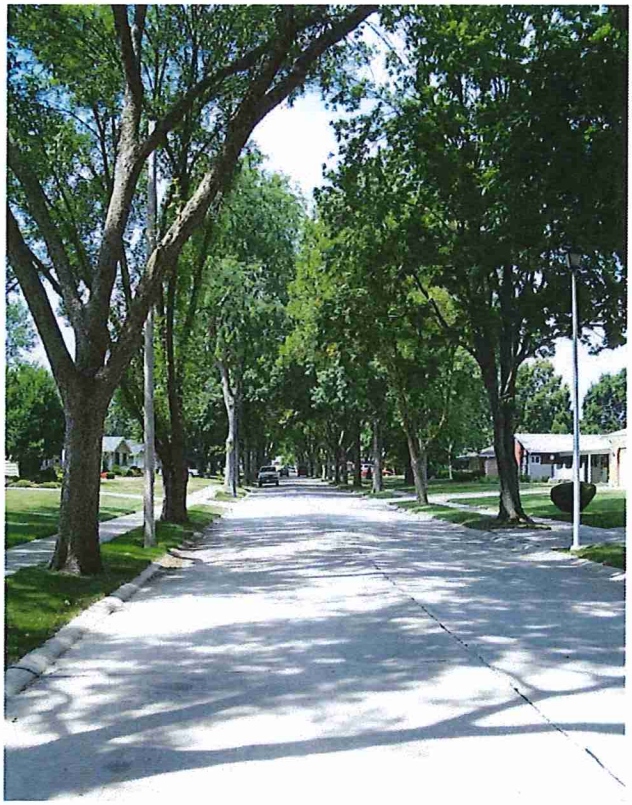
City of Burnsville

Emerald Ash Borer Management Plan



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ACKNOWLEDGEMENTS

City Council

Elizabeth Kautz, Mayor
Bill Coughlin
Dan Kealey
Suzanne Nguyen
Mary Sherry

PARKS AND NATURAL RESOURCES COMMISSION

Maroof Rauf, Chair
Steve Steuber, Vice Chair
John Dedzej
Don Matthys
Brian Wolff
Grant Domke
Len Nachman
Iver Cleveland
Isak Hawkinson

City Staff

Terry Schultz, Director of Parks, Recreation & Natural Resources
Dave Grommesch, Superintendent of Forestry/Community Landscape
Brian Ulvin
Steve Watson
Angela Hanson (former)

Consultant

Rainbow TreeCare™

Rainbow Treecare
11571 K-Tel Drive
Minnetonka MN, 55343
Phone: 952-922-3810

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Introduction

Over 200,000 trees grace the City of Burnsville (City). They clean our air, help to manage our storm water, and stabilize our soils. They provide air conditioning in the summer, buffer winter's harsh winds, and delight us with their splendor every fall. They increase our property values and enhance our commercial sales, calm our traffic, and reduce noise and crime. When the benefits that can be quantified are weighed against the cost of trees (e.g. purchase, planting, pruning, and removal), the benefits outweigh the costs by a margin of about three to one. Ash trees comprise about 20% of the City's trees. If it is not here already, the emerald ash borer (EAB) will soon arrive and it will be lethal to any trees left untreated. To replace the thousands of trees that will be lost to the infestation, many more thousands must be planted to replace them and to maintain the City's tree cover.

EAB[1] is not the only major challenge the future holds. According the *Chicago Climate Action Plan*, the regional effects of climate change will bring increased frequency and severity of both droughts and floods and average daily summer ozone levels that could increase by 25%. Our day-to-day summer heat index values (the combination of the effects of temperature and humidity) are expected to average 94 to 105 degrees F.

These predicted threats from climate change will place great strains on our urban forest making it even more susceptible to the EAB infestation. The discovery of EAB within the City limits is imminent, and no city within the U.S. has successfully maintained or increased the percentage of tree canopy cover once the pest begins to decimate it.

Purpose of the Plan

The purpose of the *City of Burnsville Emerald Ash Borer Management Plan* (Plan) is to prepare the City for the EAB infestation before it is discovered, and to buffer its impact on both public and private properties throughout our community. The initial Plan developed by the City of Burnsville was approved by City Council on September 21, 2010. This updated Plan includes up-to-date information on the City's urban forest; a listing of the pertinent adopted policies and goals; and the strategies, policies, and resources needed to prepare for and manage the EAB infestation. The Plan will help the City distribute the costs associated with certain and widespread tree death over an extended time period, and lessen the social and economic impacts on the quality of life in Burnsville. By taking a proactive approach toward EAB planning and preparation, the City can better position itself to roll with the ecological and financial punches that EAB will undoubtedly throw. While the estimated costs of a response to an EAB infestation are staggering, proper planning and preparation can mitigate such costs and help prevent the City from being caught off guard.

The Superintendent of Forestry/Community Landscaping (City Forester) will lead the City's efforts to implement and following up on the provisions of this Plan, with assistance from Forestry and Natural Resources Department staff.

[1] Consistent with common usage, the acronym, *EAB*, is used herein to refer to both the emerald ash borer *beetle* and occasionally, the EAB *infestation*.

The Emerald Ash Borer Infestation

The Emerald Ash Borer, *Agrilus planipennis*, is an exotic beetle from Asia that was discovered in the United States during the summer of 2002 near Detroit, Michigan. The adult beetles nibble on ash foliage but cause little damage. However, the larvae (during the beetle's immature stage) feed on the inner bark of ash trees and disrupt the tree's ability to transport water and nutrients. EAB may take years to build populations large enough to infest an entire tree, but once an ash tree is infested, it has almost zero chance of survival. The current evidence from Michigan and Ohio shows that it takes five to ten years to infest and kill the majority of the ash trees in a city. Cities infested with this devastating pest have lost tens of millions of ash trees and endured costs that have reached into the billions. As of January 2013, 19 states including Minnesota and two Canadian Providences have discovered the EAB and enforced quarantines. The Minnesota Department of Agriculture has established 15 miles as the buffer zone, referred to as the "EAB Detection Neighborhood Watch Zone." Burnsville is within 15 miles of the nearest EAB discovery. It is highly likely the pest is currently attacking trees in the City but has yet to be discovered.

As is the case for many suburban cities developed primarily in the 1960's and 1970's, Burnsville has an over-abundance of green ash trees on both private and public property, including boulevards. The complete loss of these trees throughout the City due to EAB would have a devastating effect on home values, quality of life, and the environment if the City does not begin to act.

Definitions

The following are definitions for words and terms used in this Plan:

Host species: Tree species in the genus *Fraxinus* (ash), all of which are susceptible to EAB infestation.

Non-host species: Tree species that do not act as a host (i.e. foster growth and reproduction) for emerald ash borer.

Diameter at Breast Height (DBH): The diameter (inches) of a trunk cross section, measured at 4 ½ feet above ground.

Condition Rating: A system to rate the condition of trees from zero to four. A tree with a condition rating of four is the highest quality, zero is dead.

Vital Areas: Public areas the City deems to be important as regards trees. Vital Areas include the Civic Center, Burnsville Parkway, Burnsville Center area, Birnamwood Golf Course, and the Heart of the City area.

Legacy Ash Tree: All public ash trees with a condition rating of 3 or 4 with a DBH greater than 10 inches. In Vital Areas, all ash trees with a condition rating of 3 or 4 of any size shall be considered a Legacy Ash Tree.

Private Trees: Trees existing wholly or partially upon privately owned land and existing outside of City easements and right-of-ways, such as in yards.

Public Right-of-Way (Boulevard Area): A strip of land granted for a transportation or utility purpose, such as a street boulevard. For practical purposes, fifteen feet from the curb is considered a guideline for Burnsville right-of-way boundaries; however, the extent of this area will vary from property to property. Public Right-of-Way includes the median areas of streets.

Public Trees: Trees existing wholly or partially upon City-owned property, such as parks, or on public rights-of-way, such as street boulevards or medians (refer to Appendix C).

Quarantine Zone: An area designated by the Minnesota Department of Agriculture where the movement of ash tree material is restricted.

Woodland Areas: Forested areas in City parks typically utilized for passive activities. Woodland areas are not mowed.

