



City of Buchanan, MI Tree Maintenance Program

The Buchanan Tree Inventory was completed in early 2022. Certified Arborists assessed every City tree along public streets, as well as the public trees within a number of City parks. For each tree, the tree's condition, primary maintenance need, and risk level were assessed (Appendix A).

Tree risk was assessed based on a risk assessment period of one year. To assign a tree risk level, the likelihood of a tree or part of the tree to fail, the likelihood that the tree or part would strike a target if it failed, and the consequences (e.g. damage) caused by any failure were taken into account. A full accounting of the approach used to identify tree risk can be found in the attached Appendix A.

The first responsibility of a municipal forestry operation is to manage tree risk. It is important to recognize that all trees pose some degree of risk. The only urban forest without risk, is an urban forest without trees. However, it is well recognized that trees provide a wide range of benefits -- from air and water quality, to human enjoyment of the outdoors.

Trees were rated Low, Moderate, High, or Extreme-Risk following industry standards for Tree Risk Assessment established by the International Society of Arboriculture. It is recommended that all High-Risk trees are addressed first. Moderate-Risk trees should be addressed after High-Risk trees. All trees present some level of risk. Low-risk trees should be the last priority and many may be addressed as part of a routine maintenance or pruning cycle.

The City seeks to balance tree management between the benefits that trees provide, the risk that trees pose, and the resources available to maintain trees. This outline is designed to provide an overview of the City's tree management program, starting with mitigation of known tree maintenance concerns, before addressing practices that help maximize the benefits that trees provide, and manage tree risk over the long term.

Maintenance Priority 1

High Risk Trees

The 2022 tree inventory identified a total of 59 High risk tree concerns. No Extreme risk trees were identified.

The first priority of the City of Buchanan's urban forestry program is to address these 59 High risk trees. The site listing for this work can be found in **Appendix B**.

- **High Risk Removals: 43 trees** were identified as in need of Removal and presenting a High risk to the public. It is recommended that these trees are removed as soon as possible.
- **High Risk Pruning: 16 trees** were identified as in need of Pruning and presenting a High risk to the public. In order to mitigate some the risk presented by these trees, it is recommended to remove all dead, dying, decayed, diseased, broken, or otherwise damaged limbs 4-inches or greater.

Pruning: For all pruning operations, under no circumstance should more than 25% of the tree's live crown be removed in one growing season. Pruning is best performed during the winter months. At the very least, no elms or oaks should be pruned during the growing season. Prior to implementing any pruning cycle, detailed specifications should be developed based on ANSI A300 Part 1 and appropriate ISA best practice guides

Maintenance Priority 2

Moderate Risk Trees

After addressing the 59 High risk trees, the next priority is performing tree work on Moderate risk trees. The 2022 tree inventory identified a total of 439 Moderate risk tree concerns.

Appendix C lists the 60 trees that are the highest priority of the 439 Moderate risk trees. This list provides are starting point for the City of Buchanan to work toward completing *all* Moderate risk tree work. After completing work on these 60 trees, the remaining Moderate risk trees should be addressed systematically and during the routine pruning cycle (See below). Trees listed as Priority 2 (Appendix C) are all over 34" DBH and have a probable or imminent likelihood of total tree or branch failure within the next year.

