LAND MANAGEMENT PLAN FOR PEOPLE'S CHURCH

1758 North 10th St., Kalamazoo MI

Compiled by Cybelle T. Shattuck

A project of the Green Sanctuary and Building & Grounds Committees with assistance from members of the People's Church Community.

Special thanks to Connie Ferguson, Julia Kirkwood, Marj Lightner, Catherine Niessink, Gary Leadley, Andrea Huff, and Diane Worden for their contributions to this report.

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Vision

The grounds surrounding People's Church form an outdoor church space that is important for the religious life of the church members. Unitarian Universalism encourages people to recognize the interdependent web of life of which we are all a part: humans and other beings need to live in right relationship so that all may flourish. The goal of this Land Management Plan is to outline policies and practices that will contribute to the physical and spiritual well-being of the humans, wildlife, and plants that share the church lands, thereby assisting church members in living out their values.

This plan emerged from information and ideas shared by many people through community and committee meetings as well as archival documents recording community surveys and professional reports on land conditions. Its themes were shaped by community meetings in which people discussed their visions for the grounds around People's Church. Those conversations brought together people who care deeply about the outdoor church space as a place where they engage in spiritual practices, connect with nature, watch children play and learn, remember loved ones, and express their commitment to the church community through volunteer service.

The Management Plan focuses on 4 areas: Improving the manageability of grounds maintenance; improving the health of the ecosystem; increasing use of the grounds; and revising policies for the Memorial Garden to address lack of space for additional trees.

Each of these areas is addressed below. The major challenges in each area are summarized and proposed solutions are presented.

Constraints on Land Use

There are constraints that affect land use in three sections of the church property

- 1. The land on the north side of the entry road was given to the church with an easement stating that it must remain a natural area. The area is used for a Memorial Garden and natural area with paths and benches, but roads and buildings are not permissible structures.
- 2. Because of the easement on the northern parcel, long-range plans for adding a new sanctuary assume that future additions would be on the south side of the building. Consequently, no permanent installations such as memorial trees or playgrounds should be placed on the terraces between the southern wall and the woods.
- 3. The congregation has expressed interest in photovoltaic energy generation. Because a roof-mounted system would void the roof warranty on the older section of the building, ground-mounted panels may be preferable. One good location for panels is in the grassy area to the north of the building. Therefore, it is recommended that no permanent plantings or structures be placed in this area.

I. IMPROVING THE MANAGEABILITY OF GROUNDS MAINTENANCE

Grounds maintenance at People's Church depends on the hard work of volunteers who mow lawns and paths in the Memorial Garden, weed and water flowerbeds and the labyrinth, plant annual flowers, compost leaves and kitchen waste, and trim trees along trails and near walkways. The volunteers put in a tremendous number of hours; however, the amount of time and physical strength required to maintain the grounds will probably become unsustainable in the near future. Therefore, one goal of this plan is to develop strategies for reducing the time and effort needed for upkeep.

1. Mowing

Mowing is one of the most time and energy-consuming of the maintenance tasks for the church. There are two major challenges for mowing the grounds: 1) the amount of area covered in grass that needs mowing and 2) the presence of obstacles, especially trees, shrubs, and garden beds, that complicate the process of mowing. Some church members have suggested replacing grass with more native plants as a means of reducing greenhouse grass emissions from the mower, however, there are reasons to retain the current amount of grass. First, children use the large open areas for group activities during Religious Education classes and Peace and Nature Camp. Second, mowing is less time-consuming and physically demanding than weeding flower beds. Therefore, the following suggestions focus on ideas for simplifying mowing so it will require less time and fuel.

