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Urban Forest Standards

The Town of High River recognizes that trees are important for their aesthetic and environmental contributions to our neighborhoods. Through policies, procedures and best management practices the town will ensure that there is a safe, healthy and diverse urban forest to enjoy for generations to come.

Tree Protection Policy

Policy Statement:

The Town of High River (the “Town”) is committed to maintaining and managing the quality of trees within the Town. The Town’s primary concerns are the impact of private development, construction, and general public use on the quality and quantity of trees on Town property and the overall impact any reduction in the number of trees within the Town will have on the health and wellbeing of the Town’s citizens.

The Town will maintain a comprehensive tree management program that will include:

1. Planting new trees
2. Monitoring the condition of trees on Town property; and
3. Seeking out alternative solutions to removing trees that hinder infrastructure or development projects.

Purpose

This policy is intended to provide a framework for the Town of High River’s Parks and Recreation Department to manage and maintain trees on Town property.

Parks and Recreation Department Responsibilities

The Parks Division, its staff and contracted firms are responsible for monitoring and ensuring the provisions of this Policy are followed.

The Parks Division shall develop tree planting plans on an annual basis that will detail the number and areas where new trees are to be planted in the Town. The tree protection plan budget will be presented to Council prior to implementation as per the Tree Protection Policy # 4223/2009.

Tree Protection Bylaw

Bylaw serves to protect and preserve Town owned trees

With the increase in development and construction activities occurring in High River, the Town has in place a bylaw that ensures that trees on town property are protected.

The bylaw prohibits:

- Cutting, removing, moving or pruning of Town trees
- Penetrating the bark or attaching any object or sign to trees on Town land
- Planting trees on Town land
- Spraying trees with any substance except water
- Attaching electrical cords or other objects to trees
- Unauthorized entry or interference with a Tree Protection Zone

The Parks Division can be contacted to verify if a tree is town owned. A Tree Protection Plan is required when development occurs within six meters of town owned trees.

The Town of High River is committed to maintaining and managing quality trees. This includes planting new trees, monitoring the condition of trees on town property, and seeking out alternate solutions to the removal of trees that hinder infrastructure or development projects.

Failing to follow the Tree Protection Bylaw # 4223/2009 can result in damage to the tree and could result in fines. A complete copy of the bylaw can be viewed online at www.highriver.ca by clicking on Bylaw & Policies under the Town Hall menu.

Tree Planting

Whether replacing a tree or planting to increase tree canopy a number of site considerations are looked at before choosing a tree species.

- Available growing space- Above ground/ below ground/ at ground level(distance to pavement)
- Light- daily sun-shade pattern
- Wind-daily and seasonal patterns
- Soil-Structure and texture/ drainage/ph.
- Surface cover-turf/mulch
- Irrigation water-quantity/quality
- Management-road salt used/pest control available
- Use-Litter problematic/Honeydew and other residues/ allergenic/invasiveness/high canopy needed?

Once the location has been evaluated and species chosen, trees are ordered from a certified Tree Nursery. This certification ensures that the nursery produces plants that meet high phytosanitary standards that are plants that are completely free of all regulated pests and substantially free from all other insects and diseases.

Once new trees arrive they are inspected to ensure they meet criteria for size and quality. Trees are inspected for the following characteristics:

- True to type
- A well developed, healthy root system without kinked or circling roots
- Height to trunk caliper ratio adequate to support the crown without staking
- Adequate and well-developed taper

- Good vertical and radial branch distribution
- Good vigor, as indicated by foliage size and color; branch size and color
- Free of injuries and wounds
- Free of pests and disease

During planting trees are inspected to ensure proper planting hole size, planting depth and removal of top 1/3 of wire basket. Trees are watered within 24 hours of planting and mulch is placed within the drip line of each tree to a depth of 3 to 4 inches. Staking trees is not recommended but where it is necessary must be removed after the first growing season.