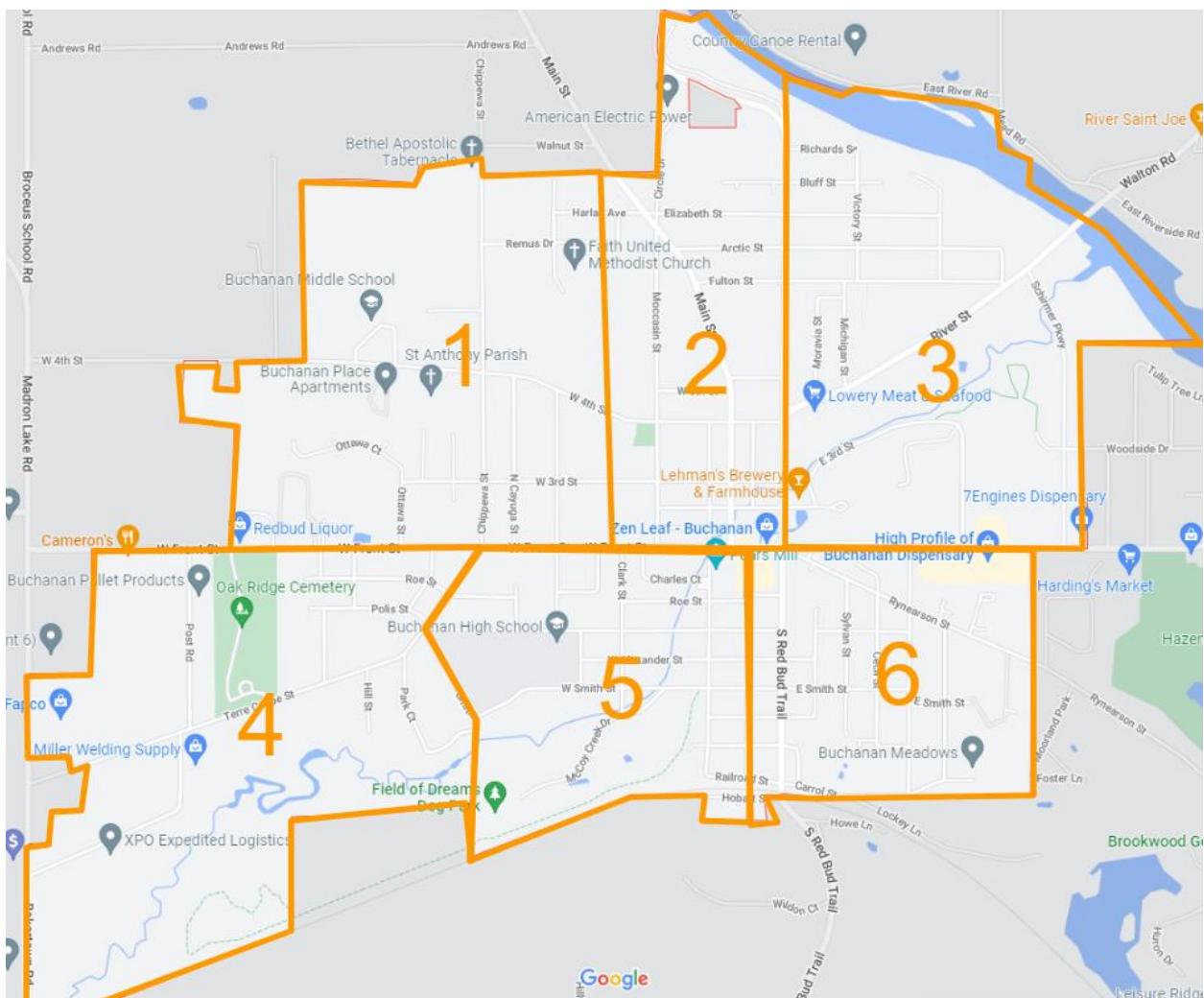
- **Moderate Risk Removals: 188 trees** were identified as in need of Removal and presenting a Moderate risk to the public. The **24 trees** listed in Appendix C should be addressed first due to their likelihood of failure and size.
- **Moderate Risk Pruning: 251 trees** were identified as in need of Pruning and presenting a Moderate risk to the public. The **36 trees** listed in Appendix C should be addressed first due to their likelihood of failure and size. In order to mitigate some the risk presented by these trees, it is recommended to remove all dead, dying, decayed, diseased, broken, or otherwise damaged limbs 4-inches or greater.

Routine Pruning

A regular pruning cycle can help identify and manage tree defects long before they arise to a tree risk concern, when they are often more damaging to the tree and more costly to address. A proactive pruning cycle also minimizes storm damage, improves tree structure and form, and maximizes tree longevity.

- **Routine Pruning: 803 trees** were identified in the inventory as needing a Routine Prune. This means pruning can take place any time during the pruning cycle and is less urgent than the Priority Prune maintenance recommendation.

For the City of Buchanan, a 6 to 7 year pruning cycle is most appropriate. Ideally, approximately 1/6 (one-sixth), or roughly 200, street trees greater than 6-inches in diameter would receive attention each year.



Example of pruning cycle zones/districts for Buchanan

During the pruning cycle, the first priority is to manage any tree risk concerns. Specifically, this is the pruning of any diseased, dying, broken, cracked, decayed, or otherwise damaged limbs 4-inches or greater in diameter and to maintain clearance for visibility and safe passage. Once these issues are taken care of, additional pruning should be considered for limbs 4-inches or greater that are likely to become competing leaders, clustered, or otherwise competing. As appropriate, attention can be given to improve tree architecture (scaffolding and spacing).

Young Tree Training

Young trees (those 6-inches in diameter and less) benefit from more frequent pruning (every 3 years). Pruning, or training, young trees can help to reduce tree defects and conflicts such as competing leaders, clustered branching, and poor limb attachment. It's also far less resource intensive to prune these trees, as they can generally be reached from the ground with the use of non-mechanized equipment.

- **Young Tree Training: 203 trees** were identified in the inventory as needing Young Tree Training. The City should aim to prune these 203 trees on a 3-year cycle (approximately 70 trees per year). Note, the number of trees trained annually should increase as planting increases to maintain a 3- year training cycle.