Recommendations:

A. Reduce the complexity of the mowing by simplifying the layout of planted areas. Mowing around small beds or in narrow spaces between plants and walls adds time and uses more fuel as the mower route becomes less efficient. Some ideas for making it easier to mow around flower beds:

- To simplify the mowing route, link smaller isolated plantings into larger beds with weed barriers and mulch to reduce weeding in these beds.
- Keep the edges of the beds simple, either straight or gently curved, so that the mower can easily follow the edge.
- Maintain mower-width spacing between flower beds and walls; where there is not enough space, consider filling in the area along the wall with groundcover.

B. To reduce fuel use, establish a tiered mowing regimen. Currently, each person who mows the grass has a different idea of what route to take and which areas to prioritize. B&G could strategize about priorities: What areas need to be mown every week, and which could be mown at less frequent intervals? If a consensus is reached, it will be possible to determine whether some areas, such as the south terraces or the area between the parking lots, could be mown less frequently.

Note: Longer periods between mowing may not be viable in wet summers when rain causes grass to grow quickly and longer periods between mowing would mean overly long grass cuttings that may form a thatch on top of the lawn.

2. Additions to the Landscape

Building and Grounds must be consulted about any additions to the landscape that will affect maintenance of the church grounds. Such additions would include trees, shrubs, flower beds, vegetable gardens, benches, compost bins, etc. B&G will determine if there is an appropriate location for the suggested addition and has the right to deny the request if the addition will increase the time or effort required to maintain the grounds.

Temporary Additions

School groups or others who rent space in the building may plant temporary vegetable gardens in a designated area on the north side of the building (see map, Appendix 1). This area is near a water supply, is easily accessible, and will not affect the aesthetic appearance of the church.

Groups that wish to put in one or more garden beds should adhere to the following procedures:

- Provide the name of a contact person
- Provide information about the timeframe for the project: when will it begin and end?
- Use smooth borders for the beds so they are easy to mow around.
 - Acceptable borders include timber or Trex boards, lawn edging, or a simple trench to separate the garden from the grass.
 - o Rocks are **not** an acceptable border.
- The people who create these temporary beds are responsible for removing them or arranging with B&G for help in removing them at the end of the growing season.

3. Weeding and Trimming

Maintaining the flower beds and the labyrinth require significant time and effort. Some tasks, such as spring planting or trimming of dead growth from the previous year, are concentrated at specific times of year but weeding of the flower beds requires weekly attention throughout the summer. There are few options for reducing the amount of labor needed, therefore the best options for reducing the burdens on B&G workers may involve finding ways to increase the number of volunteers sharing in these tasks.

Recommendations:

- Add edging to beds to prevent grass from spreading into plantings that must be weeded by hand, especially in the beds between the church and the front parking lot where the clay content of the soil makes weeding difficult. Use smooth edging materials rather than rocks for borders, since the rocks become areas that need to be weeded.
- Continue to collaborate with the Green Sanctuary Committee to organize spring workdays.
- Experiment with a regular monthly workday before or after Sunday services during the summer.

4. The Labyrinth

The labyrinth at People's Church was created as an Eagle Scout Project. It is composed of mulched paths outlined by stones and is surrounded by a magnificent border bed of native plants.

These plants increase local biodiversity and, due to careful labeling, educate people about the beauty of native plant gardening. The labyrinth is listed in a national data base and is used by adults and youth from the church as well as people from out of town. Thus, it provides spiritual, environmental, and educational benefits while also drawing people outside to use the church grounds.

Unfortunately, the current format makes maintenance of the labyrinth overly time-consuming. The weed barriers under the mulch fail to prevent plants from growing in the paths and the native plants enthusiastically populate the "empty" space in the walkways. Consequently, the labyrinth requires frequent weeding. With great patience and creativity, B&G workers have figured out how to use a mower on the paths when weeding is too time consuming, however the rock borders make this solution very difficult.