Tree Watering / Fertilizing

New trees are watered and fertilized for two seasons. After the first two seasons, the new plantings are assessed and may be watered and fertilized for another season if it is determined the tree would benefit from this in order to become established. Extension of care may be due to location or growing conditions. In some cases an established tree may be added to the list if it is in distress due pests, disease or construction damage, etc.

Tree Removal

At times it is necessary to remove a tree:

- To create a safe urban forest environment by removing trees that pose a threat to persons or property.
- To assist in maintaining the health of the urban forest by managing tree diseases and pests through the removal of hazard, infected or nuisance trees.
- To accommodate civic or private development projects by removing trees that impede the development.
- To facilitate public maintenance by removing trees that impede on-going access or interfere with maintenance work.
- To protect motorists and pedestrians by removing trees that obstructs sight-lines.
- To remove trees that have been severely damaged by a storm, fire or other natural or man inflicted causes that have the potential to become dangerous trees.

The Parks Division is responsible for determining if a tree on public land is a dangerous, obstructing or structurally damaged tree.

All trees considered for removal will be assessed by a Parks Division designate to determine if it meets the tree removal criteria. Those trees that meet the criteria will be scheduled for removal.

Public trees may be removed only when one or more of the following criteria apply:

- 1) The tree is infected with an insect pest or tree disease that could cause an epidemic and removal is the recommended action to prevent transmission.
- 2) The tree is dead or suffering from major decay which cannot be treated successfully

and is therefore susceptible to DED or poses a threat to public safety or property.

- 3) The tree poses a threat to persons or property which cannot be corrected by pruning, transplanting or other treatments.
- 4) Removal of the tree is required to accommodate private development or civic projects such as sewers, roadways, utilities or buildings and there is no cost-effective alternative to save the tree.
- 5) Removal of the tree is required to mitigate conflicts such as the obstruction of motorist or pedestrian sight-lines; roof damage to buildings; sidewalks or underground water or utility lines; or interference with overhead utility lines or public maintenance work; and there is no cost-effective alternative to save the tree.
- 6) The tree has been severely damaged in a storm, fire or other natural or man inflicted cause, and there is no possibility of repairing it.
- 7) The tree interferes with the growth and development of a more desirable tree.

In those cases where the Town receives a request for the removal of a tree on public land that is not a hazard, infected or nuisance tree; a Parks Division designate will conduct a site assessment to determine if removal is the preferred option. As per the Town's Tree Protection Bylaw the town may require compensation for the removal of the tree which could include removal costs and replacement tree. Where necessary the Parks Division Designate will appraise the tree using methodology from Council of Tree and Landscape Appraisers "*Guide for Plant Appraisal*" most current edition published by the International Society of Arboriculture.

***Trees and sewer lines- If roots are found to be a problem in sewer lines property owners must first contact a plumber and then the Town of High River Utilities Department. Roots in lines are usually due to age, cracked or split lines that allow for penetration of roots and removal of nearby trees will not correct the problem.**

Tree Replacement

It is the Town of High River's policy to replace trees on a 1:1 ratio. When removals take place a replacement tree is planted in the same area if utilities allow. If a replacement tree cannot be planted in the same area the replacement will be planted in an area of town with a lower tree population.

Tree species are chosen based on suitability for the region and pest and disease resistance. Consideration is given wherever possible to incorporate native tree species into parks and green spaces. The "right tree in the right place" is a philosophy that has been adopted by the town to ensure that trees will not pose issues to overhead or underground utilities from time of planting to maturity.

A mixed population of tree species is important in established and new developments to avoid the creation of monocultures which aids in the control of pest and disease infestations. Age diversification is also important in maintaining an urban forest for the future.

Selection of tree species on any given year may change if a pest or disease becomes prevalent within the town. This may require the removal of certain tree species from the town's approved tree species list in order to control infestations in the future.

Insect/ Disease Control and Monitoring

Monitoring is regular inspection of trees for insect, disease and cultural problems. This assesses the severity of tree problems but determines if control measures are needed.

