

Village of Medina

2010 Street Tree Risk Survey Report



**Prepared for:
Village of Medina, New York
Department of Public Works**

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I. Introduction

At the request of the Village of Medina, NY (Village), a windshield survey of trees located on the right-of-way of Village streets was completed in February of 2010. The purpose of the survey was to identify Village trees with defects present that may pose a risk to people and property and make management recommendations to reduce these risks. The survey did not identify all tree related risks.

II. Survey Methodology

Each Village street was driven in one direction, trees appearing to be within the Village's right-of-way with obvious defects were identified and management recommendations were made. The Village provided a list of streets to be surveyed, identifying the Village street right-of-way widths. State and County streets were not surveyed. Urban Forestry, LLC confirmed the tree was located in the Village right-of-way (ROW) by measuring $\frac{1}{2}$ the right-of-way width from the centerline of the street. It is the Village's responsibility to verify the trees are within the Village ROW and what management actions are appropriate. Each tree was assigned to geographical management areas (Appendix 1).

Tree Location

The location of each tree is identified by the descriptors noted in Table 1 and the diagram in Appendix 2.

Table 1.	Tree Location
Descriptor	Description
Address	Street address when present.
Assigned	Y - means yes assigned, an address was not present on a building or it was a lot and an address was assigned based on adjacent addresses. N - means no, not assigned, it is an actual address.
Street	Street name
On Street	Tree is located on this street
Side of Street	Even or Odd side of the street or Median the tree is located on
Mgmt. Unit	Geographic management 1 - 4
Tree #	Trees at an address are numbered in ascending order with the addresses of the on street (See Appendix 2)
Side	Tree is located in Front, Side or Rear of property

Location	Tree Lawn – Tree is located between the sidewalk & street. Lawn – Tree is located within ROW, there is no sidewalk present. Tree Pit – Tree is located in a cutout of the sidewalk. Behind walk – Tree is within the ROW, between the sidewalk and private property. Private tree – Tree is on private property, however, poses a threat to the ROW Natural Area – Tree is located in an un-maintained natural area.
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Management Information

Additional information was collected for each tree and regarding the site (Table 2). This information will assist in making management decisions, setting priorities and the allocation of resources.

Table 2.	Tree Management Information
Descriptor	Definition
Tree Species	Tree genus, species and common name
DBH	Approximate tree diameter in inches at 4.5 feet above grade
Mgmt. Rec.	Management recommendation, see Table 3.
Replace	Tree removals and stumps only. Should the tree be replaced – Yes, No, NA – Not Applicable
Condition	Tree health – Good, Fair, Poor, Very Poor, Dead
Site	Good, Fair or Poor site for a tree
Overhead	Overhead utilities present: All, Primaries, Secondaries, None.
Further Inspection	Resistograph – decay present in trunk or limbs, Resistograph measurement will determine the extent of decay and help assess the risk of failure. Aerial – There are defects in the tree crown that are difficult to evaluate from the ground, need to be evaluated by arborist when pruning the tree. Check ROW – The client needs to confirm the tree is located in the ROW
Comments	Comments regarding defects or specific recommendations.

Management Recommendations

Trees with defects were evaluated and recommendations were made to minimize the risk of a failure by pruning, removal or further inspection. These recommendations were also prioritized based on the seriousness of the defects and potential targets (Table 3).

Table 3.	Tree Management Recommendations
Management Recommendation	Description
Prune Reduce	High priority defects present in the trunk, limbs and scaffolds, or codominant leaders with included bark and scaffold length needs to be reduced to remove

	end weight and reduce risk of trunk or branch failure.
Prune Safety 1	Perform Safety Prune, high priority due to large size of parts that may fail, risk of failure and/or targets threatened
Prune Safety 2	Perform Safety Prune, lower priority due to risk of failure and/or targets threatened
Remove 01 to 16	Remove Defective Tree, the higher the score (01-16) the higher the priority for removal.

The trees recommended for removal were scored Remove 01 through 16 (Table 4). The system is designed to prioritize the removals. The trees should be removed in order from the higher score to lower score if resources are limited.