Recommendations:

Replace the current rock-bordered mulched paths with turf that can be mowed. There are several styles of turf labyrinths that would be less work. One style would replace the paths with grass and replace the rock borders with bare soil, which would be kept bare through periodic maintenance with a weed trimmer. A similar option would be to have grass paths and replace the rock borders with bricks or pavers that a mower could pass over while mowing the grass. A third style seeds the entire area with grass and uses a mower to create the paths while leaving taller grass to form the borders of the walking paths. See Appendix 2 for images of different turf labyrinth styles.

Some members of the church have raised questions about the location of the labyrinth, suggesting that the slope of the current site makes the path inaccessible for some people. There are no obvious alternative locations, although it might be possible to place a turf labyrinth without a complex plant border in the lawn area on the south side of the parking lot near the new main entrance. This area would be covered by snow during the winter. If the labyrinth were moved, the current labyrinth area could be reconfigured to create a native plant garden. Making such a drastic change would require extensive community discussion and commitments from volunteers to participate in the tasks necessary to make it work.

Timeline: In the near future (10 years or less), the church will replace its septic system with a sewer hook-up. That project will require digging up parts of the labyrinth in order to fill in the drain field that runs under it. Since this project will damage the labyrinth, it makes sense to wait until the sewer transition to make any changes in the labyrinth style.

II. FOSTERING ECOSYSTEM HEALTH AND RESILIENCE

Long before People's Church was built, the area was cleared of its native forests so the land could be used for agriculture. Although much of this former farmland has reverted to woodland, the current ecosystem bears little resemblance to the multi-story, species-rich characteristics of pre-settlement forest. In 2008, Botanist Tyler Bassett conducted an assessment of the woodlot at People's Church, which is included here as Appendix 3. He determined that the land had the characteristics of a highly disturbed patch of forest, with low plant, insect, and animal diversity and stresses from invasive species. The northwestern woods are similarly lacking in diversity of plant species although less troubled by invasive plants. However, invasives such as swallow-wort and autumn olive are well-established in the Memorial Garden. As caretakers of this land, the congregation has a responsibility to foster a healthier ecosystem by increasing biodiversity and decreasing stresses that reduce ecosystem resilience.

The State of the Woodland (in 2008)

When Mr. Bassett conducted his assessment of the south woodlot in in 2008, he noted both challenges and signs of hope. According to his analysis of the forest:

The canopy in the south woodlot is largely made up of wild black cherry, although sassafras, American elm, white ash, and black walnut are present in decent numbers. Wild black cherry's dominance is another indication of the transitional nature of the forest, as it often dominates in successional forests. A mature forest on these soils would probably support a great proportion of either red and white oak, or even beech and sugar maple.¹

In addition to low tree diversity, he noted that the outer edges of the woodlot suffered from encroachment by invasive species such as garlic mustard, bush and Amur honeysuckle, multiflora rose, and common buckthorn. Fortunately, there were also areas in the center of the woodlot that are mostly free of these species.

In spite of these challenges, Bassett saw signs of partial ecosystem recovery, including the presence of:

understory trees such as flowering dogwood, black maple, and hawthorn, which probably became easily established under more open canopy conditions and will persist under a more closed canopy. The herb layer has a few encouraging residents, including downy Solomon's seal, golden ragwort, and James' sedge.

It is also worth noting that trout lilies bloom each spring in the northern woodlot, near 10th Street.

Recommendations:

The two significant challenges for ecosystem health are: 1) lack of biodiversity and 2) invasive species.

1. Increasing Biodiversity

Bassett recommended that management of the woodland focus on encouraging a more diverse canopy, including more oak species, particularly red, white, and bur oak. These could be planted in extant sunny spots or we could remove a few wild black cherries to make space for them and speed up the natural succession process.

¹ Tyler Bassett, "Observations of the South Woodlot of People's Church" (August 8, 2008).

To avoid accidental removal of desirable trees, any trees selected for removal should be checked against the list of "major trees" on the property. These trees were categorized by landscape architect Larry Harris, who identified noteworthy species and assigned each major tree a number on a map of the property. Numbered metal tabs were subsequently placed on the north side of each tree, about four feet above ground level, which should make it easy to identify these desirable trees.²

2. Controlling Invasive Species

Bassett also made practical suggestions for dealing with invasive species.