Regular Tree Assessments

Tree maintenance should be prioritized based on a firm understanding of tree risk. The American National Standards Institute (ANSI) A300 committee has established an industry-accepted approach to tree risk assessment. This has been further supported by the International Society of Arboriculture's (ISA) best practice guides. Together, these frameworks inform the City's tree risk management approach.

The basics of the City's regular assessment is to perform a Level 1 Limited Visual Assessment:

- Annually or after any major weather event (e.g. ice storm with greater than ¼" accumulation, tornado, derecho, etc.): Major roads and thoroughfares, high pedestrian traffic streets and areas.
- Every other year along all remaining streets. This may be performed all at once, or alternate different areas each year.

A limited visual assessment may be performed from a slowly moving vehicle with hazards and cab-mounted flashers activated. It is useful to have two people perform the assessment, one driving and one looking for tree maintenance concerns. Alternatively, an assessment may be performed on foot or bicycle.

The purpose of the assessment is to identify public trees with substantial defects that are likely to fail before the next assessment and likely to impact public areas. Generally, these include but are not limited to:

- Dead trees 10 inches or greater in diameter within the right-of-way.
- Trees 10 inches or greater in diameter with significant structural defects such as major decay, large horizontal or vertical cracks, large cavities, or dead or declining canopies that are within the right of way.

- Trees 10 inches or greater in diameter with signs of recent or changing lean or shifting root plates that are within the right of way.
- Dead, dying, diseased, decayed, broken, or otherwise damaged limbs greater than 4" in diameter that overhang sidewalks, streets, or other places of public congregation.

Such trees shall be indicated for pruning or removal to mitigate the risk concern identified. Work shall be completed as soon as practicable within the limitations of the City's available budgetary and personnel resources.

Planting

The City's Tree Inventory included 1,589 trees, 1,503 of which are located along community streets. This comes out to about 57 trees per mile, which is considered fairly low-stocked for Michigan communities.

Mortality due to both natural causes and tree removal for infrastructure projects is expected to range around 2% or around 30 trees per year. Therefore, to maintain a continuous population of trees, the City should plan to plant 35 to 45 trees each year. To improve stocking levels, it may be more appropriate to **plant 50-60 trees each year**.

The City's tree population is lacking in species diversity. The inventory determined that over 60% of the City's tree population are maple. To the extent possible, no additional maple trees should be planted until a greater degree of tree diversity is achieved. A selected list of recommended tree species for planting is in **Appendix D**.

Perhaps most importantly, planting may be limited by how many trees can be reasonably watered. No more trees can be planted than can be watered for 2 growing seasons. Each newly planted tree should receive 5-10 gallons of water each week, applied slowly to soak into the soil, from May through October. Willing residents may be able to augment the City's watering efforts.

APPENDIX A

TREE INVENTORY DATA FIELDS

1. **Address/Location**—DRG identifies the location of each tree and stump by the following attributes.
 - a. *Address.* House address.
 - b. *On Street.* The street the tree is physically found.
 - c. *Side.* The side of the house on which the tree stands in relation to the physical address.
 - d. *X and Y coordinates* in the desired format.
2. **Species**—DRG names trees by genus and species using both botanical and common names, and by cultivars where appropriate.
3. **Tree Size**—DRG’s urban foresters measure the diameter to the nearest inch in 1-inch size classes at 4½ feet above the ground, or diameter at breast height (DBH).
4. **Multi-Stem Tree**—DRG notes if a tree has multiple stems on trunks splitting less than 1 foot above ground level.
5. **Condition**—Staff consider signs of stress, poor structure, mechanical damage, soil and root problems, disease, and pests in the assessment of tree condition.
 - e. *Good.* A good tree shows no significant problems.
 - f. *Fair.* A fair tree has minor problems that may be corrected with time or corrective action.
 - g. *Poor.* A poor tree has significant problems that are irrecoverable.
 - h. *Dead.* A dead tree shows no sign of life.
6. **Primary Maintenance**—DRG assigns one of the following maintenance needs:
 - a. *Remove.* Trees recommended for removal have defects that cannot be practically or cost-effectively treated. Most trees in this category have a sizable percentage of dead crown.
 - b. *Priority Prune.* Removal of one or more limbs to reduce risk, provide clearance, and restore the tree.
 - c. *Train.* Pruning of young or medium-aged trees to improve tree and branch architecture.
 - d. *Routine Prune.* Buchanan may opt to prune or manage the trees for health or aesthetic appearance. Tree should be pruned as part of a routine pruning cycle.
 - e. *Stump Removal.*
7. **Defects**—DRG identifies the conditions which indicate the presence of structural defects recording only the most significant condition and limit conditions to the following:
 - a. Dead and dying branches.
 - b. Broken and/or hanging branches.
 - c. Branch attachment (adventitious, codominant, multiple, overextended).
 - d. Trunk condition (canker, bulges, ridges).
 - e. Cracks.
 - f. Decay or cavity (large trunk wound).
 - g. Tree architecture (lean, bows, taper, live crown ratio).
 - h. Root problem (dead, decayed, missing, abnormal, girdling, lack of flare).
8. **Risk Rating**—DRG evaluates risk and assigns a risk rating based on an assessment of the failure mode (i.e., branch, whole tree, codominant stem) with the most significant risk. The specified period for the risk assessment is one year. The risk part of this inventory and evaluation is to maintain compliance with the most recent standards and practices in the arboricultural industry. It is important to note that our