Table 4. Risk Rating		
Factor	Possible Values	Value/Score
Failure Risk	1-low; 2-medium; 3 – high; 4 - severe	Enter value
Target rating:	potential target that may be struck on failure: 1 – Lawn, walk 2 – Residential street 3 – Arterial street, Residential Intersection, School Zone 4 – Primary utility, Building, Arterial Intersection	Enter value
Risk Rating		Multiply the two values to get risk rating

III. Survey Data Summary & Discussion

Management Needs

There are 154 trees identified requiring action. Fifty-three percent (82 trees) are recommended for pruning, and forty-seven percent (72 trees) were recommended for removal.

The southwest management area of the Village has the highest percentage of trees and the northeast has the lowest (Table 5.). This is consistent with the observed high concentration of old large silver and red maples located in southwest portion of the Village.

Table 5. Geographic Distribution		
Mgmt Unit	# of Trees	% of Trees
1	31	20.13%
2	22	14.29%
3	73	47.40%
4	28	18.18%
Total	154	100.00%

Species Distribution of Needs

An analysis of the tree species requiring maintenance can provide an indicator of a problem with a particular species of tree and assist a manager to direct attention to an emerging problem. Over ninety-seven percent of the trees are maples and the majority are red and silver maple (Table 6). Red and silver maples are large, weak-wooded species that require a high level of maintenance, particularly when they become over-mature.

Table 6. Species Distribution of Needs		
Tree Species	# of Trees	% of Trees
Acer negundo - Boxelder	3	1.96%
Acer platanoides - Norway Maple	5	3.27%
Acer rubrum - Red Maple	70	45.75%
Acer saccharinum - Silver Maple	52	33.99%
Acer saccharum - Sugar Maple	19	12.42%
Platanus occidentalis - Sycamore	1	0.65%
Populus deltoides - Cottonwood	1	0.65%
Robinia psuedoacacia - Black Locust	1	0.65%
Tilia americana - Basswood	1	0.65%

Urban forestry professionals recommend a single species of tree should not exceed 10% of the total population in an effort to minimize the potential impact of disease or insect pests on the urban forest. The Village's high maple population is well above the 10% threshold and thus is reason for concern. There two exotic pests that threaten maples and ash trees that were imported from Asia. The emerald ash borer (www.emeraldashborer.info) is lethal to ash trees and is expected to arrive in our area in the near future. Fortunately the Village has very few ash trees in its public tree population to raise concern; however planting ash trees should be avoided. The Village tree population is susceptible to losses from Asian long horned beetle (www.na.fs.fed.us/fhp/alb/) which preys on maples. The pest has not reached our area and quarantine and mitigation measures have been in place in the outbreak areas of New York City and Chicago for a number of years with some success. Early detection and reducing the number of maple trees in the public tree population by replacing maple trees with other species as they are removed is the first line of defense followed by culling of infected trees after detection.



Asian Longhorned Beetle

Diameter Distribution of Needs

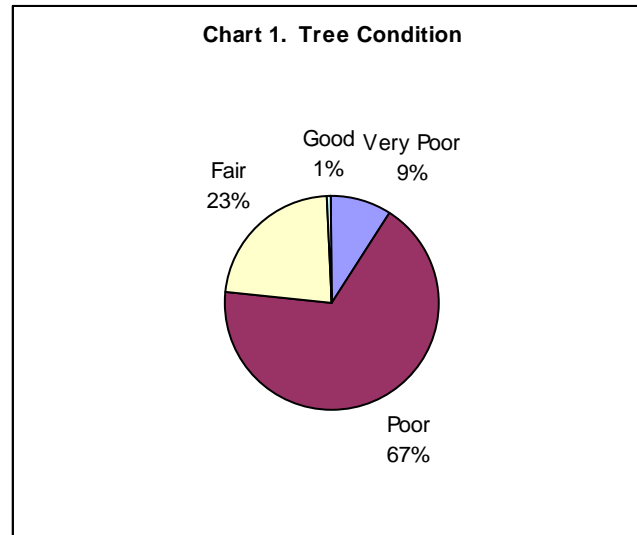
Trunk diameter is an indicator of tree age. Over eighty-two percent of the trees are 25 inches in diameter or larger (Table 7). This is an exceptionally large population of mature and old aged trees. Large trees are more costly to maintain however they also provide the most environmental benefits such as reducing storm runoff, air pollution and buffering temperature. Dedicating resources to maintain and enhance the condition and lifespan of large and mature trees helps maximize these benefits.