Determines the following:

- Does the problem threaten the life of the plant?
- Can it predispose the plant to a secondary stress?
- Does the problem affect only the tree's appearance?
- Is control treatment required?

Control treatments

5 Major groups

Regulatory – Implemented by government agencies and can include restricted movement of firewood or mandatory removal of susceptible plants in an effort to halt the dispersion of a pest. Communication with governing agencies is maintained in order to monitor for potential threats to the urban forest.

Genetic – Commonly reflected as the resistance or susceptibility of a species or cultivar. An example is Schubert Chokecherry and Mayday trees that are susceptible to Black knot. This disease is prevalent within the town and requires a diligent annual pruning program or the planting of alternative species not prone to this disease. Genetic controls also exist within cultivars of the same species. The 'Thunderchild' cultivar of crabapple is an example of an ornamental that is chosen predominantly due to its resistance to fireblight compared to other crabapples.

Biological – Employs natural enemy organisms that feed on pests. An example would be the Lady Bird Beetle that will feed on aphids.

Cultural – Focus on creating conditions that favor the tree over the pest. Maintaining healthy trees with a watering and fertilizing program is beneficial as is the selection of pest free plants. Pruning at appropriate times and disinfecting tools are examples of routine maintenance practices that can be critical in controlling pests and disease. The integration of diverse tree species avoids the creation of monocultures which can lead to devastating outbreaks during pest and disease infestations.

Chemical – The application of pesticides to either kill or prevent reproduction of pests and diseases. This is generally done when the pest is present and the tree's health is at risk. Application of chemicals will only be performed by Licensed Pesticide Applicators.

Tree Pruning

Tree pruning is a significant maintenance practice that not only influences a tree's health and structure but also sets the visible standard for the public to follow. Pruning standards are set by the International Society of Arboriculture *Best Management Practices: Tree Pruning* publication. These practices set the stage for expectations and describe several types of pruning such as raising, thinning, reducing, restoring or structural pruning. Whatever the case, pruning should be limited to removing no more than 25 per cent of the crown in any one year.

Objectives for pruning can include the following:

- Reduce the risk of failure by cleaning of dead, diseased and otherwise structurally unsound limbs.
- Provide clearance to stop signs, street lights and other visual obstructions.
- Provide clearance for pedestrians and vehicles.
- Reduce the risk of failure by lessening the length and weight of long, horizontal branches.
- Develop good structure by subordinating branches that are competing with the central leader.
- Restore good structure to trees that were damaged by extreme weather events.
- Maintain health by removing infestations of pests, i.e.: Ash bark beetle.

Practices that are not permitted:

- Topping
- Removing 50 percent of the foliage
- Tipping back all branches

To achieve appropriate pruning results either removal or reductions cuts shall be made. If removal is necessary then the entire branch will be removed to its point of origin. The final cut should be made outside the branch collar. Where reduction cuts are to be made, a limb is shortened to a branch of similar or smaller size. The lateral must be at least one-third the diameter of the limb being removed.

Pruning cycle – The town's main objective is for young trees to develop good structure. Regular pruning establishes a strong overall structure to the crown and creates small wounds. Building a foundation early in a trees' development will reduce the need for corrective pruning.

Pruning requirements are based on the age of tree which determines different procedures for pruning and the desired end result.

Young trees

- Pruned after first growing season
- Removal of dead, broken or diseased branches
- Prune for structure where necessary

End result – Good radial and vertical branch distribution that is free of dead, diseased or broken branches. Develops dominant leader and removes or subordinates competing stems and branches resulting in less need for corrective pruning as the tree matures.

Medium/ Large Trees

Structural

- Remove dead, broken, diseased and dying branches and/or limbs
- Competing stems and branches are subordinated or removed
- Subordinate co-dominant stems so that one leader dominates
- Canopy height of 8' over sidewalks and pathways and 16' over any roadway
- Prune to ensure well balanced, true to form canopy
- Epicormic growth on trunk is removed

End result – Tree is well balanced, free of deadwood, defects and/or hazards.