APPENDIX A TREE INVENTORY DATA FIELDS

inspections are “rapid assessments” and are meant to show a need for further study, and thus are not legally binding in any litigation.

DRG used the following criteria and matrices, based on the *International Society of Arboriculture Best Management Practices—Tree Risk Assessment*, Second Edition (E. Thomas Smiley, Nelda Matheny, and Sharon Lilly 2017), to arrive at a risk rating.

1. *Likelihood of Failure*. Identifies the most probable failure and rates the likelihood that structural defect(s) will result in failure based on observed current conditions.
2. *Likelihood of Impacting a Target*. The rate of occupancy of targets within the target zone and any factors that could affect the failed tree as it falls towards the target.
3. *Consequences of Failure*. The consequences of tree failure are based on the level of target and potential harm that may occur. Consequences can vary depending on the size of the defect, a distance of fall for the tree or limb, and any other factors that may protect a target from harm. Target values are subjective, but DRG staff try to assess them from our client’s perspective.

As shown in the matrix below, the likelihood of failure and the likelihood of target determine the likelihood of tree failure impacting a target.

Likelihood of Failure	Likelihood of Impacting Target			
	Very Low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

DRG’s urban foresters estimate the risk rating by combining the likelihood of tree failure impacting a target and the consequences of failure in the matrix below. Risk ratings are Low, Moderate, High, and Extreme. A Low Risk tree poses a low overall level of risk. A Moderate Risk tree may pose some threat, particularly during storm events or unusual weather. A High Risk tree presents a high likelihood of tree or tree part failure, even during normal weather conditions. An Extreme Risk tree always poses a significant risk and probability of failure.

Likelihood of Failure	Consequences			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Even though trees may pose multiple risks at once, DRG assigns one risk rating to each tree during the inventory process. The risk rating serves only as a prioritization mechanism and is not a guarantee; Buchanan must determine the level of acceptable risk.

9. **Risk Assessment Complete**—Staff record if they are not able to complete the assessment due to obstructions, safety concerns, or other unforeseen site conditions.

APPENDIX A

TREE INVENTORY DATA FIELDS

10. **Residual Risk**—DRG estimates residual risk as None, Low, Moderate, High, or Extreme for each inventoried tree, assuming that the recommended maintenance was carried out. DRG based residual risk solely on professional judgment, and our assessment of residual risk is not a guarantee or warranty of risk reduction.
11. **Further Inspection**—Trees in this category need added and future inspections due to a variety of issues beyond the scope of a standard tree inventory. Categories for further inspection include:
 - a. Annual inspection (e.g., a tree with a defect requiring annual monitoring).
 - b. Recent damage inspection (e.g., a healthy tree affected by recent construction or other damage).
 - c. Advanced risk assessment (e.g., a tree with a defect needing added or specialized equipment for investigation).
 - d. Insect/disease monitoring (e.g., a tree that appears to have an emerging insect or disease problem).
 - e. None.
12. **Overhead Utilities**—For each tree or site, DRG records if overhead utilities are:
 - a. Present and not conflicting.
 - b. Present and conflicting.
 - c. Not present.
13. **Date of Inventory**—The date the DRG urban forester collected the data.