Table 7. Diameter Distribution		
Diameter Range	% of Trees	% of Trees
6 -12	4	2.60%
13-18	7	4.55%
19-24	16	10.39%
25-30	41	26.62%
31-36	37	24.03%
37-42	32	20.78%
43-48	14	9.09%
> 48	3	1.95%

Tree Condition

Tree condition is assessment of tree health and tree structure. Seventy-six percent of the trees are in poor condition or worse (Chart 1). This is not surprising given that nearly 50% of these trees are recommended for removal. However, this is an exceptionally large percentage of trees in poor condition. The age of these trees and the recent frequency of severe tree damaging storm events has most likely been the cause the high percentage

of these trees poor condition. Implementing a proactive pruning program of these trees will improve the health and prolong the lifespan of these trees.



Removals

Defective trees were evaluated for removal. If pruning more than 33% of the trees live crown was required to remove the defective parts and the tree was in poor condition, the tree was recommended for removal. Some removals may appear healthy, however in many cases there is severe trunk decay (as pictured to the right) that is not readily evident and the tree is a high failure risk.



There are 72 trees recommended for removal. Trees recommended for removal were scored

Priority	# of Removals	% of Removals
Remove 16	6	8.33%
Remove 12	15	20.83%
Remove 09	1	1.39%
Remove 08	13	18.06%
Remove 06	8	11.11%
Remove 04	17	23.61%
Remove 03	2	2.78%
Remove 02	9	12.50%
Remove 01	1	1.39%

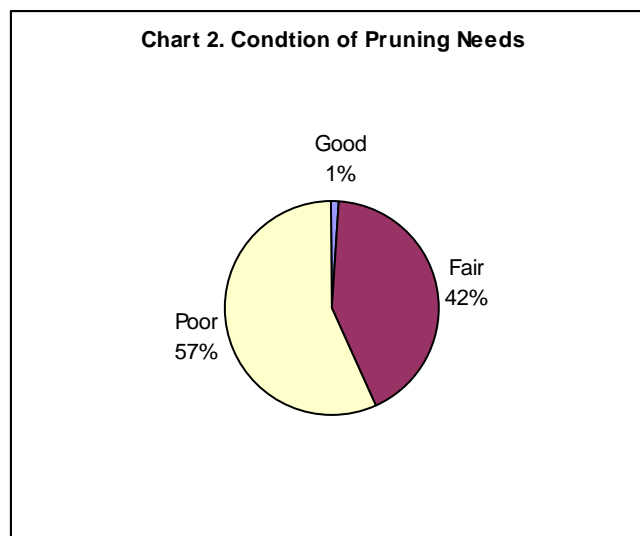
using the risk rating detailed in the survey methodology to assign a priority. Table 8 displays the number removals by priority from the highest to lowest. If there are insufficient resources available to complete all of the removals in one operation, trees should be removed starting with the highest risk rating working down to lowest risk rating.

Pruning Needs

Pruning needs were also prioritized (Table 9). Prune reduce and safety 1 are trees with large defective branches or serious trunk defects that are recommended for pruning to reduce the risk of these defects failing. Reduction pruning is the proper pruning practice of reducing the length of branches and/or the total height of a tree to reduce the risk of structural failure of defects identified in the tree. By reducing the length of a branch or the tree height, the probability the defective branch or trunk will fail decreases.