Control of invasive species should be approached on a scale that is feasible to accomplish. For example, if you would like to see a more diverse and colorful herb layer, tackle a small section of honeysuckle along the edge so that your efforts will be visible. Trying to do too much at once can often result in only frustration. Once progress is made with invasive species, consider planting forest wildflowers in those areas.

Suggestions:

Distinguish between invasive species that have redemptive value as food for wildlife (such as honeysuckle) and those that cause habitat degradation. Prioritize specific areas where invasive plants are gaining a foothold and create tiered goals. Near-term goals may focus on preventing newer arrivals from spreading while longer term goals may focus on removing more established species from the grounds one area at a time over several years.

Near-Term Goals: Begin removal of swallow-wort, autumn olive, and garlic mustard.

- Swallow-wort has taken over an area in the center of the Memorial Garden. A mowing regimen slowed but did not stop the plant colony from spreading. In 2017, Catherine Niessink sought assistance from the Cooperative Invasive Species Management Area (CISMA) program, through the Kalamazoo Nature Center. CISMA applied an herbicide treatment to the area and will return for follow-up treatments.
- Autumn Olive. There are large shrubs on the northern edge of the Memorial Garden. Removal would require cutting the shrubs down to stumps and treating the stumps with herbicide. Young seedlings can be pulled in the spring when it is easy to identify because autumn olive leafs out earlier than most other plants.
- Garlic Mustard grows profusely on the edges of the parking lot. Pulling of garlic mustard can be incorporated into the spring grounds work day.

Long-Term Goals:

• Removal of honeysuckle, multiflora rose, and buckthorn from woodlot.

- Planting of native wildflowers in areas where invasives have been reduced.
- Development of a plan for increasing forest canopy diversity by planting oak saplings.
 - Locate appropriate sites with adequate light or create necessary conditions by removing some less desirable trees.
 - o Research and construct effective deer protection.

² Information on the history of the tree mapping project courtesy of Diane Worden.

III. THE MEMORIAL GARDEN

The Caroline Bartlett Crane Memorial garden was established by People's Church in 1988 as a permanent and pleasant site for lasting memorials of significant life events such as births, weddings, and deaths. It is located on the land immediately north of the church building and parking lot on land that was donated by an anonymous benefactor to be used as a green buffer. The Memorial Garden enhances and beautifies the grounds of People's Church and contributes to the quality of life shared by its members.

The Memorial Garden is owned by the church and administered by a Memorial Garden Committee approved by the Board of Trustees. The Memorial Garden Committee and the Building and Grounds Committee have joint responsibility to provide the care and maintenance of the Memorial Garden. The Building and Grounds Committee provides regular mowing so people have access to the Memorial Garden. The Memorial Garden Committee works with the Building and Grounds Committee on other maintenance needs and future plans for the Garden.

The primary challenge affecting the Memorial Garden is lack of space for planting new trees. A second challenge concerns maintenance, which includes keeping paths mowed, preventing grasses and brambles from encroaching on benches, weeding around memorial trees so that name plates remain visible, and planting, weeding and watering the mound at the south edge of the garden. A third issue of invasive plants in the garden was addressed in Section II of this plan.

In March 2018, the Memorial Garden Committee developed the following revised policies to address the issue of limited space. They are designed to encourage people to place plaques on the Memorial Wall in lieu of planting trees and shrubs.

1. Memorials

Any member, direct relative of a member (parent, child, sibling, spouse/partner, grandchild) or any friend of People's Church (such friend defined as a person making a financial contribution to the church for at least the previous church financial year), and anyone else designated by the Board of Trustees may be memorialized in the Memorial Garden. Ashes (without containers) may be placed in the Garden at a place approved by the Garden Committee. A donation of \$50 to be used for the maintenance of the garden is suggested for people placing ashes without purchasing a plaque for the wall. The names of all persons memorialized in the Garden are entered in a permanent file by the Garden Committee. This file is kept in the Archives of People's Church.