Tree Inventories and Surveys

To anticipate the effects of the imminent EAB infestation, the City and Rainbow Treecare (RTC) conducted three tree inventories and two surveys over the past 3 years:[2]

- City inventories:
    - Burnsville Boulevard Tree Inventory: In 2010-2012, the City completed an inventory of boulevard trees.
    - Burnsville Park Ash Inventory: In 2012 - 2013, the City inventoried the trees on public building sites and in the high activity (mowed) areas of City parks.
    - Burnsville Vital Area Inventory: In March 2013, the City inventoried the ash tree populations and total tree populations on areas the City designates as "Vital Areas," which include the Civic Center, Burnsville Parkway, Burnsville Center area, Birnamwood Golf Course, and the Heart of the City area.
- In February 2013, RTC prepared the following surveys:
    - Burnsville Woodland Area Tree Survey: This is a survey estimate of the ash tree populations in the City's woodland areas.
    - Burnsville Private Tree Survey: This is a survey estimate of the ash tree populations and total tree populations on private property in the City.

[2] An inventory is an exact accounting of the trees in the study area while a survey uses statistically accurate sampling to derive estimates of tree data.

Burnsville Boulevard Tree Inventory

City staff completed an inventory of boulevard trees between 2010 and 2012 that counted the ash trees and the total trees located on City property within 15 feet of all of the streets in the City. Staff collected a variety of useful information including tree type, location, size, and condition. Based on the survey and inventory data collected for this Plan and the assumptions described herein, ash trees are estimated to constitute about 20% of all of the trees in the City, and they represent a larger share (25%) on City boulevards. After Dutch elm disease destroyed billions of elm trees, ash was considered an excellent replacement tree to withstand the rigors of urban boulevards, and accordingly ash trees were heavily planted in our boulevard areas. Table 1 summarizes the results of the inventory and Appendix A includes additional information:

Table 1: Burnsville Boulevard Tree Inventory, 2010 -2012	
Total Number of Trees	12,401
Ash Trees	3,040
Ash Trees as a Percent of the Total	24.5%

Burnsville Park Ash Inventory

In March 2013, City staff completed an inventory of the trees on public building sites and in the high activity (mowed) areas of City parks. The inventory also identified 171 low quality ash trees appropriate for removal.[3] Ash trees equal 15% of the total tree population. Table 2 summarizes the results of the inventory:

Table 2: Burnsville Park Ash Inventory, 2012 - 2013	
Total Number of Trees	6,136
Ash Trees	932
Ash Trees as a Percent of the Total	15%

Burnsville Vital Areas Inventory

The City prepared an inventory of the ash tree populations and total tree populations on areas the City designated as "Vital Areas" (Civic Center, Burnsville Parkway, Burnsville Center area, Birnamwood Golf Course, and the Heart of the City area). Table 6 does not separate out these trees because they are included in the inventories of the boulevard trees and the public building sites and active park areas. About 92% of the ash trees are in good condition (condition rating 3 & 4) and 56% of these high quality trees have a DBH of 10 inches or smaller. Table 3 shows the results of the inventory:

[3] Low quality ash trees are those with a condition rating of 0 to 2 and less than 7 inches DBH.

Table 3: Burnsville Vital Areas Inventory, 2013						
Condition Rating	Class I (1-10")	Class II (10.5-20")	Class III (20.5"+)	Total Ash	Total DBH	Average DBH
0	0	0	0	0	0	0
1	1	4	1	6	92	32
2	7	9	4	20	285	26
3	146	95	32	273	2,981	24
4	16	0	0	16	60	4
Overall	**170**	**108**	**37**	**315**	**3,417**	**85**

Burnsville Woodland Area Tree Survey

A survey is not an inventory. An inventory counts and measures each individual tree. This would have been difficult and expensive to accomplish in the City's woodland areas, which in essence are the areas of City parks that are not mowed. A survey is an appropriate alternative because it gathers a sufficient sampling of trees to be statistically representative of the whole.

RTC staff located all woodland areas within Burnsville parks and calculated total acreage with the aid of computer software. Inventory plots 1/5 acre in size[4] were randomly generated within these areas. Ninety-nine plots were sampled for ash tree presence and size. Ash trees were identified within the following trunk diameter classes:

- Class I = 1-10"
- Class II = 10.5-20"
- Class III = 20.5" or larger

Most of the ash trees in the woodland areas of City parks are relatively small; 79% are Class I with a DBH of 10 inches or smaller. Table 4 summarizes the results of the survey and Appendix A provides additional detail regarding the statistical methodology and validity of the survey:

Table 4: Burnsville Woodland Area Tree Survey, 2013		
Ash Tree Classification	Estimated Trees (±10%)	Percent of Total
Class I (1-10")	11,227	79%
Class II (10.5-20")	835	6%
Class III (20.5"+)	2,227	16%
Estimated Ash Total	14,289	100%

[4] A 1/5-acre plot size was chosen because it equals an area with a radius of 50 feet, the distance within which a surveyor can identify an ash tree.

Burnsville Private Tree Survey

The Private Tree Survey was designed to give a statistically valid estimate of the number of trees growing on private property within the City. RTC first determined the total number of private parcels in the City using publicly available information. In order to achieve a statistically valid sample, 399 private parcels were chosen randomly and surveyed for ash trees.[5] Using this data, RTC estimated the number of ash trees on private property to be 22,624, which constitutes about 25% of the total tree population. Table 5 summarizes the survey results and Appendix A provides additional detail regarding the statistical methodology and validity of the survey:

Table 5: Private Tree Survey, 2013	
Total Private Parcels	16,806
Parcels Surveyed	399
Total Ash Trees	560
Average Ash Trees per Acre	1
Estimated Ash Population (within ±5%)	22,624

Total Tree Populations Table

Table 6 provides a summary of the various tree populations in the City of Burnsville and the Legacy Trees, all of which the City plans on treating:

Table 6: Tree Populations in the City of Burnsville					
Categories		**Ash Trees**	**Other Trees**	**Total Trees**	**Ash as a % of Total**
City Tree Populations:					
	Boulevard trees	3,040	9,361	12,401	25%
	Public property and active parklands	932	6,136	7,068	13%
	Woodlands (+/- 10%)	14,289	94,074	108,363	13%
Private trees (+/- 5%)		22,624	69,665	92,289	25%
Total		**40, 885**	**179,236**	**220,121**	**19%**

Public Education & Communication

Periodic updates on the status of EAB in our community will be distributed through the various channels the City currently has at its disposal. All media relations will follow normal City protocol. Forestry staff will continue to coordinate with the Minnesota Department of Agriculture and other entities concerned with EAB to ensure that the City is following the best practices for detecting and managing EAB.

[5] The standard statistical procedures used predict that the survey samples have a 95% chance of representing the total private ash tree population within ±5%; however, these predictors probably underestimate the actual accuracy of the survey, according to Rainbow Treecare.

Staff will also maintain good communication with adjacent municipalities to ensure mutual awareness of EAB management strategies and to develop mutual aid and equipment sharing as appropriate.

The City will endeavor to educate its citizens on EAB impacts and management through the following tools on the City's website:

- An EAB informational page updated and maintained by City staff that addresses the following:
  - How to identify an ash tree
  - How to determine if your ash tree is worth protecting
  - When to seek a second opinion
  - How to hire a qualified arborist
  - Treatment options
  - Managing, transporting, and processing EAB-infested wood
  - Confirmed EAB infestations within the City
  - Information and links to the Minnesota Department of Agriculture EAB quarantine regulations
  - City staff created or shared internet video and webinar links
  - List of licensed City contractors
- Advertisements of the annual tree sale where the City will offer non-EAB susceptible, large canopy, replacement trees at wholesale prices.
- A contact list containing pertinent resources for EAB information and management.

In addition to making information available on the website, City staff will also educate citizens through the following methods:

- Attending community group meetings upon request.
- Disseminating information to targeted citizens surrounding known infestations.
- Submitting articles to local newsletters and newspapers.
- Appearing on local television programs.
- Collaborating with the University of Minnesota's Tree Care Advisors program and its educational workshops. The Tree Care Advisors are a network of community-based volunteers under the direction of the University's Department of Forest Resources, who have been trained to give free or low-cost EAB educational workshops to the public.

Policy Review

One priority identified in the 2010 EAB Plan was to update key City ordinances and policies relating to urban tree management to prepare for an EAB outbreak and its consequences. The City has completed a review of the existing ordinances and policies and updated them as needed. Burnsville now has a comprehensive set of ordinances and policies in place to support management of the City's urban forest and its preparations for the EAB infestation.
These form the foundational framework that guides the City's decisions involving its investments in public infrastructure (including the urban forest), the permitting process for private property, staff preparations, as well as the City's response to the EAB infestation and its consequences.