APPENDIX B

HIGH PRIORITY TREE MAINTENANCE ACTIVITIES

High Risk Tree Removals					
Site ID	Address	On Street	Species	DBH	Comments
59	113 Red Bud Trl	Red Bud Trl	Norway maple	33	
133	508 Days Ave	Days Ave	Maple, Silver	24	
146	601 Oak St	Oak St	Maple, Silver	32	
169	501 Oak St	E Smith St	Mulberry, White	21	
237	116 S Detroit St	S Detroit St	Maple, Sugar	45	
250	112 S Detroit St	S Detroit St	Maple, Sugar	30	
255	307 W Front St	W Front St	Maple, Sugar	35	
264	112 S Detroit St	S Detroit St	Maple, Sugar	23	
268	123 S Detroit St	S Detroit St	Norway maple	28	
275	110 S Detroit St	S Detroit St	Maple, Sugar	25	
405	105 Moccasin St	Moccasin St	Norway maple	26	
445	315 W 4th St	N Detroit St	Maple, Silver	31	
454	314 N Detroit St	N Detroit St	Maple, Silver	31	
516	323 N Detroit St	N Detroit St	Maple, Sugar	30	
846	320 Bluff St	Bluff St	Maple, Sugar	20	
868	1005 Victory St	Victory St	Maple, Silver	54	
877	906 Victory St	Elizabeth St	Maple, Silver	30	
916	1002 Victory St	Elizabeth St	Maple, Sugar	30	
919	418 Arctic St	Arctic St	Elm, Siberian	27	
977	712 Roe St	Colonial Ct	Maple, Silver	25	
990	611 Roe St	Roe St	Elm, Siberian	45	cavity/decay in trunk
1000	610 Roe St	Roe St	Maple, Sugar	27	
1001	706 Polis St	Polis St	Maple, Sugar	24	decay in trunk
1138	110 Arctic St	Arctic St	Mulberry, White	35	
1174	308 Arctic St	Arctic St	Willow, Black	45	tree in significant decline
1178	801 Red Bud Trl	Fulton St	Maple, Sugar	27	
1183	130 Elizabeth St	Elizabeth St	Oak, Northern Red	30	private tree
1262	507 Michigan St	Michigan St	Elm, American	55	private tree. large dead branches over road
1271	444 Moccasin St	Main St	Maple, Sugar	65	unmaintained area but high risk
1276	444 Moccasin St	Main St	Maple, Sugar	23	
1291	444 Moccasin St	Main St	Maple, Sugar	29	
1300	445 Moccasin St	Moccasin St	Maple, Silver	36	
1324	603 Main St	Main St	Maple, Silver	33	
1325	110 W 4th St	W 4th St	Maple, Sugar	24	
1335	110 W 4th St	W 4th St	Maple, Sugar	37	
1376	703 Main St	Main St	Maple, Sugar	30	
1485	308 W Front St	W Front St	Maple, Sugar	27	
1498	116 Elizabeth St	Elizabeth St	Maple, Sugar	26	Very high risk, immediate removal recommended

High Risk Tree Removals (continued)					
Site ID	Address	On Street	Species	DBH	Comments
1512	307 Harlan Ave	Harlan Ave	Maple, Silver	45	Private tree with large decayed lead that could fall onto ROW
1543	701 W Front St	W Front St	Maple, Silver	48	
1549	701 W Front St	W Front St	Cottonwood, Eastern	45	
1555	709 W Front St	W Front St	Ash, Green	29	
1581	301 W Alexander St	Clark St	Maple, Sugar	33	

High Risk Tree Pruning					
Site ID	Address	On Street	Species	DBH	Comments
55	309 Red Bud Trl	Red Bud Trl	Spruce, Norway	35	
94	206 Red Bud Trl	Red Bud Trl	Maple, Silver	29	
151	111 Charles Ct	Charles Ct	Norway maple	30	
167	608 Oak St	Oak St	Maple, Silver	45	multiple hanging and dead branches
251	120 S Detroit St	S Detroit St	Maple, Sugar	28	
291	108 S Detroit St	S Detroit St	Maple, Sugar	26	
295	208 Oak St	W Chicago St	Maple, Sugar	26	
296	607 Days Ave	Jordan St	Maple, Sugar	27	
318	203 Days Ave	Days Ave	Cottonwood, Eastern	34	
381	110 W Front St	W Front St	Maple, Sugar	35	
400	108 Moccasin St	1st St	Oak, White	54	Recommend monitoring for health and preservation. Beautiful tree!
486	120 Lake St	Lake St	Maple, Sugar	31	
621	705 Caroll St	Liberty St	Maple, Sugar	27	
1334	430 Moccasin St	Moccasin St	Maple, Sugar	31	
1460	410 Moccasin St	Moccasin St	Maple, Silver	32	
1564	306 Clark St	Clark St	Basswood, American	36	

APPENDIX C

PRIORITY 2 TREE MAINTENANCE ACTIVITIES:

Large Moderate Risk Trees with Probable/Imminent likelihood of failure within 1-year