2. Plantings

The original 1988 plan allowed for the planting of trees and shrubs as memorials. In 2017, it was determined that any new plantings could interfere with the growth and health of the existing ones, so it was determined that no trees, flowers, plants or decorations shall be placed in or about the Memorial Garden except at the direction of the Memorial Garden Committee. If a tree or shrub dies or becomes diseased, the Memorial Garden Committee will notify the family. If the family chooses not to replace the tree, that space may be used for honorary trees approved by the Board of Trustees.

3. Memorial Wall Plaques

A bronze plaque, four inches by nine inches, may be placed on the Memorial Wall in recognition of a death or other life event. Plaques may not be placed anywhere else in the Memorial Garden. These plaques may be purchased by contacting the Church Administrator or a member of the Memorial Garden Committee. The cost is determined by the existing rate plus an additional \$150 for the maintenance of the Memorial Garden and Wall. This price includes 36 characters on the plaque. Additional characters may be purchased at the going rate. Plaques must be mounted on the Memorial Wall by the Church. Only plaques purchased through the Church will be allowed in the Memorial Garden.

Recommendations for Simplifying Maintenance:

There are strategies that might help reduce the number of hours needed for weekly maintenance, such as simplifying the mowing, as discussed in Section I above. The need for constant weeding around memorial trees might be alleviated by installing barriers to reduce encroachment by grasses that spread by extending their roots and covering the ground under trees with weed fabric and mulch.

Perhaps it would be possible to create a Memorial Day tradition (either on national Memorial Day Sunday or an alternate weekend) of community service in the Memorial Garden. This event might become part of the Sunday service so that rituals of remembrance are directly connected to actions in our memorial space.

IV. INCREASING USE OF THE GROUNDS

A desire to encourage greater use of the outdoor areas emerged as a theme in discussions about community visions for the grounds at People's Church. People described ideas for making the grounds more accessible and adding features to promote a greater variety of activities.

One suggestion was to create a map of the grounds and place it in the church foyer or entry hall so more people would know about all the attributes of the land. The map would serve as a means to inform people about the existence of the nature trail and the benches in the Memorial Garden as well as the labyrinth, picnic area and playground. This visual cue might inspire more people to spend time interacting with nature on the church grounds.

Other suggestions to encourage greater use of the grounds include installation of additional benches and adding a paved path in front of the Memorial Wall to make it more accessible.

The needs of children also inspired several suggestions. The current playground equipment is suitable only for preschoolers. It would be beneficial to create a safe play area for older children. This might include traditional playground equipment like swings and slides, a natural play area with large boulders and a water feature, or some combination of the two. Two suggestions also were made that might increase teen activity on the grounds. First, the campfire area near the shed could be renovated and expanded to make it more attractive. Second, the southeastern trail could be improved and log seating added in the glade at trail's end to create a gathering space for youth.

Recommendations:

The map project is already under way. In March 2018, Julia Kirkwood completed a map that highlights the significant features of the grounds, including a numbered key identifying the names associated with each tree in the Memorial Garden. The next step is to consult with the Aesthetics Committee about placing the map on a wall for display.

Two of these suggestions require fundraising and installation assistance: the walkway by the Memorial Wall and acquisition of playground equipment. The first step in determining how to pursue these projects would be to develop cost estimates. Then it would be possible to determine whether sufficient funds for installing a path are available in the Memorial Garden account and what kind of fundraising would be required to provide a playground.

