



Town of Okotoks

2013

# Urban Forest Management Plan

Written by Town of Okotoks Open Spaces

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## **INTRODUCTION**

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As Okotoks is experiencing rapid growth and development, the urban forest is also increasing rapidly in population. Individual trees take many years or even a few decades to reach their maximum potential. Trees are recognized as valuable assets by reducing temperature extremes, reducing energy losses, absorbing carbon dioxide, and increasing aesthetic appeal and property value. Species selection, planting specifications, and management practices collectively determine the ability of a forest to be resilient to periods of drought, insect and disease infestation, and high maintenance costs.

It is important to have long term goals and objectives to manage this ever-growing and changing asset such that future generations will benefit from our endeavors. Note that the goals are not necessarily in order of importance.

### **OBJECTIVE**

The main purpose of this document is to set goals for managing the Okotoks urban forest to conserve water, minimize run-off, minimize pest and disease losses, and minimize maintenance costs while growing a beautiful, healthy and strong forest asset. These goals incorporate the vision of “Sustainable Okotoks” and environmental stewardship.

### **CURRENT CHALLENGES**

1. **Risk management:** As urban trees age, their risk of becoming a hazard may increase if they are located in close proximity to a target. An assessment, removal, and replacement program is necessary to adopt for the aging tree community.
2. **Maintenance:** A cyclic maintenance program needs to be developed to address pruning, mulching, weeding, watering, and pest and disease control.
3. **Pest & Disease Management:** Various pests and diseases pose a threat to the urban forest which can be reduced by increasing species diversity with new plantings, applying control measures, and decreasing stress on existing trees through appropriate care and maintenance.

**GOAL 1: Urban Forester to continue implementing the Urban Forest Management Plan and be accountable for its goals and objectives**

- *A well-planned and managed program is integral to growing a healthy and resilient urban forest that compliments the objectives of “Sustainable Okotoks.”*

**Target Issues**

- ✓ *One-stop contact for status of program*
- ✓ *Responsibility and accountability for goals*
- ✓ *Annual review of UFMP and progress report*
- ✓ *Acquire UF Technician to assist with management and maintenance duties*

Due to the technical requirements of arboriculture, the care and maintenance of the urban forest should be under the direction and supervision of an Urban Forester. This specialist is to be dedicated to this program and assigned responsibility and accountability for the implementation of the actions set out.

**Some Specific Strategies and Actions...**

**STATUS**

- |   |                 |
|---|-----------------|
| • Review job description details/requirements | <i>Complete</i> |
| • Hire UF Technician                          | <i>Complete</i> |

**GOAL 2: Ensure newly planted trees are watered for five years or until established**

- *to help trees to establish quickly and minimize tree losses and associated replacement costs*

**Target Issues**

- ✓ *5 year watering program*
- ✓ *Two dedicated water truck operators*
- ✓ *Annual update of watering schedule*
- ✓ *Reduce plant establishment period*
- ✓ *Improve watering techniques*

In the Okotoks area, water is usually the biggest limiting factor for new tree survival and long-term growth. Young trees that have not yet established an extensive root system are most vulnerable during periods of drought. In order to encourage roots to penetrate deeply and facilitate a young tree to get firmly established, watering deeply is recommended. This makes them less vulnerable to stress in periods of drought.

To alleviate these problems, it is recommended new trees are on a watering program until five years after planting. Most trees planted in Okotoks are under the care of the developer for their first two years after which time a Final Acceptance Certificate may be issued. Once issued, the Town would then be responsible assuming the watering responsibility.

**Some Specific Strategies and Actions...**

**STATUS**

- |   |                         |
|---|-------------------------|
| • Continue to provide two water trucks and operators dedicated to tree watering from April through November each year | <i>Complete Ongoing</i> |
| • Hire contractors to meet watering demands as resources permit   | <i>Ongoing</i>          |
| • Incorporate deep root watering and monitor  | <i>Incomplete</i>       |

effectiveness	<i>Scheduled for 2013</i>
• Use non-potable water source whenever possible	<i>Complete</i>
• Incorporate hand and automatic irrigation where and when feasible	<i>Complete Ongoing</i>
• Use different planting methods and plant size to shorten establishment period	<i>Complete Ongoing</i>
• Annual update of watering schedule (map) to meet this goal	<i>Complete Ongoing</i>

**GOAL 3: Assess and report on the Town's liability related to tree risks and clearance conflicts**

➤ to facilitate mitigation and reduce maintenance costs

**Target Issues**

- ✓ *High risk trees*
- ✓ *Clearance conflicts*
- ✓ *Reducing liability and documenting its progress*
- ✓ *Trees along river valley pathway*

There are two main types of liabilities with the Okotoks urban forest.