Clean

- Removal of dead, diseased or broken branches and/or limbs greater than 1" in diameter

End result – Tree is free of dead, broken, diseased branches and/or limbs.

Raise

- Raise the canopy to allow for clearance of 8' over sidewalks and pathways and 16' over any roadway
- Removal of epicormic growth on trunks to a height of 10'

End result – Clearance for pedestrian and vehicle traffic.

Reduce

- Reduce limb length and end weight
- Reduction cuts to reduce heavy foliage where potential for breakage exists

End result – Balanced canopy providing clearance and /or reducing likelihood of breakage of limbs.

Restore

- Remove branches and/or limbs, sprouts and stubs that have been vandalized, broken in a storm or otherwise damaged
- Re-form a more natural appearing crown
- Prune to balance canopy while ensuring no more than 25% removal of live foliage
- Sprouts are selected to become permanent branches by shortening sprouts, removing others and leaving some untouched

End result – Improves tree's structure, form and/or appearance.

Utility Line Clearance – The town maintains open communication with utility line clearance contractors. These contractors are responsible for maintaining minimum distance for clearance between lines and vegetation. Although utilities take precedence over trees, efforts are made to reduce the need for line clearance either by removing troublesome trees or ensuring the correct species is planted where utility lines exist.

Elm Pruning

At present Alberta has the largest Dutch elm disease free American elm stand in the world.

For this reason the Town of High River is diligent in following rules and regulations set out by the province. Elms are not to be pruned between April 1 and September 30. Elm bark beetles (EBB), the vectors of DED are active between these dates and can be attracted to the scent of fresh cuts, possibly infecting a healthy tree. Once an elm is infected with DED it will die within a year.

Pruning Elms is permitted from October 1 to March 31. This will include preventative pruning which involves removal of dead, damaged or diseased branches from healthy elm trees to eliminate breeding material for the EBB's. Healthy trees will also aid in the control of this disease.

Proper pruning techniques performed by qualified personnel are essential in maintaining a healthy Elm population. Disinfecting tools and properly disposing of Elm wood either by chipping or landfill is an important practice that will also aid in preventing this disease. Public education is utilized through Town of High River publications advising residents when it is permitted to prune or when the pruning ban is in effect.

Tree Risk Assessment

Risk assessment is a critical tool in maintaining a safe and healthy urban forest.

Assessments are performed to maintain the safety of public property from potentially hazardous trees and to aid in the scheduling, prioritizing and budgeting of tree maintenance within the town. Since budgeting can limit the number of trees removed, priority shall be given to those trees with a higher risk rating. The standard for rating the hazard of a tree will be the International Society of Arboriculture's 12 point rating system.

Trees with possible issues are placed on a town list with an initial priority rating between 1 and 3, with 1 being highest priority. Trees are placed on the list when concerns are raised regarding health, structure, construction damage etc. and will require annual monitoring. Most assessed trees will be mature trees with possible defects due to:

- Poor maintenance practices (i.e. Topping)
- Age
- Species
- Construction
- Location

Trees placed on the initial priority list that are rated a 1 will be thoroughly inspected by the Town arborist with a 360 degree ground level inspection.

The inspection evaluates key areas:

- Tree characteristics - Species, age, pruning history
- Tree health - Vigor, foliage color/density
- Site conditions - Site character, landscape type, irrigated, recent soil disturbance
- Target - use under tree, can target be moved, occupancy
- Tree defects - root condition, potential for root failure, lean
- Crown defects - roots, trunk, scaffolds, branches

Once key areas have been evaluated a rating is assigned to the tree. During the inspection it will be determined whether the hazard can be mediated through pruning, moving target or possible removal of tree. As trees are removed from the list other trees are added or moved up the priority list.

The arborist will collect and record assessments and will then prioritize and schedule tree maintenance within the budget set by council.

Tree Appraisal

Trees are important for their beauty, interaction with other organisms and spiritual contributions to people.