Also, as part of this EAB Plan update, a review of the City's related planning documents was completed to provide further guidance to help refine our EAB Strategies. Appendix B includes a list of the policies, plans, and goals most relevant to the EAB infestation from the following adopted plans that were reviewed:

- *City of Burnsville 2030 Comprehensive Plan*
- *City of Burnsville Natural Resources Master Plan*
- *Burnsville Sustainability Guide Plan*
- *City of Burnsville Emerald Ash Borer Management Plan*
- *City of Burnsville Parks Master Plan*
- *Burnsville Storm Water Pollution Prevention Plan*
- *Burnsville Water Resources Management Plan*

Appendix B also describes two State programs that are relevant to the EAB infestation in which the City is an active participant:

- The Urban Forest Best Practice Area of the Minnesota GreenSteps Cities Program
- The storm water management policies and practices of the Minnesota Blue Star City Program

Revised Urban Forest and EAB Management Plan Goals

The following are suggested modifications that address the entire urban forest in Burnsville. These goals will be integrated into the City's *Natural Resources Master Plan and have been utilized to set strategies for this updated EAB Plan*:

Goal 1: The City will strive to improve tree diversity and the sustainability of the tree canopy cover. With the adoption of the original EAB Management Plan in 2010, the City instituted a tree diversity guideline known as the "10-20-30 rule," which is an arboriculture guideline to reduce the risk of catastrophic loss due to pests. Currently, a single species, the green ash tree, accounts for about 20% of the urban forest when a maximum of 10% is appropriate per this proposed goal. This Plan update utilizes strategies to implement this diversity goal through 1) selective replacement of the lowest quality ash trees with preferable species, and 2) preservation of the highest quality ash.

Goal 2: The City will maximize and preserve the benefits that the citywide urban forest provides. According to the National Tree Benefit Calculator, the typical tree in the City (17" DBH) provides over $160 in measurable benefits every year.[6] That translates into a significant community benefit considering the City has over 220,000 trees. Benefits include increased property value, improved storm water management, the reduction of carbon dioxide in the atmosphere, and improvements in air quality.
The shade provided by a 17-inch DBH tree will also reduce fossil fuel consumption and electricity needed for cooling. These quantifiable benefits can only be fully realized when a tree grows a large enough canopy to provide significant shade and capture appreciable amounts of water and pollutants.

[6] Downloaded March 2013 from: National Tree Benefit Calculator http://www.treebenefits.com/calculator/

Goal 3: The City will strive to model the natural maintenance practices of a forest.
The City's urban forest management practices should be designed around strategies that reduce the need for synthetic additions such as fertilizers and pesticides, allowing the forest to thrive more independently from human intervention.

Goal 4: The City will minimize the capital and operating costs to manage City-owned trees, while at the same time using a sustainable approach.
This approach will include reserving chemical treatments for the most important trees, and staged replacements to maximize diversity and canopy cover. This approach will maximize the benefits of the urban forest and balance the economic, environmental, and cultural needs of our community.

Strategies for Private Trees

Private trees are defined as those that exist wholly or partially upon privately owned land and exist outside of City easements and right-of-ways, such as in yards. The City will utilize the following strategies when dealing with private ash trees that are infested with EAB:

Responding to EAB Infestations on Private Property

EAB infestations, known or suspected, on private property will be handled by City staff in accordance with existing City ordinances (See Appendix D - Section 8-3-5-of the City Code). This section of the Code gives the City the authority to enter upon private property to inspect private trees for tree pests and use our discretion to require the property owner to remove the infested material if it presents a nuisance or safety issue. All infested material must be disposed of in accordance with the Minnesota Department of Agriculture EAB Quarantine information (which can be found on the City's website). Early detection and control of trees infested with EAB are important protection strategies for surrounding ash trees.

The management strategy for large private woodland areas (1 acre or more – neighbors may combine shared wooded areas to utilize this approach) will mimic the strategies identified for public woodland areas (see page 14 - "Woodland Ash Tree Management" section). These strategies differ greatly from the strategies utilized for private trees on smaller more developed lots. Topography and forest density makes protecting large wooded areas difficult and costly. Woodland trees grow in close proximity to one another and compete for light. This competition reduces the canopy size of each tree, which makes the loss less significant to total canopy cover. Neighboring trees are positioned to quickly grow into the newly opened spaces created as ash trees die. A large number of trees located in the large private woodland areas may never pose a threat to the public may never need to be removed or treated. These ash trees will be allowed to die and decay in place, unless they are deemed a public safety concern, or neighborhood nuisance.

Removal of Private Ash Trees

Ultimately, the removal of dead and infested ash trees is the responsibility of the property owner (See 8-3-5: TREES, SHRUBS AND PLANTS ON PRIVATE PROPERTY in the City Code). However, City resources may be needed at some point to assist private property owners that are unable to remove their ash trees. Private ash trees outnumber public ash trees, which makes successful EAB management throughout the City very dependent on citizen response. To assist private property owners and promote proper treatment of private ash trees, the City will extend City contractor pricing for ash tree treatments to our residents. This will be accomplished by simply writing language into City contracts that will allow residents to access city pricing should they so desire. Other possible public/private strategies will be considered as the EAB infestation unfolds in our community. Successful management requires the City to play an active role in supporting private tree owners in the management process.

Disposal of Private Ash Trees

The volume of material generated as tens of thousands of ash trees begin to die throughout the metro area could easily overwhelm local wood processing outlets. This will slow the removal process and cause greater risk to people and property from falling debris. If private industry is unable to handle the volume of debris, the City will explore a partnership with private industry to develop a waste disposal site that can be used by all public and private entities.

Strategies for Public Trees

Public trees are defined as those existing wholly or partially upon City-owned property, such as parks or on public rights-of-way including street boulevards or medians.

The City explored the following four options for managing public ash trees. All four options use private contractors to do the removals, planting and treatment of the 3,972 ash trees within the City's boulevards, medians, parks and building sites. Generally, the cost of removing and replacing an average size ash tree is $770.00, compared to the treatment cost to save an average size tree of $75 - $80 per year. The options considered did not include any tree removals, planting or treatments in any of the City's woodland areas.

Option 1) Remove all ash trees and don't replace any of them..... $ 2,160,000

This option would have a significant environmental and aesthetic impact on our community. It would also focus the financial impact into a 3 – 5 year window, rather than the 10 year window presented in options 3 & 4.

Option 2) Remove all ash trees and replace at a one for one ratio.....$ 3,055,000

This option would also have substantial short term environmental and aesthetic impacts, as the City would be replacing a number of large ash trees with much smaller trees. Further, these costs do not factor in survival rates of the newly planted trees which can be lower in our boulevard areas. This option would also focus the financial impact into a 3 – 5 year window, rather than the 10 year window presented in options 3 & 4.

Option 3) Proposed Plan – treat 2,865 trees, remove 1,107 trees, and replace 50%.....$ 3,530,000

The ash trees treated would be only the high quality trees and the trees removed would be of low quality. Initially, funding would be allocated to replace approximately 50 % of the trees removed. Plan costs would be spread out over a 10 year period. It should be noted that there will be ongoing cost for treatment of the ash trees that are included in this option. These costs will go down over time, but could still be substantial. Staff is proposing that the preservation of these trees be re-evaluated in 2018, after the bulk of the lower quality trees have been removed and the EAB threat begins to subside in the metro area.

Option 4) Proposed Plan plus replace 100% of the removed trees (additional 507 trees).....$ 3,645,000

This is a viable option that would realize all the benefits of the recommended option, plus the added benefit of additional trees being planted. This option is not being recommended at this time because of financial considerations.

After deliberation, it was decided the best strategies for our community for dealing with EAB preparation and the management of public trees should incorporate the strategies outlined in Option # 3, and will focus on the following areas:

- Monitoring
- Analyze the Data
- Protection of Public Ash Trees with Insecticides
- Protection of Public Ash Trees by Private Parties
- Removals
- Wood Utilization and Disposal
- Canopy Replacement and Care
- Woodland Ash Tree Management

Monitoring

As time and budget allows, strategically located public non-asset ash trees will be annually selected and prepared as detection trees, either using City forestry staff or in coordination with the Minnesota Department of Agriculture. These trees will be set up in the spring and removed for examination in the fall. If an EAB infestation is discovered, a thorough survey of the surrounding area will be made and acted upon. Monitoring will be concentrated in the northeast quadrant of the City where natural EAB migration is most likely to affect first due to its proximity to the Minnesota River Valley. Trained volunteers will be utilized as 'First Detectors' of the EAB to the fullest extent possible.