1. High risk trees – trees or tree parts that are situated where a failure may cause significant damage or injury are the biggest concern.
2. Tree clearance conflicts - associated with pedestrians, vehicles, buildings, amenities and utilities. Mitigating street clearance conflicts for regular street cleaning for river health is especially important in achieving environmental objectives

**Some Specific Strategies and Actions...**

**STATUS**

• Include in operating budget each year to assess and mitigate hazard trees within the urban forest	<i>Complete</i>
• A cyclic schedule to be updated annually and carried out to address both tree/sidewalk and tree/street clearance conflicts	<i>Complete Ongoing</i>
• Provide an annual report on the status of mitigated issues for both hazard trees and clearance issues	<i>Complete Ongoing</i>

**GOAL 4: Revise and update existing urban forest database**

➤ to accommodate inventory objectives and the production of work orders and progress reports

**Target Issues**

- ✓ Working database

Although a database is currently used to record the activities related to the urban forest it will need to be reviewed and updated. The database should accommodate data for generating work orders, preparing budgets, and summarizing facts about the urban forest inventory.

**Some Specific Strategies and Actions...**

**STATUS**

• Update and expand database accordingly to accommodate objectives for inventory program and	<i>Incomplete In progress</i>
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work order generation.	
<ul style="list-style-type: none"> <li>Enter all new data about the urban forest, with follow-up timelines such that work activities and urban forest goals can be monitored and completed.</li> </ul>	<i>Incomplete</i>

**GOAL 5: Update inventory of the Town’s manicured urban forest once every Seven years**

➤ *in order to develop and carry out a cyclic pruning and maintenance program*

**Target Issues**

- ✓ *7 year cyclical inventory program*
- ✓ *Information to be obtained from developers*
- ✓ *Database to be created and updated*

An inventory can provide a significant amount of data about the urban forest such as tree count, age structure, species diversity, state of health of the urban forest (such as dead and diseased trees), and tree value and appreciation. Once collected this information helps with prioritization of maintenance schedules to reduce potential liabilities. A one time inventory of a forest is not going to remain useful for more than just a few years because as trees grow and change, they are susceptible to damage from weather, pests, and disease and the information becomes invalid. The urban forest inventory program must be an ongoing, updatable program.

Answers to the following questions may help us with proactive management planning we wouldn’t otherwise be able to achieve.

- How many trees are scheduled to be pruned next year, two years from now, three?
- How many trees can we estimate will need replacing in the next few years?
- With so many new trees being planted in a relatively short time span, are we going to have too high a proportion of tree risks and replacements 30, 40, 50 years from now? How can we alleviate this problem?
- How many tree species do we have in Okotoks and what is their percent composition of the entire tree inventory? What is the average tree diversity for other municipalities in our zone?
- How many trees do we have in parks, boulevards, cemetery, natural areas, naturalized areas, the River Valley, on private land? How does Okotoks compare to other municipalities of similar size? Is our 2:1 replacement strategy a good strategy?
- What is the current value of our urban forest? How does it appreciate in time?
- What is the current tree canopy coverage in the Town?

Some Specific Strategies and Actions...	STATUS
<ul style="list-style-type: none"> <li>Collect similar urban forest data from the Town’s Landscape Inspector on new additions to the urban forest</li> </ul>	<i>Complete Ongoing</i>
<ul style="list-style-type: none"> <li>Update database regularly with new inventory data</li> </ul>	<i>Complete Ongoing</i>

**GOAL 6: Prune one fifth of the Town's manicured urban forest each year**

➤ to ensure high risk trees and clearance conflicts are mitigated as well as pruning for disease, damage and form

**Target Issues**

- ✓ Pruning prioritization
- ✓ Database maintenance
- ✓ Target locations vs. species

Pruning is a critical component in maintaining the health and structure of the urban forest. Pruning trees properly helps to

- reduce tree risks,
- reduce damage from weather,
- control insects and disease,
- improve aesthetics, and
- increase property values

By establishing a cyclic pruning program, every tree can be regularly inspected and proactively maintained. A pruning cycle can vastly improve the condition and aesthetics of a large number of trees in a relatively short time frame. Pruning cycles may range from 3-7 years where shorter cycles are on higher profile areas, younger trees and pest and disease control.