Improvements to the campfire area and creation of a log circle in the southeastern glade could be accomplished through consultation with Building and Grounds and by enlisting the youth to do some of the work, thereby giving them a sense of ownership for the resulting gathering spaces. When any large trees need to be removed, the wood could be cut into sections for use as seating, and the teens can be assigned the task of placing them around the campfire or hauling them out to the glade. The campfire area can be improved during a volunteer work day or as a teen service project.

CONCLUSION

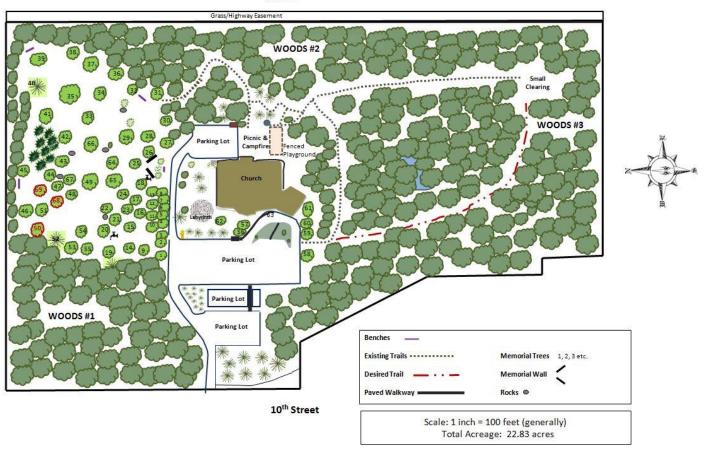
This land management plan, with its description of current conditions and recommendations for future actions, is meant to be a living document that can be continually revised and updated. It already includes information about recently instituted actions undertaken to address issues such as invasive species management. The outcomes of these actions can be recorded in annual updates to this document along with information about new undertakings or challenges that arise. Hopefully, creating this plan will help promote activities that benefit all the beings, human and other, who spend time on the grounds of People's Church.

Appendix 1

Map of the Grounds at People's Church Created by Julia Kirkwood

March 2018

US 131



Appendix 2

Types of Turf Labyrinths







Appendix 3

Observations of the South Woodlot at People's Church

I walked the woodlot with members of People's Church on Friday, August 8, 2008. It is a highly disturbed patch of forest, rife with invasive species. Although the walk-through occurred later in the season and some species were surely missed, it is clear that plant diversity is extremely low. This is a sign of disturbance, and can be generally correlated with low animal diversity, especially insects which are in many ways the backbone of the forest food web. This is a woodlot, like so many, rebounding from the abuses of the past.

Another main determinant in ecological relationships in a forest is the tree species that make up the canopy. The manner in which dominant tree species grow, and the shade they cast, has a large effect upon the growth at the forest floor. The canopy in the south woodlot is largely made up of wild black cherry, although sassafras, American elm, white ash, and black walnut are present in decent numbers. Wild black cherry's dominance is another indication of the transitional nature of the forest, as it often dominates in successional forests. A mature forest on these soils would probably support a great proportion of either red and white oak, or even beech and sugar maple.

Discouraging signs include the density of garlic mustard, as well as invasive shrubs such as bush and Amur honeysuckle, multiflora rose, and common buckthorn. This is, however, common in a forest that is rebounding from being farmed, grazed, and/or intensively logged. There are significant areas in the center of the woodlot that are mostly free of these species.

Encouraging signs include understory trees such as flowering dogwood, black maple, and hawthorn, which probably became easily established under more open canopy conditions and will persist under a more closed canopy. The herb layer has a few encouraging residents, including downy Solomon's seal, golden ragwort, and James' sedge. More species surely lie in waiting under the dense shade of honeysuckle and other invasive shrubs.

I would recommend any management be focused on encouraging a more diverse canopy, including more oak species (red, white, and bur oak in particular). This is a simple and easy task that can have a very positive effect on the health of the woodlot. Look for a sunny spot to plant some trees, or remove a wild black cherry to make some space for trees you wish to plant.