All ash wood from pruning or removals on public trees, whether they are removed in-house or contracted, will be inspected for EAB by looking for characteristic signs and symptoms. The tree care contractor licensing program will help ensure that this process is conducted by trained, professional arborists.

Analyze the Data

In an effort to provide consistency to the analysis, the City has been divided into nine sections using major roadways as boundaries. Management strategies will vary based on the number, density, and condition of ash trees in the various sections.

The goal of the digital inventory of public trees is to provide City staff and decision makers a comprehensive and quantitative summary of the urban forest and tree canopy so we can assess, manage, and make more informed decisions. As described above, the recent inventories and surveys of all ash trees growing on public rights-of-way, boulevards, in parks, and on other municipal properties identified the location, species, size, and condition of each tree. The data will be updated frequently to reflect actions performed on City trees.

Protection of Public Ash Trees with Insecticides

Based on the data gathered regarding public ash trees, the City will determine which ash trees will be chemically treated with an insecticide known in the scientific community to be effective at preventing EAB infestations. Because research in this field is currently evolving, the City will monitor all treatments for their effectiveness and future use.

In an effort to minimize the potential environmental impacts of the insecticides utilized to treat for EAB, the City will utilize the "trunk injection" application method for insecticide treatments on all public boulevard ash trees, and the soil injection and bark spray method for public trees growing in parks and public property. Contractors will be utilized to perform the insecticide treatments. The City will utilize a balanced management approach that will allow many of the high-value trees to be preserved while preemptively removing lower quality trees that will eventually pose a hazard to the public. This Plan calls for the treatment of 2,865 ash trees on public land that have been identified as "Legacy Trees". Legacy status will be assigned to ash trees that meet the following criteria:

- Public ash trees with a condition rating of 3 or 4 and a DBH of at least 10 inches.
- Public ash trees with a condition rating of 3 or 4 located within the City's Vital Areas, regardless of size.

A large number of trees located in the woodland areas of parks that may never pose a threat to the public may never be removed or treated. These ash trees will be allowed to die and decay in place, unless they are deemed a public safety concern, or neighborhood nuisance.

Protection of Public Ash Trees by Private Parties

Because it reduces the City's financial burden, the City will encourage citizen stewardship of public trees. Protective insecticide treatments may be applied at the residents' discretion and expense after first obtaining a prior permit issued by the City.

Treated trees will be removed at the City's cost if the City determines the treatments have failed and EAB infests the tree. Residents who wish to treat boulevard trees on public property will be required to utilize a licensed tree contactor and only the "trunk injection" method of application will be permitted with the most effective and environmentally preferred insecticide available, as determined by the City Forester. Contractors will be prohibited from utilizing insecticides that are applied directly to the soil or sprayed on the tree bark or canopy on boulevard trees due to the possibility that the chemicals will drain into surface or ground water.

Removals

Public ash tree removal will be prioritized based on risk to people and property. Higher-risk public trees will be removed first followed by those that are no longer assets to the community (dead, dying, diseased, or miss-sited). During the development review process, staff will recommend that ash trees be prioritized for removal over other species when tree impacts cannot be avoided. Because City staff do not have the resources and equipment to perform large-scale removals, City-licensed contractors will be utilized for most removals. This plan calls for the removal of 1,107 low quality public ash trees. Removals will occur under the requirements and guidance of the Minnesota Department of Agriculture (MDA).

Wood Utilization and Disposal

The City will develop a plan to use or dispose of the wood generated from public trees during the removal program. The plan must comply with the MDA regulations for handling regulated material. Wood that cannot be used for lumber, turning, firewood, or mulch will be disposed of according to MDA specifications.

The City will use its compost site for ash trees removed from public property (if allowed by the MDA). Wood processing facilities may soon have more material than they are capable of handling as the number of dead trees increases. The City's relationships with private industries that process wood material will be documented with as many guarantees as possible to ensure the City will continue to have an outlet for surplus wood waste. The loss of thousands of trees from within the City also represents the loss of thousands of tons of biomass from the ecosystem. In order to increase the sustainability of plants in the landscape, that biomass will be re-purposed as mulch to be used for groundcover.

Canopy Replacement and Care

As the budget permits, removed public ash trees will be replaced with appropriate plantings selected to enhance the planting site and add to the diversity and general health of the urban forest. Trees will be planted in accordance with the City's Tree Planting Specifications and obtained from nurseries that get their plant material from regional sources. No plantings will be made that cannot be adequately maintained. New plantings will comply with City ordinances related to tree diversity and the City shall utilize the 10-20-30 rule to increase species diversity.

Woodland Ash Tree Management

An appropriate management strategy for woodland ash trees will differ greatly from the strategies utilized for boulevard or park trees. Topography and forest density makes protecting woodlands difficult and costly. While the total number of ash trees may seem significant (about 14,000 trees and an estimated 15% of total woodland tree population), the ash trees grow over a large area making their overall density low. That low density reduces the impact to the forest when the entire ash population is lost to an infestation. Woodland trees grow in close proximity to one another and compete for light. This competition reduces the canopy size of each tree, which makes the loss less significant to total canopy cover. Neighboring trees are positioned to quickly grow into the newly opened spaces created as ash trees die.

No data was collected on specific locations of ash trees in woodland areas. City staff will need to monitor any areas where dying ash trees present possible hazards to the public. These trees will be removed in the interest of public safety.

Costs Anticipated when EAB Arrives

Example Costs from other EAB-Affected Communities

Ann Arbor, MI was one of the first cities infested with EAB. Because they did not have time to plan, they suddenly found themselves with thousands of dead and dying ash trees that had to be removed (5,000 in public rights-of-way and 5,500 in city parks). The estimated removal and disposal cost of the ash trees was $ 4.2 million over two years. Although the city placed an EAB tax levy on the ballot to raise the needed funds, it was defeated and the city was forced to reallocate existing funds from other department budgets. The City of Minneapolis is planning for the need to spend up to $26M for removing and replacing ash trees on public property, not including parks and natural areas.

Anticipated Costs for the City of Burnsville

In 2010, the City created a dedicated EAB Fund (utilizing General Fund allocations) to prepare the City financially for an EAB infestation. The capital and operating costs to the City over a 10-year period of dealing with the EAB infestation will be in the range of $3.5 million dollars. Planning now and spreading out the cost for such a significant financial burden will reduce the severity of the impacts to the City's budget when EAB arrives.

Table 7 provides a more detailed plan of the funding needs for the upcoming 10-year period. The table states anticipated costs in 2013 dollars, and future numbers have not accounted for inflation. It should be noted that existing staff will be utilized to the fullest extent possible prior to hiring additional staff or contractors in an effort to help keep costs down.

Policy-directed plan: The following reiterates the policy decisions described above that are the key variables for determining the EAB Plan costs to the City:

- **Woodland areas:** The City will not manage ash trees in the woodland areas of City parks; no treatment and no replacement trees. Hazard trees and fallen debris will be removed when it affects or threatens trail use or other activities.

- **Low quality trees:** The City will remove all public ash trees having a condition rating less than 3.

- **Treating Legacy Ash Trees:** The City will treat Legacy Ash Trees throughout the upcoming 10-year period.

- **Treatment initiation:** To save treatment costs, the City shall adopt the strategy of initiating treatment only after EAB has been detected in the City.

The City will revisit the EAB Plan strategies and financial plan in 2018, at which time it is anticipated the bulk of the impact on our urban forests will have been realized. Strategies should be updated at this time and changes to the funding plan should be considered.

Financing Options

Grants: It is likely that the Minnesota Department of Agriculture and/or other state or federal agencies may award grants to communities affected by EAB as they have recently done in several metro communities. While the City will actively pursue such grants as they become available, the City should not rely on them. Demand for such grants will grow as the infestation continues and the grants are unlikely to cover significant portions of the funds needed to completely address the effects of EAB.

EAB Response Fund: As mentioned above, the City has established a dedicated EAB Fund that will be utilized to fund the EAB programs and strategies identified in this Plan. The City will utilize reserve and fund balance to cover costs that might exceed anticipated funding.