Priority 2 Tree Removals					
Site ID	Address	On Street	Species	DBH	Comments
139	506 Days Ave	Days Ave	Maple, Silver	37	
288	119 W Chicago St	W Chicago St	Maple, Sugar	37	
299	209 Days Ave	Days Ave	Maple, Sugar	37	
322	703 Days Ave	Days Ave	Maple, Sugar	37	
416	114 W Front St	1st St	Maple, Sugar	40	
518	319 N Detroit St	N Detroit St	Maple, Sugar	39	cavity/decay in trunk
571	322 W Front St	N Cayuga St	Maple, Sugar	36	
731	602 Ryneerson Rd	Cecil St	Maple, Silver	44	decay in trunk
855	316 Fulton St	Fulton St	Tree, Unknown	60	
871	322 Arctic St	Victory St	Maple, Sugar	45	
875	808 Victory St	Arctic St	Maple, Silver	40	
890	316 Fulton St	Michigan St	Maple, Sugar	47	
895	1107 Victory St	Victory St	Oak, Northern Red	55	decay in trunk/poor architecture
906	316 Fulton St	Michigan St	Maple, Sugar	50	
908	408 Fulton St	Fulton St	Cherry, Black	42	decay in trunk
911	406 Fulton St	Fulton St	Cherry, Black	45	decay in trunk
1162	118 Arctic St	Arctic St	Cottonwood, Eastern	38	
1184	310 Arctic St	Arctic St	Maple, Silver	50	
1224	318 Arctic St	Arctic St	Maple, Silver	43	
1236	325 Arctic St	Arctic St	Maple, Silver	37	
1252	124 Arctic St	Arctic St	Elm, American	47	
1415	1045 E Front St	Schirmer Pkwy	Mulberry, White	47	
1470	204 W Front St	W Front St	Oak, Northern Red	44	
1603	312 W 4th St	W 4th St	Maple, Sugar	42	

Priority 2 Tree Pruning					
Site ID	Address	On Street	Species	DBH	Comments
102	0 Oak St	Oak St	Tree of heaven	40	
162	105 Charles Ct	Charles Ct	Hackberry, Northern	50	
164	210 Days Ave	Days Ave	Maple, Sugar	39	
172	105 Charles Ct	Charles Ct	Hackberry, Northern	50	
272	127 W Chicago St	W Chicago St	Walnut, Black	37	
300	601 Days Ave	Days Ave	Walnut, Black	36	
312	703 Days Ave	Days Ave	Walnut, Black	37	
331	601 Days Ave	Marble St	Walnut, Black	40	
344	601 Days Ave	Days Ave	Walnut, Black	39	
430	305 Lake St	Lake St	Oak, Northern Red	43	
439	312 W 4th St	W 4th St	Oak, Swamp White	41	
446	106 Lake St	Lake St	Maple, Sugar	36	
525	112 N Detroit St	N Detroit St	Maple, Sugar	37	

Priority 2 Tree Pruning (continued)					
Site ID	Address	On Street	Species	DBH	Comments
544	115 N Detroit St	N Detroit St	Maple, Silver	40	
549	113 N Cayuga St	N Cayuga St	Maple, Silver	45	unable to determine trunk condition due to vines
769	512 Cecil St	Cecil St	Maple, Silver	42	poor root system
842	906 Victory St	Victory St	Sycamore, American	38	
851	906 Victory St	Elizabeth St	Maple, Silver	37	
884	808 Victory St	Arctic St	Maple, Silver	54	
897	0 Victory St	Arctic St	Maple, Silver	38	
905	426 Elizabeth St	Commercial St	Maple, Silver	38	
910	316 Fulton St	Michigan St	Maple, Sugar	50	
950	828 Terre Coupe St	Post Rd	Elm, Siberian	45	
968	828 Terre Coupe St	Post Rd	Elm, Siberian	38	
972	125 S Cayuga St	S Cayuga St	Maple, Sugar	36	
979	420 Hill St	Hill St	Maple, Red	45	
988	309 Terre Coupe St	Terre Coupe St	Oak, Pin	60	
1145	121 Elizabeth St	Elizabeth St	Maple, Silver	38	
1245	325 Arctic St	Arctic St	Maple, Silver	45	
1281	311 Elizabeth St	Elizabeth St	Maple, Sugar	39	
1407	404 Main St	Main St	Oak, White	60	
1428	701 Main St	Main St	Maple, Silver	40	
1436	502 Main St	Main St	Maple, Sugar	35	
1449	706 Rynearson Rd	Rynearson Rd	Maple, Silver	42	
1525	126 W Smith St	Clark St	Maple, Sugar	40	
1590	508 W Front St	W Front St	Oak, Northern Red	46	