Plant appraisals are used for various reasons:

- Settlement for damage or death of plants
- Loss of property value
- Establishing value of plants that may be damaged during construction
- Proactive reasons- educate clients and justify additional costs for featuring or saving trees
- Ongoing comprehensive inventory to establish and justify budget requests for maintenance, removals and new plantings
- Negotiate variances to zoning or building codes to help save trees

Appraisals can be as diverse as plants themselves. The practice of plant appraisal and studies has provided methods to value plants in monetary terms. Trees provide architectural, engineering, esthetic uses which can include screening objectionable views, erosion control, softening architecture, and attracting birds or animals etc. One of the most important functions is climate control involving wind control, sun control, precipitation, humidity and temperature.

Where a situation exists as to whether a tree is worth preserving, the town arborist will conduct a tree appraisal using methodology from Council of Tree and Landscape Appraisers "*Guide for Plant Appraisal*" most current edition published by the International Society of Arboriculture.

Once the appraisal has been completed, the tree will be assessed for age, species, condition, and once all factors have been considered a decision will be made regarding tree preservation.

Tree Inventory

A tree inventory is a listing and description of trees and planting sites and is a powerful management tool for maintaining the urban forest.

Information gathered includes:

- Address
- Species
- Size
- Condition
- Hazard potential
- Necessary maintenance

Tree inventory can be used for the following:

- Provide an overview of ages, types and condition of trees
- Aids in developing a maintenance schedule on a solid basis
- Able to set priorities for pruning and removal work
- An excellent tool for budget planning
- Supplies guidelines for new tree selection

The tree inventory process involves the use of a free software program called I-tree developed by the USDA Forest Service. The process involves having an individual using a hand-held data collection device going to all town sites and inputting all predetermined information on each tree. Once data has been collected it is downloaded to the I-tree program at which time a report is produced. The program analyzes and assesses the information gathered.

Items included in the report:

- Species-size-condition rating
- Species-percentage-dead/dying/poor/fair/good
- Recommended maintenance by species
- Priority tasks- size-species
- Removals
- Species percentage in the Urban forest
- Provides a replacement value by species and size

The report provides information important for budget development and the sustainability of the urban forest for future generations. It can also be used for monitoring changes in forest composition and values of the tree population. The final report provides information on the diversity of tree species which can aid in identifying possible threats of pest or disease on various species of trees. This allows for the development of species diversification to avoid the potential for monocultures which can be devastating to the tree population during pest or disease outbreaks.

The Town conducted a tree inventory of George Lane Park in 2012 and is in the process of conducting an inventory of all streets and green spaces within the town beginning in 2014. The information gathered will be important in providing a value to the trees and guide management in maintaining and sustaining the urban forest for future generations.

Arboriculture Practices

Proper tree care is an investment that can lead to substantial returns. Well cared for trees are attractive and can add considerable value to a property. Poorly maintained trees can be a significant liability.

Pruning or removing trees especially large trees can be dangerous work and should be done only by those trained and equipped to work safely in trees.

During any tree care operations there are standards set by the American National Standards Institute that is adhered to. Since there are no Canadian national standards arborists rely on these standards. The International Society of Arboriculture has developed best management practices to accompany these standards which provide urban foresters with effective methods of standard application. They provide safety standards for workers engaged in pruning, repairing, maintaining or removing trees.

In addition to following these best management practices it is also important to have an International Society of Arboriculture Certified Arborist on site during any tree care operations. This ISA certification is a nongovernmental, voluntary process by which individuals can document their base of knowledge. It operates without mandate of law and is an internal, self-regulating device administered by the ISA. Certification provides a measurable assessment of an individual's knowledge and competence required to provide proper tree care.

Whether tree care operations are performed in-house or contracted out the use of these best management practices and qualified individuals will ensure safe and proper care of the urban forest.

Tree Transplanting/Relocating

It is the town's policy to consider alternative methods to tree removal during construction projects and or other cases where a tree's preservation is in jeopardy. Transplanting is one alternative that has been practiced throughout town.

