

City of Thornton
Parks and Forestry
Emerald Ash Borer Management Plan
January, 2014

Since its discovery in the Detroit/Windsor metropolitan area in early 2002, the Emerald ash borer has devastated ash tree inventories in over 20 states. EAB was discovered in Boulder, CO in September, 2013. The potential impact of this pest on the Thornton urban forest will be felt by residents, businesses and other entities.



EAB – Summary – Thornton, CO

- The ash tree population in Thornton is estimated at 60,000 trees - 3,000 in the parks system, another 57,000 in non-park properties.
- EAB has not been detected in Thornton.
- When EAB is positively identified in Thornton, the county will be quarantined by the Colorado Dept. of Agriculture, preventing the movement of wood across county boundaries.
- City of Thornton Forestry staff have attended several seminars and workshops aimed at identifying the signs, symptoms and identification of the EAB. Forestry is actively looking for the EAB.
- The City of Thornton Parks system has approximately 3,000 Green and White ash tree with an average size of 11.9" diameter, and average rating of .6 or fair condition (specimen = 1.0).
- The COT recommended 5 year plan includes treatment, removal and replacement of ash trees - \$1.32M. This plan deals with 1,450 ash trees. The balance of 1,500 ash trees will need to be funded outside of this plan.
- Estimated cost of tree removal 1,150 COT ash trees - \$686,900 based on 12" caliper tree (2014 contractor pricing).
- Cost of replacement 1,150 COT ash trees – \$567,600 based on a 2" caliper tree at \$450 per tree (2013 pricing).
- Estimated cost of systemic insecticide treatments for 300 ash trees – \$72,300. Treatments are advised to save specimen ash trees and stall the progress of EAB.
- Forestry staff looking at wood disposal options.

Ash trees – Thornton, CO – based on a study sponsored by the Mile High Million, it has been estimated that the city of Thornton has a tree population which approaches 390,000 trees of many species. In many other Front Range Colorado cities, ash tree populations average 15% of the total tree population. If that percentage holds up in Thornton, the number of ash trees may approach 60,000 trees. In the City of Thornton Parks system, it is estimated we have 3,000 ash trees. This could mean that there are 57,000 ash trees on private properties.



Fall color

Life cycle/biology – this pest begins its life from eggs deposited on tree bark fissures by adult EAB. The eggs hatch and larvae invades the cambium layer of the tree during the winter season. The larvae then pupate and develop into adults. It is the larvae stage that is most destructive. The EAB larvae create serpentine galleries that destroy the water conveying vessels of the tree.

- The likelihood of EAB now present in Thornton is high. In Boulder, dendrochronologists have estimated that EAB has been in the city for 3 - 4 years prior to discovery. At the time of a Thornton positive EAB discovery, the City may see a 3 – 4 year delay in trees affected to the point where removal will be necessary.

Detection and Identification

City of Thornton Forestry staff have attended several seminars and workshops aimed at identifying the signs, symptoms and identification of the EAB. Forestry is actively looking for the EAB. Suspect trees are thoroughly examined, with branches stripped down in search of the larvae

Forestry staff has divided the City into one (1) mile square inspection districts. Five branch samples are randomly taken from each district and examined.

- Detection criteria includes:
 - Sparse leaves or branches in the upper part of the tree
 - D-shaped exit holes about 1/8 inch wide
 - New sprouts on the lower trunk or lower branches
 - Vertical splits in the bark
 - Winding S-shaped tunnels under the bark
 - Increased woodpecker activity

When the EAB is discovered in Thornton, officials from Colorado Dept. of Agriculture will be notified and enlisted to collect samples of suspect ash trees.

Quarantine – with the verified identification of EAB in Thornton, Adams County would be placed under a quarantine by the Colorado Department of Agriculture. The specific language of the quarantine would be the same as described in a press release dated November 12, 2013 from the Colorado Dept. of Agriculture for Boulder County:



“The emergency quarantine prohibits the movement of all untreated plants and plant parts of the genus *Fraxinus* out of the quarantined area. This includes, but is not limited to:

EAB larvae

- Logs and green lumber
- Nursery stock, scion wood, and bud wood
- Chips and mulch, either composted or uncomposted
- Stumps, roots and branches
- Firewood of any non-coniferous (hardwood) species

Quarantined items may be transported within the quarantined area but may not be moved outside its borders without specific authorization from the Commissioner of Agriculture or the United States Department of Agriculture. Any person violating this quarantine is subject to civil penalties up to \$1000 per violation.

Residents can dispose of ash plant material at landfills within the designated quarantine area.”

Tree Inventory

Forestry staff estimates a total tree inventory at 18,000 – 20,000 trees in irrigated, improved landscapes. The tree inventory process includes examining trees and listing them by:

- specific database number

- genus/species
- size by trunk diameter
- condition (scale 0 – 1.0, 1.0 = specimen)
- actions needed (pruning, removal, watering, etc.)
- comments (tree defects noted)

To this date, Forestry staff has inventoried 4,500 trees. The inventory information collected is entered into an ArcView database. This database is then exported to a spreadsheet format where a value of each tree is determined based on a formula based on ISA (International Society of Arboriculture) standards.