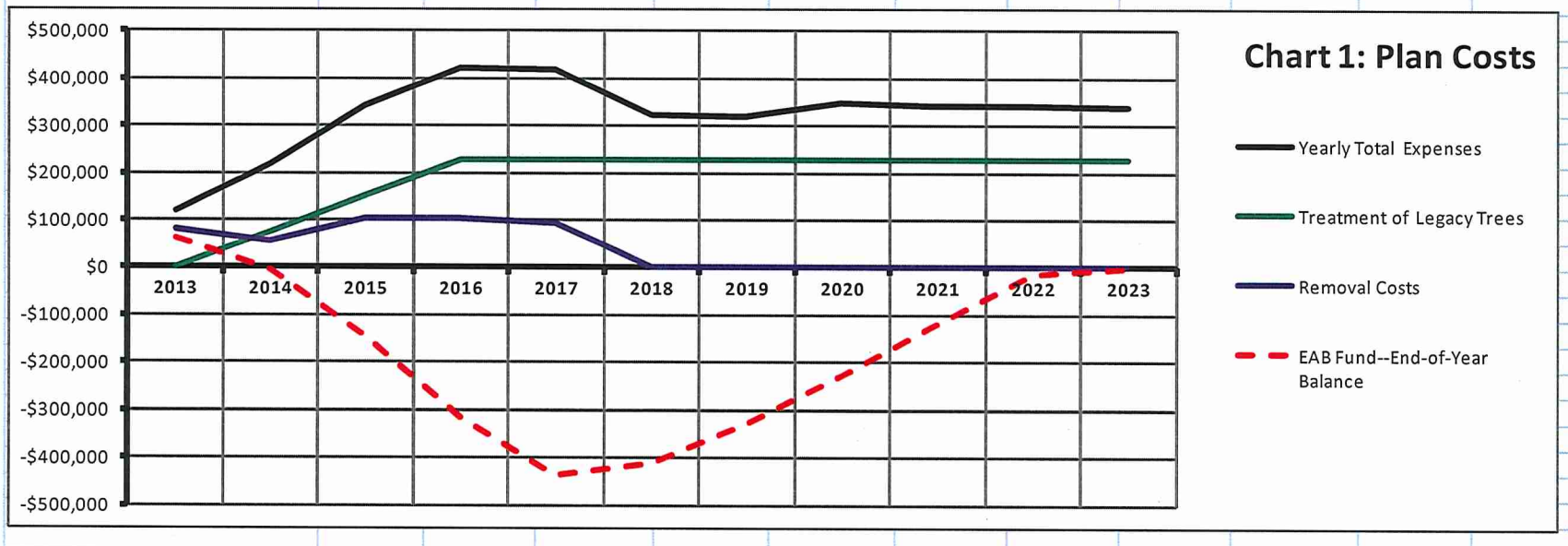
Table 7: City Plan for Treatment, Removals, and Replacement Trees

Action Item	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	11 year total
EAB Technician	$35,000	$76,000	$76,000	$76,000	$76,000	$76,000	$76,000	$76,000	$76,000	$76,000	$76,000	$795,000
Treatment of Legacy Trees	$0	$76,000	$152,000	$227,925	$227,925	$227,925	$227,925	$227,925	$227,925	$227,925	$227,925	$2,051,400
Treated Trees (2-Year Cycle)	-	478	955	1,432	1,433	1,432	1,433	1,432	1,433	1,432	1,433	2,865
Removal Costs	$82,688	$54,944	$103,360	$102,816	$95,200	$0	$0	$0	$0	$0	$0	$439,008
Total Removals	152	101	120 (170)	119 (170)	105 (170)				-	-	-	1,107
Public/Private Projects & Outreach	$0	$10,000	$10,000	$15,000	$20,000	$20,000	$15,000	$10,000	$5,000	$5,000	$0	$110,000
Total Trees Planted								150	150	150	150	600
Canopy Initiative Tree Planting								$33,750	$33,750	$33,750	$33,750	$135,000
Yearly Total Expenses	$117,688	$216,944	$341,360	$421,741	$419,125	$323,925	$318,925	$347,675	$342,675	$342,675	$337,675	$3,530,408

Funding	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	11 year total
Current Funding (1)	$180,000	$ 150,000	$ 200,000	$ 250,000	$ 300,000	$ 350,000	$ 400,000	$ 450,000	$ 450,000	$ 450,000	$ 350,000	$3,530,000
Annual Balance	$ 62,312	$ (66,944)	$ (141,360)	$ (171,741)	$ (119,125)	$ 26,075	$ 81,075	$ 102,325	$ 107,325	$ 107,325	$ 12,325	$ (408)
EAB Fund--End-of-Year Balance	$62,312	($4,632)	($145,992)	($317,733)	($436,858)	($410,783)	($329,708)	($227,383)	($120,058)	($12,733)	($408)	

(1) The 2013 "Current Funding" amount includes the EAB fund balance carried forward from 2012.

Cost Factors	Amount	Average Cost/Tree	Total Trees	Total DBH	Annual DBH Treated
Treatment Cost Per DBH-inch	$9.00	$153	2,865	50,650	25,325
Removal Cost Per DBH 17-inch	$32.00	$544	597	10,670	
Removal Cost Per DBH 7-inch	$32.00	$224			
Tree Planting Per Tree	$225.00				



City of Burnsville

Emerald Ash Borer Management Plan

Appendices

A: Tree Inventories and Surveys: This appendix provides additional information regarding the tree inventory and survey analyses not included in the body of the updated *Burnsville Emerald Ash Borer Management Plan.*

B: Adopted City Policies, Goals, and Objectives Pertinent to the City's Management of the Emerald Ash Borer Infestation: The City has adopted a rich set of policies, goals, and objectives pertinent to its management of the City's urban forest and its preparations for the imminent emerald ash borer (EAB) infestation. Appendix B lists the most important ones.

C: Typical Boulevard Diagram: This is a graphic that depicts the typical street and boulevard design in the City.

D: Section 8-3-5-of the City Code – Trees on Private Property

E: GIS maps: The ArcGIS platform was used during the majority of the woodland and private parcel surveys. The desktop application was used to randomly generate sample sites, analyze data, and create all maps. ArcGIS for iOS was used to collected data while in the field. In addition to the data, tables, and maps derived from the woodland and private parcel surveys, content also came from the Burnsville parks forestry department. ArcGIS for Desktop provided an area to reveal the relationships between the two RTC surveys and Burnsville's park and boulevard tree inventories. All results were exported to Microsoft Excel or Adobe PDF formats in order to append them with the EAB Management Plan. **Under separate cover.**

Appendix A

Tree Inventories and Surveys

To anticipate the effects of the imminent EAB infestation, the City and Rainbow Treecare (RTC) conducted three tree inventories and two surveys over the past 3 years:

- City inventories:
  - "Burnsville Boulevard Tree Inventory:" 2010 through 2012, the City completed an inventory of boulevard trees.
  - "Burnsville Park Ash Inventory:" In 2012 - 2013, the City inventoried the trees on public building sites and in the high activity (mowed) areas of City parks.
  - "Burnsville Vital Area Inventory:" In March 2013, the City inventoried the ash tree populations and total tree populations on areas the City designates as "Vital Areas," which include the Civic Center, Burnsville Parkway, Burnsville Center, Birnamwood Golf Course, and the Heart of the City.
- In February 2013, RTC prepared the following surveys:
  - "Burnsville Woodland Area Tree Survey:" This is a survey estimate of the ash tree populations in the City's woodland areas.
  - "Burnsville Private Tree Survey:" This is a survey estimate of the ash tree populations and total tree populations on private property in the City.

The purpose of this report is to provide additional information regarding these analyses not included in the body of the updated *Burnsville Emerald Ash Borer Management Plan*.