Certain criteria must be met before a tree can be considered for transplanting:

Species – Some species transplant easier than others. Ash, Elm, Poplar, Willow and Crabapple all transplant easily where the Oak species is more difficult to successfully transplant.

Size – Smaller trees are easier to transplant where large trees are more difficult due to the larger root system and will take longer to reestablish than a younger tree. General rule is root ball must be 10 inches in diameter for every inch of trunk diameter.

Quality – Tree must be healthy, structurally sound and attractive and include the following

- Symmetric and well-formed crown
- Good foliage size, density and color
- Normal growth
- Good branch structure
- Free of wounds, decay, pests and disease

Site condition – Is the tree accessible for transplanting equipment.

New site – Is the site appropriate for species. Site should be similar to transplanting site. I.e.: a tree grown in a sheltered area should not be planted in an exposed, windy area. Site should accommodate the larger planting space required and bigger canopy of transplanted tree.

Tree spades are the preferred method of transplanting and should be appropriate size for tree being moved. Once tree has been moved to new site backfill soil should be placed around root ball ensuring there are no voids or air pockets present, adding water while backfilling will aid in this. Tree should be watered after backfilling and should be on a regular watering schedule for 1 to 2 growing seasons. The addition of 3 to 4 inches of organic mulch within the drip line will reduce water evaporation, reduce weed competition and provide an organic source that will improve soil composition.

The application of a water soluble fertilizer appropriate for new plantings will have more phosphorus and potassium present that will aid in root establishment. This should be applied in the spring and fall for two growing seasons.

Staking is not recommended but if it is necessary, it should be removed after the first growing season.

Memorial Trees

The Town of High River has a Memorial tree program in place which allows residents to choose a tree and location for it to be planted. The program was started in 2010 and allows residents to commemorate a loved one or special occasion by purchasing a tree. Trees are chosen from a preapproved list and can then choose between two locations in town where they will be planted. Plaques to commemorate the occasion are placed on a sign located within each park. The cost for the tree covers the tree, planting, plaque and maintenance of the tree. As of 2014 approximately fifty trees have been planted between these two locations.

George Lane Park

In February and March 2012 a tree inventory was conducted in the park. Each tree had information recorded including GPS coordinates, diameter, species and condition. In total 1412 trees were recorded. Any trees that required a more detailed inspection were flagged for further assessment. 59 trees had hazard assessment performed with 35 being listed as priority removals.

Some interesting statistics:

- 88%- *Populus* species
- 561 require pruning
- 52% are 12"-24" diameter/ 12% are 24" or greater
- 967 trees provide 88% of the canopy cover within the park
- Out of a condition rating of poor, fair and good- 90% are rated good.
- These trees provide 35 acres of canopy cover

Tree assessments are performed in the spring and fall of each year to determine pruning and removal needs.

Although tree planting includes the planting of alternative species such as Elm, crabapple and Ohio Buckeye etc. efforts are made to replant native species within the park. Any construction taking place is closely monitored to limit damage to the root systems of adjacent trees. Since this park is an important asset to the town every effort is made to maintain its natural beauty through a comprehensive tree maintenance plan.

New Development

The urban forest is an important item to consider when developing new neighborhoods. Tree selection and tree placement are one of the key areas that are evaluated when plans are presented. All areas of the Urban Forest Standards are implemented to ensure a healthy addition to the Town of High River's urban forest.

Natural Areas

Natural areas are characterized as undisturbed sections of land that could be defined as riparian areas, wetlands, river valleys, grasslands, fields or forests, but in any of the areas human intervention is low or non-existent. These areas contain a high percentage of native species and provide considerable indigenous habitat. They sometimes border developed areas or divide commercial areas from residential areas. In all cases they provide an essential environment for plants and animals to exist without human intervention. Maintenance is only performed where a hazard has been identified that could put people at risk. Efforts are made to limit any pruning or removals. Deadfall and plant litter is left undisturbed because its presence is essential in providing nutrients to the area and an ideal ecosystem for natural propagating of many plant species.

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