Control of invasive species should be approached on a scale that is feasible to accomplish. For example, if you would like to see a more diverse and colorful herb layer, tackle a small section of honeysuckle along the edge so that your efforts will be visible. Trying to do too much at once can often result in only frustration. Once progress is made with invasive species, consider planting forest wildflowers in those areas. I can provide a list of available species if you wish.

Overall, having a very disturbed woodlot provides a "blank slate" of sorts when determining its restoration. Aside from the few species mentioned in the fourth paragraph, there is little else of great value to protect. Adding plant species can only benefit this woodlot.

Tyler Bassett Botanist keepitsimple7@yahoo.com

Plant species observed:

(non-native species in all CAPS)

SCIENTIFIC NAME
Acer nigrum

COMMON NAME
BLACK MAPLE

Arisaema triphyllum JACK IN THE PULPIT
Aster lateriflorus SIDE FLOWERING ASTER

Carex blanda SEDGE

Carex jamesii JAMES' SEDGE

Carex projecta SEDGE

Cornus florida FLOWERING DOGWOOD

Crataegus pedicellata **HAWTHORN ELAEAGNUS UMBELLATA AUTUMN OLIVE EPIPACTIS HELLEBORINE HELLEBORINE** Fraxinus americana WHITE ASH Geranium robertianum HERB ROBERT Geum canadense WHITE AVENS Juglans nigra **BLACK WALNUT** Juncus tenuis PATH RUSH

LONICERA MAACKII AMUR HONEYSUCKLE LONICERA MORROWII MORROW HONEYSUCKLE

Parthenocissus quinquefolia VIRGINIA CREEPER
Polygonatum pubescens DOWNY SOLOMON SEAL

Polygonum virginianum JUMPSEED

Prunus serotina WILD BLACK CHERRY
Prunus virginiana CHOKE CHERRY
Quercus velutina BLACK OAK

RHAMNUS CATHARTICA

ROSA MULTIFLORA

Rubus allegheniensis

Rubus occidentalis

COMMON BUCKTHORN

MULTIFLORA ROSE

COMMON BLACKBERRY

BLACK RASPBERRY

Sassafras albidum SASSAFRAS

Senecio aureus GOLDEN RAGWORT

Toxicodendron radicans POISON IVY
Ulmus americana AMERICAN ELM

VIBURNUM OPULUS EUROPEAN HIGHBUSH CRANBERRY

Vitis riparia RIVERBANK GRAPE

TAGGED TREES

(Brass tag at 4.5' from ground on north side of trunk)

No.(#)	Tree	LHA* PCVT** Diameter		Comment
1	Black Oak	30"	23"	
2	Paper Birch	12" & 15"	14"	Double trunk
3	Blue Spruce	24"	20"	
4	Cherry	9" & 30"	26"	Double trunk in barbed fencerow
5	White Oak	18"	16"	
6	White Oak	24"	23"	
7	Walnut	20"	20"	
8	Oak	18"	?	Ribboned tree not found; instead, tagged tree ~30' from condo
9	Walnut	20"	20"	
10	Cherry	18"	15"	
11	Maple	14"	14"	
12	Oak Rock Elm	22"	20"	Definitely NOT; see Trees of Michigan (Tekielo), p.47
13	Cherry	20"	18.5"	Double trunk
14	Oak	10"	?	Ribboned tree not found; look again during winter
15	Cherry	16"	15"	Double trunk
16	Maple	10"	?	Ribboned tree not found; look again during winter
17	Walnut	14"	12"	
18	<i>Maple</i> White Oak	20"	- 16"	Definitely NOT
19	White Oak	20"	14"	8
20	Hickory	20"	15"	

^{*} L.L. Harris & Associates, 3 March 2011

^{**} People's Church Volunteer Team, 8 & 15 August 2011, diameter = measured circumference and divided by pi (3.14): Matt Dean-Hall, Alexander Bennett, Wyatt Klan, Diane Worden