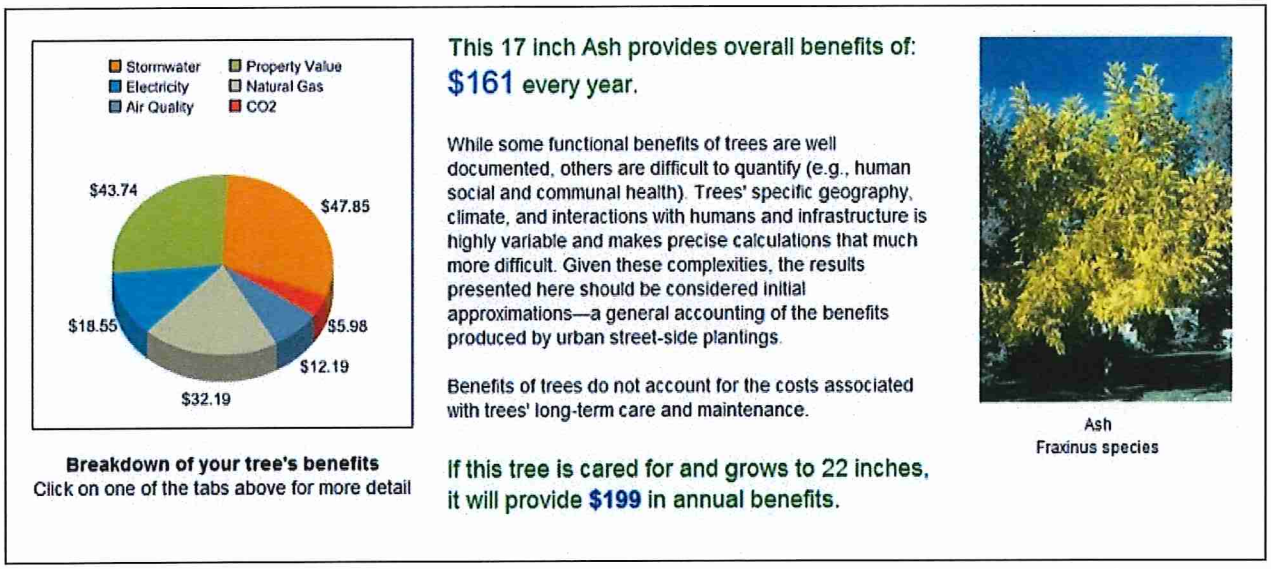
"Burnsville Boulevard Tree Inventory," 2010 -2012

City staff completed an inventory of boulevard trees in 2010 - 2012 that counted the ash trees and the total trees located on City property within 15 feet of all of the streets in the City. The following table summarizes additional information gathered as part of the inventory:

Burnsville Boulevard Tree Inventory, 2010 - 2012

Category	Sections	Trees	Ave. Condition	Ave. Ash DBH	Total DBH	Acres	Ash Trees/ Acre	Rank of Ratio
Ash trees	1	114	2.8	15.5	1,762	6,199	0.02	6
	2	743	2.9	20.0	148,889	1,767	0.42	2
	3	320	2.8	20.8	6,658	511	0.63	1
	4	466	2.8	16.5	7,701	5,136	0.09	4
	5	794	3.0	16.0	12,748	5,406	0.15	3
	6	187	2.9	16.4	3,075	2,234	0.08	5
	7	82	3.0	12.7	1,046	19,853	0.004	9
	8	105	2.9	13.2	1,387	11,196	0.01	8
	9	229	2.8	14.9	3,403	14,553	0.02	7
Ash tree totals		3,040	2.9	16.2	186,669	66,855	0.05	
Other trees		9,361						
Total boulevard trees		12,401						
Ash trees as a percent of total		24.5%						
Source: City of Burnsville0								

Assessing the Value of Trees: The following is an example of how the "Burnsville Boulevard Tree Inventory" was used to assess tree values and benefits to the community. By entering information about the City as well as Burnsville's tree inventory data, a free software program developed in part by the United States Forest Service can generate tree benefit information such as the following, either on a tree-by-tree basis or on a citywide basis. Such tools will help assess the values of the urban tree canopy and can also help City staff develop cost-benefit ratios and guide management and associated costs.



"Woodland Ash Tree Survey," 2013

In February 2013, Rainbow Treecare (RTC) conducted a survey of the ash trees growing in the woodland park areas within the City of Burnsville (City). Woodland areas are those wooded areas in City parks that are not mowed. The following table provides additional information regarding the statistical validity of the survey:

Woodland Ash Tree Survey Characteristics	
Confidence Level	95%
Confidence Interval	± 10%
Standard Error	0.051
Population (total number of plots)	9,186
Sample Size (1/5-acre plots)	99
Ratio of Population to Sample Plots	92.79

Survey Methodology: RTC Staff identified woodland areas in Burnsville parks with aid of ArcGIS desktop software. The acreage of each woodland area was calculated in order to conduct a stratified survey. A plot size of 1/5 acre was established and a total number of possible plots (9,186) was found.[1] It was determined that 99 sample plots were needed to maintain confidence in the survey estimates. These sample plots were randomly

[1] A 1/5-acre plot size was chosen because it equals an area with a radius of 50 feet, the distance within which a surveyor can identify an ash tree.

distributed among the woodland areas based on the proportion that each area represented. At each plot sampled, all ash trees within 50 feet were sorted into three DBH classes (1-10", 10.5-20", 20"+). The following table provides sample plot distribution across woodland areas in Burnsville parks.

City Parks and Woodlands Sample Plot Allocation				
Park Name	**Total Park Acreage**	**Woodlands as a % of Total Acreage**	**Samples Required**	**Actual Samples**
Terrace Oaks West and East	378.11	20.58%	20.58	22
Kelleher	334.78	18.22%	18.22	18
Alimagnet	206.97	11.27%	11.27	11
Blackdog	142.96	7.78%	7.78	8
Cliff Fen	119.50	6.50%	6.50	6
Crystal Lake West	98.16	5.34%	5.34	5
Lac Lavon Fisher Fields	70.17	3.82%	3.82	4
Wolk	67.21	3.66%	3.66	4
Civic Center Park	62.82	3.42%	3.42	3
Rudy L. Kramer	58.58	3.19%	3.19	3
Sunset Pond	47.99	2.61%	2.61	3
Judicial	42.69	2.32%	2.32	2
Neil	32.03	1.74%	1.74	2
Forest Heights	27.50	1.50%	1.50	1
Cedarbridge	23.07	1.26%	1.26	1
Red Oak	22.59	1.23%	1.23	1
Loop	18.34	1.00%	1.00	1
Wood	17.44	0.95%	0.95	1
Crosstown West	17.10	0.93%	0.93	1
Knob Hill	16.30	0.89%	0.89	1
Woods Lane Trail	14.03	0.76%	0.76	1
Brookview	9.09	0.49%	0.49	0
Westview	4.87	0.27%	0.27	0
Sue Fisher Memorial	4.80	0.26%	0.26	0
Total	**1,837.15**	**100%**	**99**	**99**

"Burnsville Private Tree Survey," 2013

In February 2013, Rainbow Treecare conducted a survey of the ash trees growing on private property within the City. The survey estimated the number of ash trees growing on private property to be between 21,700 and 23,600 with 22,624 as the most likely number.

Survey Design: Using standard statistical methods to design the appropriate degree of accuracy for the Burnsville Private Ash Tree Survey, RTC established a *confidence interval* of ± 5%. Like the Woodland Ash Tree Survey, the survey was designed to have a *confidence level* of 95%. The *standard error* (0.024) measures the survey's variation and gives the statistical likelihood that the estimate is near the true value. A smaller standard error means the estimate is less variable and therefore more likely to be accurate. To determine the final estimates, the ratio of populations (total number of private parcels) to sample parcels (42.12) was used to multiply the number of ash trees sampled. Like the Woodland Ash Tree Survey, the survey samples have a 95% chance of representing the total private ash tree

population. According to Rainbow Treecare, the statistical measures probably underestimate the actual accuracy of the survey. In order to achieve a statistically valid sample, 399 private parcels were chosen randomly and surveyed for ash trees. The following table lists the statistical characteristics of the survey.