Regular pruning and maintenance on trees will help encourage respect of the urban environment and promote environmental stewardship.

**Some Specific Strategies and Actions...**

**STATUS**

• Target species with serious pests and diseases	<i>Complete Ongoing</i>
• With priority on hazard trees and conflict issues first, prune one fifth of the manicured urban forest each year	<i>Complete Ongoing</i>
• Update database after pruning is complete and schedule next pruning/maintenance event.	<i>Complete Ongoing</i>

**GOAL 7: Maintain tree removal, replacement, and planting objectives**

➤ *in order to create measurable goals to monitor and report on the status of the urban forest*

**Target Issues**

- ✓ Increase species diversity
- ✓ Natural areas management
- ✓ Address issues with resident-planted trees on public property
- ✓ Maintain inventory by replanting equal to or greater than the urban forest's mortality rate

Maintain Urban Forest Management Plan replacement planting strategy of 1:1 on trees < 15cm dsh and 2:1 on trees > 15cm dsh. Note: dsh = diameter at standard height and standard height = 4.5 ft. or 1.36m as referenced in the *Guide for Plant Appraisal* (9th edition, 2000). The following planting priority is used for determining tree replacement locations:

1. The location from which the tree(s) were removed if possible
2. Adjacent public lands within the same community
3. Trees on public boulevards in front of resident properties
4. Boulevards and medians on main roads
5. Special requests or projects
6. Town facilities
7. Other public lands within Okotoks
8. Natural Areas and Naturalized Areas
9. School Naturalization Projects

Broad species diversity is the best defense against loss of trees from disease and environmental factors such as drought conditions. As developers tend to plant large quantities of a few species, it may be wise to identify species which are already too prominent in Okotoks and request developers to minimize their use in future developments.

Natural Areas & Naturalized Areas deserve special attention when it comes to urban forest management. Public education also plays a key role about natural areas management and appropriate use of those areas.

Up until March 2008, residents have been permitted and even encouraged to plant trees, shrubs, and flowers in parks and on other public lands. Landscape Agreements were developed to address the location, planting specifications, species types, and identify residents' responsibility of maintenance of these plantings.

Residents have been able to submit receipts for their cost of materials and receive tax receipts for their donations. To date there are 60 landscape agreements and many more locations of resident plantings without such agreements.

Although the benefit of gaining more plant material on Town property is clear, there are many concerns surrounding resident plantings, such as:

- liability related to underground utilities
- planting of fire break strips
- application of fertilizers, herbicides, and pesticides by residents on public property
- potential damage to park irrigation systems
- maintenance expectations & mower clearance
- encroachment and pruning (timing and quality)



- change in ownership of home where landscape agreement was initiated and new owner not assuming the maintenance responsibilities.
- the appearance and theme of the park (residents extending their “yard” into the park).
- the removal of inappropriate plantings would undoubtedly be bad public relations.

Many resident plantings, especially those without Landscape Agreements, are spread out in many small tree wells or planted directly in the turf creating an enormous amount of labor for mowing and trimming. The Town or Town’s contractors often have assumed this maintenance or have been requested to do so.

For these reasons, it can be concluded the concerns outweigh the benefits of resident plantings. It is recommended no new landscape agreements are created except in special cases. Exceptions may include residents who plant trees, shrubs, and flowers in Town-prepared beds that have space for more plant material. Unless the community is benefited by the plantings, tax receipts should not be issued.