APPENDIX D

RECOMMENDED STREET TREE PLANTING LIST

Botanical Name	Common Name	Cultivar	Native	Drought Tolerance	Soil Drainage Tolerance	Soil Salt Tolerance	Salt Spray Tolerance	Soil pH	Pest Resistance	Shape	Mature Spread (feet)	Mature Height (feet)	Growth Rate	Outlawn < 4'	Outlawn 4' - 6'	Outlawn > 6'	Overhead Wires
<i>Aesculus x carnea</i>	Red Horsechestnut	Briotti; Ft. McNair	Hybrid	Mod	Moist to Well Drained	Poor	Mod	Acidic to Alkaline	No Serious Pests	Upright/Oval	30 to 40	60 to 80	Mod	•	•	•	•
<i>Amelanchier x grandiflora</i>	Serviceberry or Juneberry	Autumn Brilliance; Princess Diana	Hybrid	Low to Mod	Well Drained	Low	Low	Acidic to Neutral	No Serious Pests	Rounded	10 to 15	10 to 25	Mod	•	•	•	•
<i>Betula nigra</i>	River Birch		Yes	High	Extended Flooding to Moist	Low	Mod	Acidic	No Serious Pests	Upright/Oval	30 to 40	40 to 60	Fast	•	•	•	•
<i>Carpinus betulus</i>	European Hornbeam	Fastigiata; Various	No	Mod	Well Drained	Low	Low	Acidic	No Serious Pests	Oval	20 to 30	10 to 30	Mod	•	•	•	•
<i>Carpinus caroliniana</i>	American Hornbeam		Yes	Mod	Moist to Well Drained	Low	Low	Acidic	No Serious Pests	Upright	20 to 30	20 to 30	Mod	•	•	•	•
<i>Celtis occidentalis</i>	Eastern Hackberry		Yes	Mod	Occasionally Wet to Well Drained	Mod	Mod	Acidic	No Serious Pests	Rounded	40 to 50	60 to 70	Fast	•	•	•	•
<i>Cercidiphyllum japonicum</i>	Katsuratree		No	Low	Moist	High	High	Acidic to Slightly Alkaline	No Serious Pests	Upright to Pyramidal	30 to 40	30 to 40	Mod	•	•	•	•
<i>Cercis canadensis</i>	Redbud	Various	Yes	Mod	Moist to Well Drained	Low	Low	Neutral to Alkaline	No Serious Pests	Rounded	15 to 25	15 to 30	Mod	•	•	•	•
<i>Cladrastis kentukea</i>	American Yellowwood		No	Mod	Well Drained	Low	Low	Acidic to Alkaline	Resistant	Rounded/Vase	20 to 50	40 to 50	Slow	•	•	•	•
<i>Cornus kousa</i>	Kousa dogwood		No	Low	Moist to Somewhat Well Drained	Low	Low	Acidic to Neutral	No Serious Pests	Rounded/Vase	15 to 30	15 to 30	Mod	•	•	•	•
<i>Crataegus crusgalli var inermis</i>	Cockspur Thornless Hawthorn		Yes	High	Occasionally Wet to Well Drained	Mod	High	Acidic to Alkaline	Somewhat Sensitive	Rounded	10 to 25	10 to 15	Mod	•	•	•	•
<i>Crataegus viridis</i>	Green hawthorn	Winter King	No	High	Occasionally Wet to Well Drained	Mod	High	Acidic to Alkaline	Somewhat Sensitive	Upright Vase to Spreading	15 to 20	10 to 15	Mod	•	•	•	•
<i>Gleditsia triacanthos var inermis</i>	Thornless Honeylocust	Various	Yes	High	Moist to Well Drained	High	High	Acidic to Alkaline	No Serious Pests	Rounded	30 to 70	30 to 70	Fast	•	•	•	•
<i>Ginkgo biloba</i>	Ginkgo	male trees only	No	High	Moist to Well Drained	High	High	Acidic to Alkaline	No Serious Pests	Round/Pyramidal	30 to 60	50 to 75	Slow	•	•	•	•
<i>Gymnocladus dioicus</i>	Kentucky Coffeetree		No	High	Moist to Well Drained	Mod	High	Acidic to Alkaline	No Serious Pests	Upright to Rounded	40 to 70	50 to 70	Fast	•	•	•	•
<i>Koelreuteria paniculata</i>	Golden Raintree		No	Mod	Moist to Well Drained	High	High	Acidic to Neutral	No Serious Pests	Rounded	30 to 40	30 to 40	Fast	•	•	•	•
<i>Liquidambar styraciflua</i>	Sweetgum		Yes	Mod	Extended Flooding to Well-Drained	Low	Mod	Acidic to Slightly Alkaline	Resistant	Pyramidal/Oval	35 to 50	60 to 75	Mod	•	•	•	•
<i>Liriodendron tulipifera</i>	Tuliptree		Yes	Low	Moist to Well Drained	Low	Low	Acidic to Neutral	No Serious Pests	Pyramidal/Oval	35 to 50	70 to 90	Fast	•	•	•	•
<i>Magnolia accuminata</i>	Cucumbertree magnolia	Various	No	Low	Moist to Somewhat Well Drained	Low	Low	Acidic to Alkaline	Somewhat Sensitive	Pyramidal	20 to 35	40 to 70	Mod	•	•	•	•