Private Ash Tree Survey Characteristics	
Confidence Level	95%
Confidence Interval	± 5%
Standard Error	0.024
Population (total number of parcels)	16,806
Sample Size (number of parcels)	399
Ratio of Population to Sample Parcels	42.12

Ash in Sample Parcels		Ash Per Acre of Samples		Sample Parcel Size (Acres)	
Mean	1.40	Mean	3.29	Mean	1.47
Standard Error	0.12	Standard Error	0.37	Standard Error	0.24
Median	1.00	Median	1.35	Median	0.59
Standard Deviation	2.32	Standard Deviation	7.36	Standard Deviation	4.89
Sample Variance	5.38	Sample Variance	54.10	Sample Variance	23.87
Range	29	Range	87.33	Range	55.77
Minimum	-	Minimum	-	Minimum	0.04
Maximum	29	Maximum	87.33	Maximum	55.81
Sum	560	Sum	1,312.16	Sum	587.70

Appendix B

Adopted City Policies, Goals, and Objectives Pertinent to the City's Management of the Emerald Ash Borer Infestation

The City has adopted a rich set of policies, goals, and objectives pertinent to its management of the City's urban forest and its preparations for the imminent emerald ash borer (EAB) infestation. The purpose of this report is to list the most important ones. They form the foundational framework that guides the City's decisions involving its investments in public infrastructure (including the urban forest), private developments, staff preparations, as well as the City's response to the EAB infestation and its consequences. Since the City Code (Code) constitutes the City's "rule book" for making many of these decisions, it is crucial that it be consistent with adopted policy.[2]

Direct quotes from the adopted plans are shown in italics with emphasis added by underlining:

- ***City of Burnsville 2030 Comprehensive Plan***: Chapter VI in the City's Comprehensive Plan provides overall policy direction for the City's efforts to preserve its natural resources, including its urban forest.

  > ***7.2 Comprehensive Sustainability Planning Process, Policy 11:*** *Maintain healthy urban forests; promote tree planting by establishing programs to annually increase tree canopy within the city and to develop an incentive program that encourages private sector owners to plant trees within parking lots and other areas of the city.*
  >
  > ***3.5 Tree Preservation:*** *The 2000 Comprehensive Plan set forth goals and policies to protect established woodlands. The Zoning Ordinance contains woodland protection standards as part of the Woodland Overlay District. The purpose of this overlay district (which covers the entire city) is to preserve the trees and woodlands within Burnsville for the important ecological, recreational and aesthetic functions they serve. Development must be conducted in a manner that will preserve the maximum amount of woodland and accommodate thresholds by zoning districts for re-forestation; stipulate protection measures and requires a survey and evaluation of all trees that are to be preserved by agreement....*
  >
  > *The Landscape Ordinance encourages new plantings, promotes the use of native species and helps to facilitate the reforestation of the city. The city will continue in this direction and develop a city-wide shade tree program. The city is establishing a boulevard tree planting policy to increase tree cover within Burnsville, improve the appearance of road corridors and improve the neighborhood living environments....*

[2] The Minnesota Municipal Planning Act grants the authority to cities to regulate land use. Cities within the seven-county metro area regulate land use through three basic tools—the comprehensive plan, the zoning ordinance, and the subdivision ordinance; and the latter two tools must be consistent with the comprehensive plan and implement its adopted policies.

4.3 Strategies for Management of the Built Environment: *Several goals have been identified to maximize the benefits of trees within the developed portions of Burnsville. For each of the following goals, one or more strategies are put forth to achieve maximum results in the most practical, efficient manner.*

> ***1. Increase tree cover and diversity:*** *Begin an aggressive tree-planting program on city right-of-ways.... Burnsville has a lot of room to grow trees. It should be kept in mind that the value of tree benefits is nearly three times the cost of planting, maintenance and removal....Increase the ratio of overstory trees to smaller trees in city parks....*

4.3.1 Built Environment Tree Monitoring Recommendations: *Monitoring trees in maintained areas of parks and along the city streets, will allow Burnsville to assess the effectiveness of the strategies laid out in this plan, identify new pests and stressors, and closely follow existing, chronic problems such as oak wilt, Dutch elm disease and invasive exotics. This monitoring can take place by several means.*

> *1. Existing program of oak wilt inspections with the addition of elm and ash inspections. These additional inspections, performed in conjunction with the oak wilt inspections, will provide sufficient monitoring of the existing, chronic problems of oak wilt and Dutch elm disease while forming the first step to quick response should emerald ash borer infest the city's ash population.*
>
> *2. Completing the boulevard tree and park tree inventories. Some of the data collected during these inventories, like the sample inventories already performed, will complete the database of information on species diversity, size and age diversity, tree maintenance needs, planting opportunities, spatial distribution and tree survival....*

4.7: Priorities and Recommendations: *Create a parking lot shading ordinance.*

- ***City of Burnsville Natural Resources Master Plan*, 1999:** In 1999, the City prepared its first *Natural Resources Master Plan* (NRMP),[3] one of the first in the region, to protect the City's natural resources. In 2007, the City updated the plan and adopted it as an addendum to the *City of Burnsville 2030 Comprehensive Plan Update*. The latest update of the NRMP contains an extensive urban forestry component with recommendations for boulevard trees, developed park trees and natural area forests. The plan maps areas that warrant special attention as Natural Resource Areas and has management plans for their protection.
    - ***Goal 2:*** *Reduce and prevent tree loss due to existing and potential threats.*
        - ***Strategy 3:*** *Prepare for the event of an Emerald Ash Borer outbreak by occasional drive-by monitoring of the city's significant ash population. This monitoring can*

[3] http://www.burnsville.org/DocumentCenter/View/446, http://www.burnsville.org/DocumentCenter/View/447

be performed in conjunction with oak and elm inspections. The State of Minnesota has added Emerald Ash Borer to continuing education programs focused toward State Licensed Tree Inspectors. While there is still much to be learned about this pest, the use of state licensed tree inspectors will be key in early detection. Remove the poorest quality ash trees from city parks and on city boulevards whenever the opportunity arises. This pest prefers ash trees under stress; whenever a dying, diseased or significantly damaged ash is found, removal should be a priority. The city has a high percentage of its planted trees represented by ash species, which could present a significant financial burden should Emerald Ash Borer invade the area.

- ***Goal 4:*** *Update Tree Preservation and Planting Related Ordinances. Update current ordinances to reflect goals and strategies in this Natural Resources Master Plan using a discernment process to help the city determine:*
  - *What it wishes to preserve, including which tree species, what size trees, forests versus individual trees, etc.*
  - *Whom it wishes to hold accountable (who are the involved parties)*
  - *Who will enforce the new policies/code*
  - *How will it be enforced*

- ***Outcome B:*** *New development and redevelopment occurs in an environmentally sensitive manner, preserving and enhancing our natural resources.*
  - ***Strategy B1:*** *Avoid the loss of all priority natural resources through effective use of environmental protection ordinances.*
  - ***Strategy B4:*** *Consider changes to the current landscape requirements which will encourage the use of native plant materials and maximizing biodiversity.*
- On page 26, the plan states the following: "American Forests (a non-profit organization that supports reforestation) suggests a 40% tree canopy for best building energy efficiency and comfort in cities. The tree canopy of Burnsville is currently at 24.5%."

- ***Burnsville Sustainability Guide Plan:*** The "Healthy Urban Forests" chapter in the *Burnsville Sustainability Guide Plan* provides important findings and policies for the long-term health of the City's trees.[4]

  - ***Sustainable Best Practice 11: Healthy Urban Forest:*** *Burnsville will strive to maintain a healthy urban forest; promote tree planting by establishing programs to annually increase tree canopy within the City and to develop an incentive program that encourages private sector owners to plant trees within parking lots and other areas of the City.*

[4] http://www.burnsville.org/DocumentCenter/View/1287

- ***Strategy 1 – Increase Tree Cover and Diversity:*** *Increasing tree cover will mitigate impacts from urban heat island effects by shading hard surfaces and increasing transpirational cooling.*

- ***Strategy 2 – Reduce Tree Loss:*** *Increase aerial tree cover by 30 percent by the year 2020.*

- ***City of Burnsville Emerald Ash Borer Management Plan:*** *Canopy Replacement and Care. "As the budget permits, removed public ash trees will be replaced with non-host species that will enhance the planting site, are appropriate for the planting site, and add to the diversity and general health of the urban forest.... New plantings will comply with City ordinances related to tree diversity and the City shall utilize the 10-20-30 rule to increase species diversity. That is, the City endeavors to maintain a public tree canopy that comprises of no more than 10% of trees in the same species (e.g. Red Oak), no more than 20% of trees in the same genus (e.g. all Oaks), and no more than 30% of trees in the same family (e.g. "Fagaceae" – includes trees such as chestnut and beech in addition to oak).*

- ***City of Burnsville Parks Master Plan:*** The City has an extensive park system that comprises 25% of its total land area and provides 46 acres of parkland per 1,000 residents. The City's park system plan, the *City of Burnsville Parks Master Plan*, September 2000, addresses its urban forest concerns at a very detailed level.[5]

- ***Burnsville Storm Water Pollution Prevention Plan*** **and the** ***Burnsville Water Resources Management Plan*****:** The City has adopted plans to manage stormwater and its water resources, *Burnsville Storm Water Pollution Prevention Plan*,[6] which the City is currently updating, and the *Burnsville Water Resources Management Plan*.[7] Although not specifically mentioned in either plan, probably the greatest environmental benefits from the urban forest are improvements to stormwater management, which in turn lead to both surface and groundwater quality improvements. The *Burnsville Storm Water Pollution Prevention Plan* reflects this and focuses on the integration of stormwater facilities with parks and on wetland restoration to improve stormwater quality.