<b>Some Specific Strategies and Actions...</b>	<b>STATUS</b>
<ul style="list-style-type: none"> <li>• Update developer specifications for increasing tree species diversity for both manicured and natural areas</li> </ul>	<i>Complete</i>
<ul style="list-style-type: none"> <li>• Increase diversity with Town-planted trees for all plantings possible</li> </ul>	<i>Complete Ongoing</i>
<ul style="list-style-type: none"> <li>• Discourage resident plantings on public lands by not offering new landscape agreements and associated tax receipts, except in specific situations. For existing landscape agreements, prepare and send letters reminding residents of their maintenance responsibilities.</li> </ul>	<i>Complete Ongoing</i>

**GOAL 8: Enhance public education and respond to public inquiries in a timely manner**

- to promote interest and increase knowledge about tree health care

**Target Issues**

- ✓ Public education
- ✓ Timely response to inquiries

Encouraging public involvement is an important component of managing the urban forest. By gaining the interest and respect from the Town’s residents, the forest has extra eyes watching over it for its overall health and protection. Supporting the objectives of “Sustainable Okotoks,” public involvement also has a significant impact on reducing vandalism and identifying diseases and liability hazards.

Following up on public feedback in a timely and consistent manner demonstrates respect for the urban forest and rewards citizens for taking an active interest. In addition, this correspondence provides an avenue to educate the public about urban forest health.

Some Specific Strategies and Actions...	STATUS
<ul style="list-style-type: none"> <li>• Continue to respond to all public feedback within two business days in a courteous manner and with the focus on education through the Horticulture Hotline and Town web site</li> </ul>	<p><i>Complete</i> <i>Ongoing</i></p>
<ul style="list-style-type: none"> <li>• Contribute additional articles to horticulture column in Western Wheel</li> </ul>	<p><i>Complete</i> <i>Ongoing</i></p>
<ul style="list-style-type: none"> <li>• Provide a pruning course for residents</li> </ul>	<p><i>Complete</i> <i>Ongoing</i></p>

**GOAL 9: Facilitate community involvement in both the public and private urban forest**

- to promote interest and increase knowledge about tree health care

**Target Issues**

- ✓ Community involvement

Various opportunities exist to involve individual volunteers or community groups in urban forest related activities such as tree planting, mechanical weed control, tree protection from beavers, and pest and disease watch.

Community involvement is a great way to instill pride in residents, encourage interest in environmental stewardship, and encourage support for “Sustainable Okotoks.”

Some Specific Strategies and Actions...	STATUS
<ul style="list-style-type: none"> <li>• Each year involve at least two community groups in events that compliment the goals and objectives for urban forest management.</li> </ul>	<p><i>Complete</i> <i>Ongoing</i></p>

**GOAL 10: Develop a tree preservation and protection policy**

- to minimize damage and/or recover costs for tree replacements

**Target Issues**

- ✓ Recovering replacement costs
- ✓ Tree protection policy awareness to Town business teams, developers and residents

As trees add significant value to property, it is necessary to protect them from likely damage or ensure costs for damage or replacement are recovered whenever possible.

Construction projects and other events likely to interfere with trees should be proactively monitored to ensure workers respect adjacent trees. In some cases, temporary fencing may assist to prevent damage to canopy or compaction of soil.

Some Specific Strategies and Actions...	STATUS
<ul style="list-style-type: none"> <li>• Set guidelines for construction activities.</li> </ul>	<i>Incomplete In progress</i>
<ul style="list-style-type: none"> <li>• Determine policy for damage or replacement costs for street trees from vehicles.</li> </ul>	<i>Complete</i>
<ul style="list-style-type: none"> <li>• Develop system to review development impact on trees</li> </ul>	<i>Complete Ongoing</i>
<ul style="list-style-type: none"> <li>• Incorporate Tree Protection Plans</li> </ul>	<i>Complete Ongoing</i>

**GOAL 11: Maintain cyclic mulching and weeding program**

- to ensure maintenance of tree and shrub beds is kept up

**Target Issues**

- ✓ Mulch and weed programs
- ✓ Edge mulched beds and tree wells

Mulch significantly improves moisture retention in soil and suppresses weeds allowing trees and shrubs to have the best opportunity possible to be healthy and strong in the arid Okotoks environment. Trees that receive adequate moisture not only grow faster and with better form, but are more resilient to pests and disease.