Survey of Trees to Be Saved/Delayed Mortality

As a part of the on-going inventory, Forestry staff is noting ash trees that will be saved in the event of EAB arrival within the City. The criteria used in determining an ash tree's selection to be saved includes:

- an overall acceptable rating (0.7 – 1.0)
- no insect or disease present
- no mechanical damage present
- no visible tree defects present



Within the next few years and before the actual discovery of EAB in Thornton, Forestry staff will begin the process of removing ash trees, and replacing those trees, that are in poor condition. In addition, some ash trees will be treated specifically to slow the progress of EAB infestation and delay the inevitable removal of ash trees.

Treatment of Ash Trees

Based on conversations with foresters and other experts from states already experiencing EAB problems, we have learned that treatment options are somewhat limited, largely based on the size of the ash trees. Also, any ash tree considered for treatment needs to be in good health and have ability to “push” the insecticide to the furthest reaches of the canopy.

- Ash trees 8” and greater diameters – trees of this size can be injected with the active ingredient Imidacloprid, commonly marketed as Merit. This injection is proven to 90% effective in prolonging ash tree health. It must be applied every 2 years. It is also labeled as a restricted use pesticide to be applied only by an applicator licensed by the Colorado State Div. of Agriculture.
 - The cost of treating the average COT ash tree over a ten year period (recommended) would be \$2,210 (\$221 every 2 years).
 - This treatment option is effective based on the experience of the applicator. If it is not done correctly, a tree can be irreparably damaged.
- Ash trees less than 8” diameter – ash trees of this size are treated by soil injection and/or trunk sprays with the same active ingredient as above. Although these treatment options may be considered for ash trees of this size, the success rate is 50% at best. When you consider the multi-year expense, it is recommended to let the tree live until it is affected by EAB, then replace it.

Five Year Budget - \$1,326,800

Forestry staff is recommending an initial 5 year, three prong approach to managing the existing ash trees in our inventory. This program deals with 1,450 ash trees – approximately half of the total number of ash trees in the Parks system. The spreadsheet included in this section outlines the costs associated with this program.

1. **Tree removal** – In the years 2014 – 2018, trees would be removed by contractors based on the following increments:

- a. 2014 – 50 trees
- b. 2015 – 100 trees
- c. 2016 – 200 trees
- d. 2017 – 300 trees
- e. 2018 – 500 trees

In addition, trees could be removed by in-house Forestry staff with supplemental seasonal workers. The size of trees removed would be limited to 8” diameter with no targets within the fall zone of these trees.

2. **Tree replacement** – In the years 2014 – 2018, trees would be replaced by contractors based on the following schedule:

- a. 2014 – 50 trees
- b. 2015 – 100 trees
- c. 2016 – 200 trees
- d. 2017 – 300 trees
- e. 2018 – 500 trees

In addition, some of these trees could be planted by Forestry staff supplemented by seasonal staff.

3. **Tree insecticide treatments** - In the years 2016 – 2018, trees would be treated by contractors based on the following schedule:

- a. 2016 – 100 trees
- b. 2017 – 100 trees
- c. 2018 – 100 trees

Trees would not be treated until the EAB is discovered in Thornton.

Tree Removal and Replacement Budget																
Item	2014			2015			2016			2017			2018			Total
	#	\$ Ea.	Total	#	\$ Ea.	Total	#	\$ Ea.	Total	#	\$ Ea.	Total	#	\$ Ea.	Total	
Trees removed*	50	\$500	\$25,000	100	\$565	\$56,500	200	\$582	\$116,400	300	\$600	\$180,000	500	\$618	\$309,000	\$686,900
Trees replaced**	50	\$450	\$22,500	100	\$464	\$46,400	200	\$480	\$96,000	300	\$494	\$148,200	500	\$509	\$254,500	\$567,600
Trees treated***		\$221	\$0		\$227	\$0	100	\$234	\$23,400	100	\$241	\$24,100	100	\$248	\$24,800	\$72,300
Total			\$47,500			\$102,900			\$235,800			\$352,300			\$588,300	\$1,326,800
*2014 Contractor pricing. Adjusted at 3% for future years.																
**2014 Contractor pricing per tree. Adjusted at 3% for future years.																
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Wood Disposal

One of the greater consequences of removing dead ash trees is the enormous quantity of wood generated. As a part of this plan, Forestry staff have the following recommendations:

- Secure a wood lot within Thornton. This lot could be used as a temporary storage facility for dead City ash trees, as well as resident trees.
- Purchase or lease a tub gringer to process the dead wood at this temporary lot. We are also looking at contracting with a tree company to bring their tub grinder on-site to process ash wood.
- Wood mulch generated would be transported to a local landfill. Forestry staff are looking into the cost of hauling and disposing ash borer contaminated wood.

Trees on Private Properties – it is yet to be determined what long term direction the City will take with regard to ash trees on private property. However, in the next 5 years, Forestry staff will:

- conduct seminars and meetings with residents, HOA groups, businesses and other entities to introduce EAB and associated issues.
- Meet with interested entities on-site to outline a recommended program for management of EAB
- Include resident/HOA/business trees in our overall survey of ash trees and detection.

Education/Media Outreach

- coordinate the release of any information through the EAB Incident Command Team (CSFS, CSU, Colorado Dept. of Ag, etc.)

Tree Species Replacement

Tree replacement for the removed ash trees will be based on:

- site dimensions
- soil analysis suitability
- availability of tree species
- light exposure
- fall color