<i>Malus spp.</i>	Crabapple	Sugar Tyme; Prairie Fire; Various	No	High	Moist to Well Drained	Low	Low	Acidic to Alkaline	Somewhat Sensitive	Rounded	20 to 25	20 to 25	Mod	•	•	•	•
<i>Metasequoia glyptostroboides</i>	Dawn Redwood		No	Low	Occasionally wet to Moist.	Low	Low	Acidic to Neutral	Resistant	Upright Pyramidal	20 to 30	60 to 80	Fast	•	•	•	•
<i>Nyssa sylvatica</i>	Blackgum		No	Low	Extended Flooding to Well-Drained	Low	High	Acidic	No Serious Pests	Pyramidal / Oval	25 to 35	65 to 75	Slow	•	•	•	•
<i>Platanus x acerifolia</i>	London Planetree	Bloodgood; Various	No	Mod	Extended flooding to Well-Drained	Mod	Mod	Acidic to Alkaline	Resistant	Pyramidal / Rounded	50 to 70	75 to 90	Mod	•	•	•	•
<i>Platanus occidentalis</i>	Sycamore		Yes	Mod	Extended Flooding to Well-Drained	Mod	Mod	Acidic to Alkaline	Sensitive	Pyramidal / Rounded	50 to 70	75 to 90	Fast	•	•	•	•
<i>Quercus bicolor</i>	Swamp White Oak		Yes	High	Extended flooding to Well Drained	Mod	Mod	Acidic to Slightly Alkaline	Resistant	Upright Oval / Rounded	50 to 60	50 to 70	Mod	•	•	•	•
<i>Quercus macrocarpa</i>	Bur Oak		Yes	High	Moist to Well Drained	High	High	Acidic to Alkaline	Resistant	Upright Oval / Spreading	40 to 60	60 to 70	Slow	•	•	•	•
<i>Quercus palustris</i>	Pin Oak		Yes	High	Moist	Low	High	Acidic	Resistant	Upright Pyramidal / Oval	40 to 50	60 to 80	Fast	•	•	•	•
<i>Quercus rubra</i>	Northern Red Oak		Yes	High	Moist to Well Drained	High	Low	Acidic to Slightly Alkaline	Resistant	Rounded	60 to 80	50 to 60	Fast	•	•	•	•
<i>Syringia reticulata</i>	Japanese Tree Lilac	Ivory Silk	No	High	Moist to Well Drained	High	High	Acidic to Alkaline	Resistant	Oval to Rounded	15 to 20	20 to 30	Mod	•	•	•	•
<i>Taxodium distichum</i>	Bald Cypress		No	High	Extended Flooding to Well-Drained	High	High	Acidic to Slightly Alkaline	Resistant	Pyramidal	25 to 35	60 to 80	Fast	•	•	•	•
<i>Tilia americana</i>	American Linden		Yes	Mod	Moist to Moderately Well Drained	Low	Low	Slightly Acidic to Alkaline	No Serious Pests	Rounded	30 to 50	50 to 80	Mod	•	•	•	•
<i>Tilia cordata</i>	Little-leaf Linden	Greenspire	No	Mod	Moist to Moderately Well Drained	Low	Low	Slightly Acidic to Alkaline	No Serious Pests	Pyramidal to Rounded	30 to 40	40 to 60	Mod	•	•	•	•
<i>Tilia tomentosa</i>	Silver Linden		No	High	Moist to Moderately Well Drained	Low	Low	Acidic to Alkaline	Resistant	Broad Columnar	30 to 50	50 to 70	Mod	•	•	•	•
<i>Ulmus americana</i>	American Elm	Valley Forge; Princeton	Yes	Mod	Extended Flooding to Well-Drained	High	Mod	Acidic to Alkaline	Resistant	Vase	50 to 70	70 to 90	Fast	•	•	•	•
<i>Ulmus X</i>	Hybrid Elm	Patriot; Triumph; Accolade	No	High	Extended Flooding to Well-Drained	High	High	Acidic to Alkaline	Resistant	Vase	30 to 45	40 to 60	Fast	•	•	•	•
<i>Zelkova serrata</i>	Zelkova	Green Vase; Village Green	No	Mod	Moist to Moderately Well Drained	Low	Low	Acidic to Slightly Alkaline	No Serious Pests	Vase	40 to 50	60 to 80	Mod	•	•	•	•

*The tree species and cultivars on this list should not be used exclusively for replacement planting or reforestation of large areas. The diversity of all tree species on individual streets, in neighborhoods, and in the entire community should be taken into consideration. Monocultures should be avoided. The tree species and cultivars on this list are not the only suitable trees for planting in Michigan communities. This list is merely intended to be used as a starting point. There are many more excellent native and non-native shade and ornamental trees that can be planted. Please contact your local Michigan State University Extension office or Natural Resource Conservation Service for additional recommendations.



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