For tree establishment, a program is needed to continue mulching tree and shrub beds that have never been mulched and also to refresh existing mulch beds as required. Applying mulch is also a great way to suppress weeds; however, weeds will eventually find their way. A regular weeding program of mulched beds is necessary. Phase out adding mulch to established beds when trees and shrubs are creating their own mulch through leaf drop and weeds are being suppressed.

Some Specific Strategies and Actions...	STATUS
<ul style="list-style-type: none"> <li>• Proposed to budget a program to create more mulch beds where necessary to improve plant health care and refresh mulch as required.</li> </ul>	<i>Complete Ongoing</i>
<ul style="list-style-type: none"> <li>• Incorporate regular weeding program into maintenance requirements and contracts.</li> </ul>	<i>Complete Ongoing</i>
<ul style="list-style-type: none"> <li>• Incorporate regular edging program</li> </ul>	<i>Complete Ongoing</i>

**GOAL 12: Manage serious pests and diseases**

- to reduce mortality and minimize tree replacement costs

**Target Issues**

- ✓ Increase tree species and age class diversity
- ✓ Use an Integrated Pest Management approach to controlling pests and disease

To control pests and disease in the Okotoks Urban Forest, it is recommended that Integrated Pest Management (IPM) practices are utilized. IPM practices include the use of physical, biological, chemical, and cultural practices. Chemical practices such as pesticide applications may be necessary to control certain pests. Cultural practices such as watering, mulching, pruning, increasing tree species and age diversity can be significant in helping tree populations resist insects and disease.

Many insects prefer a specific host tree species and increasing species diversity can reduce the mortality rate if a serious pest becomes too difficult or costly to control. Planting smaller trees and understory planting helps to generate different age classes. As insects and diseases commonly target older weaker trees, planting smaller trees with low installation and maintenance costs is often beneficial. This helps ensure the next succession (generation) forest is ready to emerge once the older trees decline.

**Some Specific Strategies and Actions...**

**STATUS**

- Complete and utilize the Town’s IPM plan to incorporate pest and disease management in the urban forest
- Incorporate species and age diversification through Town and developer plantings
- Target tree species with serious insect and disease susceptibility

*Complete  
Ongoing*

*Complete  
Ongoing*

*Complete  
Ongoing*

**GOAL 13: Develop specific management strategies for conservation areas and other natural areas**

- to protect, maintain, and re-establish healthy native or naturalized areas within the urban community

**Target Issues**

- ✓ Incorporate River Valley Management Plan
- ✓ Create management plan for other areas

Natural areas increase the health and vigor of adjacent natural parkland ecosystems and support native wildlife and beneficial insects by providing habitat, buffers to urban areas, and corridors. Natural areas in Okotoks include the Sheep River Valley, storm water management facilities, and various escarpments and ravines. These areas are both ecologically valuable and aesthetically beautiful and deserve utmost care and attention to protect and maintain. Land disturbed by natural or unnatural events within these should be priority to re-establish native vegetation.

**Some Specific Strategies and Actions...**

**STATUS**

Some Specific Strategies and Actions...	STATUS
<ul style="list-style-type: none"> <li>• Maintenance and management of the public urban forest within the river valley management area is to follow the Okotoks River Valley Management Plan</li> </ul>	<i>Ongoing</i>
<ul style="list-style-type: none"> <li>• Only native or hardy non-invasive plant material is to be added to natural areas including grasses, forbs, shrubs, and trees.</li> </ul>	<i>Complete Ongoing</i>
<ul style="list-style-type: none"> <li>• Nuisance, noxious, and restricted weeds are a priority to control and remove from natural areas.</li> </ul>	<i>Ongoing</i>
<ul style="list-style-type: none"> <li>• Educate Town residents about appropriate and inappropriate use of natural areas via local newspaper twice per year</li> </ul>	<i>Complete Ongoing</i>
<ul style="list-style-type: none"> <li>• For the wildlife refuge, storm water pond areas, and all other natural and naturalized areas on public lands within Okotoks, create maintenance specifications for trees and shrubs with a focus on hazardous and invasive plants.</li> </ul>	<i>Incomplete In progress</i>

## References

Council of Tree & Landscape Appraisers. 2000. *Guide for Plant Appraisal (9<sup>th</sup> ed.)*. Champaign, IL. p. 45.