Table 9. Pruning Priorities		
Priority	# of Tree	% of Prunes
Prune Reduce	13	15.85%
Prune Safety 1	20	24.39%
Prune Safety 2	49	59.76%

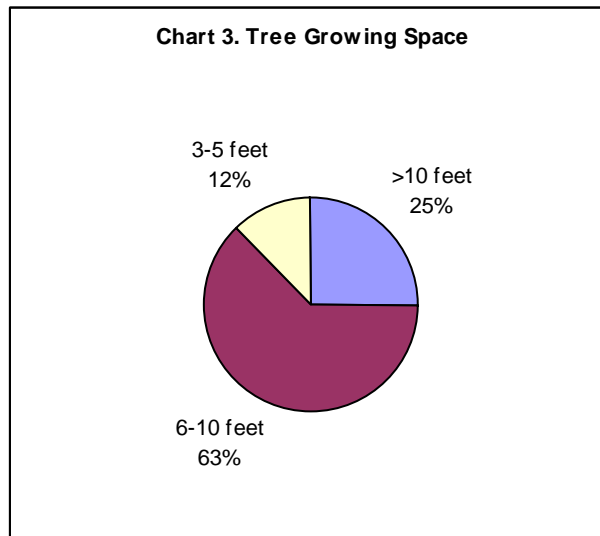
Fifty-seven percent of the trees recommended for pruning are in poor condition (Chart 2). This is an exceptionally large percentage of the trees. These trees will most likely continue to decline in health and require removal within five to ten years. Pruning will help maintain and prolong the life span of the trees in fair condition or better.



IV. Additional Observations

Tree Planting Opportunities

There are numerous opportunities to plant street trees. I estimate that there may be between 1,000 and 1,500 sites available to plant trees. The tree lawns are also very generous in Medina. Eight-eight percent of the sites the trees are located in are six feet or wider (Chart 3).



Tree lawns this wide, provide the opportunity to use large tree species that provide the most environmental and aesthetic benefits. Medina is also located in USDA Hardiness Zone 6a which expands the list of tree species available to plant such as many oaks native to the mountains of the south.

Sidewalk Replacement

Sidewalk replacement is a necessary task of any “urban” village. Improper root cutting during sidewalk replacement activities will impact tree health and may create tree failure risks. Proper and improper sidewalk replacement practices were observed in the Village. Replacing a sidewalk and protecting a tree can be accomplished with minimal impact to the tree and a proper installation of the sidewalk.



The roots were cut to install the sidewalk. Decay has entered the tree and now it is a failure risk and needs to be removed.



The sidewalk was curved around the tree roots protecting the tree.

V. Summary

It is my observation that the trees in the Village are large and over-mature red and silver maple and represent the most significant management challenge for the Village. Resources should be dedicated to managing these trees as a priority. Significant numbers of tree removals will be required in the near future. Pruning practices should focus primarily on structural pruning rather than pruning for aesthetic reasons. Village staff should be trained in proper pruning practices or qualified contractors should be hired.

Tree planting efforts should focus on building species diversity to minimize the potential impact of disease and insect pests. The work identified in this survey can be completed over several years. Once the work identified in this survey is completed, a new risk survey should be completed or a complete tree inventory could be completed if the Village would like to intensify its management efforts.

