennsylvania State University.

Ranger Services Inc.  1997.  *City of Neenah, Wisconsin.  Master Street Tree Plan.*

Ranger Services Inc.  1998.  *City of Two Rivers, Wisconsin.  Street Tree Strategic Plan.*

Ranger Services Inc.  1998.  *Village of Sherwood, Wisconsin.  Urban Forestry Strategic Plan.*

Ranger Services Inc.  1999.  *City of Two Rivers, Wisconsin.  Street Tree Planting Guide.*

RLK-Kuusisto Ltd.  1998.  *A Strategic Action Plan for the Urban Forest of the City of Superior.*

U.S.D.A.  1990.  Urban and Community Forestry.  Ogden, Utah.

U.S.D.A.  1993.  *An Introductory Guide to Urban and Community Forestry Programs.* Atlanta, GA.

WDNR 1994.  *A Technical Guide to Developing Urban Forestry Strategic Plans and Urban Forest Management Plans.*

World Forestry Center.  1993.  *A Technical Guide to Urban and Community Forestry.* Portland, Oregon.

**Biography**

## **Biography**

**Ranger Services Inc.**

**Established:** 1988

**Located:** Appleton, Wisconsin

**Profession:** Ranger Services Inc., is an Urban Forestry Management-Consulting firm providing technical assistance to communities of all sizes. The staff of degreed consultants is dedicated to promoting the science of Arboriculture and the proper management or our Urban Forests through:

- Street Tree Ordinance Development/Revision
- Street and Park Tree Inventory
- Tree Maintenance Training Programs
- Street Tree Maintenance Programs
- Urban Forestry Management Plans

**Daniel R. Traas** President - Ranger Services, Inc.

**Education:**

B.S. 1981, UW-Stevens Point, WI, Urban Forestry, Forest Management, and Forest Recreation.

**Professional Affiliations:** Member: International Society of Arboriculture (ISA)
Wisconsin Arborist Association (WAA)
Board of Directors: 1986-1990
President: 1989
Wisconsin Forestry/Right-of-Way/Turf Coalition
Board of Directors: 1984-present
National Arborist Association
National Arbor Day Foundation
American Forests Association
ISA Certified Arborist

--