- **Environmental program participation and recognition:** The City's decision to participate in a program and commit to the program's goals is an indirect policy decision, as is the case with the following two programs:

    - **Minnesota GreenSteps Cities Program, Actions for Best Practice Area 16, Urban Forests:** Since April 2012, the City has been an active participant in the Minnesota

[5] http://www.burnsville.org/DocumentCenter/View/344
[6] http://www.ci.burnsville.mn.us/DocumentCenter/Home/View/6208
[7] http://www.burnsville.org/DocumentCenter/View/459

GreenStep Cities Program and has advanced quickly to Step 2.[8] The City complies to some extent with the Program's Action Steps:

1. **Certify as a Tree City USA.:** The City is a certified participant of Tree City USA (12 years).
3. **Budget for and achieve urban canopy/tree planting goals:** The *Burnsville Sustainability Guide Plan* established the City's tree canopy cover goal (a 30% increase by 2020). The City's adoption in 2010 of the *City of Burnsville Emerald Ash Borer Management Plan* established a budget and replanting schedule for City-owned trees and the update of that plan will extend that work to encompass trees on private property as well.
4. **Maximize tree planting along your main downtown boulevard or throughout the city:** The *City of Burnsville Emerald Ash Borer Management Plan* established a budget and replanting schedule for City-owned trees.
5. **Adopt a tree preservation or native landscaping ordinance:** The City Code includes ordinances that encourage native landscaping and diversity of species. The recommendations for text changes to the City Code will significantly enhance the tree preservation regulations.
6. **Build community capacity to protect existing trees by certifying at least one or more local staff/volunteers:** The City has a strong program to build community capacity for tree preservation.

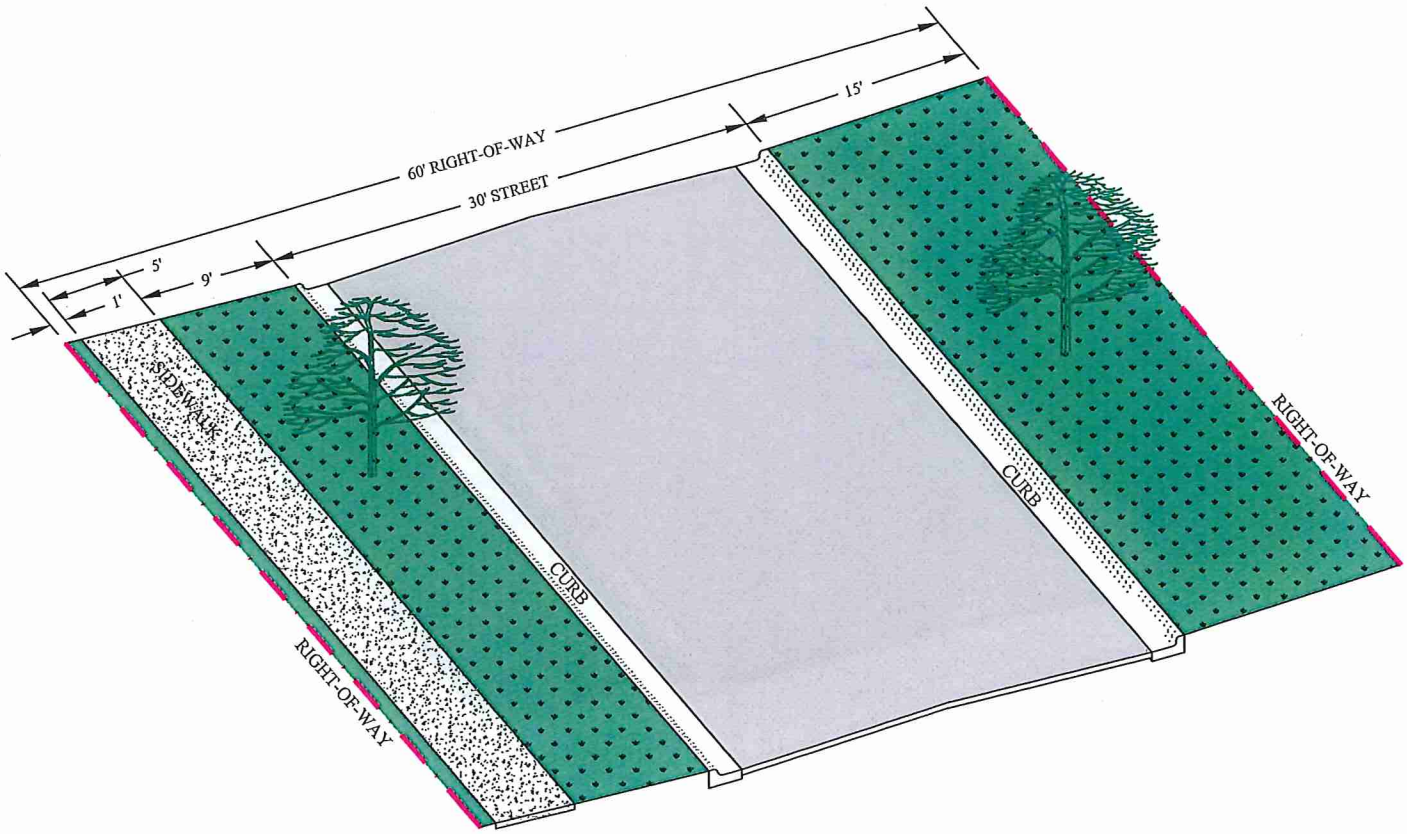
- **Minnesota Blue Star City:** As of May 2012, the City was recognized as a Minnesota Blue Star City, which honors Minnesota cities with progressive stormwater management policies and practices.[9]

[8] For more information and a description of all that the City has accomplished to achieve Step 2 status, refer to: http://greenstep.pca.state.mn.us/cityInfo.cfm?ctu_code=2393472

[9] http://www.bluestarmn.org/

Appendix C

TYPICAL BOULEVARD DIAGRAM



Appendix D

8-3-5: TREES, SHRUBS AND PLANTS ON PRIVATE PROPERTY:

(A) Any person owning or occupying real property bordering on any street shall prune trees, plants or shrubs on his/her property so that they do not obstruct the street lights, obstruct the passage of pedestrians on sidewalks, obstruct vision of traffic signs or obstruct the view of any street or alley intersection. The minimum clearance of any overhanging portion thereof shall be twelve feet (12') over sidewalks and fourteen feet (14') over streets. For purposes of this Section, obstruct means creating a public health or safety concern.

1. Notice to Prune. Should any person owning real property bordering on any street fail to prune as provided by this Chapter, the City may order such person to prune such tree, plant or shrub within thirty (30) days after written notice. A shorter period may be prescribed by the City in the event of the existence of an immediate hazard.

2. Failure to Comply. When a person to whom an order is directed fails to comply within the specified time, the City may prune the tree, plant or shrub, and assess the cost thereof to the owner as provided by law in the case of special assessments.

(B) Diseased and Infected Trees.

1. The City may enter upon private lands to inspect trees, plants or shrubs whereon insect pests and plant diseases may be found to have injuriously affected either said trees, plants or shrubs or which may injuriously affect the public health and welfare. The City may conduct field inspections, including the removal of specimens for laboratory analysis that may be necessary to determine the presence of said infestation or to locate any private lands which might serve as a breeding place for diseases or insects. Before making any inspection on private property, the City shall give notice of the inspection to all affected residents and property owners either through an individual oral or written notice, or by publishing the notice in a local newspaper.

2. If a disease or insect infestation is found, the City may, by written notice, give the property owner a definitive time but not less than twenty (20) days to remove, treat or dispose of the infested trees, plants or shrubs. If the work is not satisfactorily completed within the time prescribed, the City may enter upon the property and remove and/or treat the infested area and assess the cost thereof to the owner as provided by law in the case of special assessments.