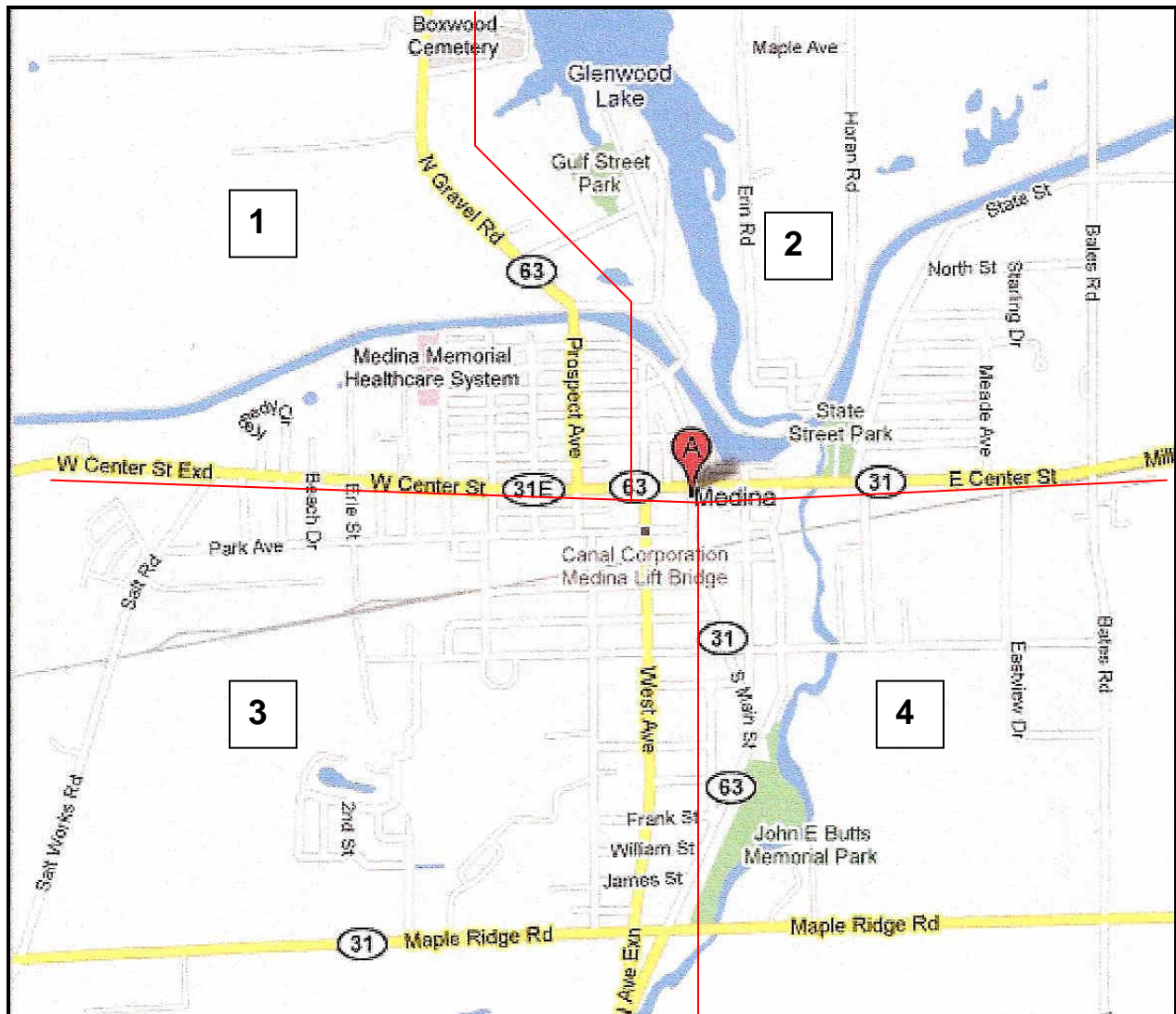
The Village's street tree population is a unique and valuable resource. There is a large population of mature trees that provide many environmental benefits and enhance the quality of living in Medina. The generous sized tree lawns and rights-of-way provide an ongoing opportunity to maintain a large and healthy street tree population.

Urban Forestry, LLC is available to assist the Village in developing a work plan, cost estimates, contract specifications and contract monitoring as well as staff training, inventories and management planning.

Thank you for the opportunity to serve the Village and don't hesitate to contact us if we can be of service in the future.

The client has agreed that UFLLC is acting as an independent contractor and that UFLLC's services and this report are a non-exclusive study of the trees in proximity to the clients facilities and further agree that any recommendations/evaluations made by UFLLC are solely for the benefit of the client so as to assist the client in it's planning/assessment of the allocation of resources. UFLLC shall have no liability for any claims arising out of the performance or non-performance of the recommended actions and the client shall defend and indemnify UFLLC from any such claim including but not limited to claims alleging that UFLLC tested, identified or caused damage (directly or indirectly) to the trees identified in the survey.

Village of Medina, New York Forestry Management Units



Urban Forestry, LLC
Tree Inventory Schematic

Legend: @ = Tree or planting site

Scale: 0 10 20 30 40 50 60 70 80 90 100 Feet

On Street	From Street	To Street	Side	Start #
B Street	C Street	A Street	Odd	21