

OAK WILT – A Case Study on How the Highland Shores Association Proactively Managed the Threat to Minimize the Impact of this Prolific Disease.

Highland Shores Association (HSA) started experiencing the loss of mature oak trees in 2021. The Board met with two forestry professionals, Dan Birochak from Omega Tree Services and Christian Stewart from C&A Arborists, to further understand the issue in 2022. We learned that Oak Wilt (OW) had taken hold in our Association. Both Dan and Christian have increasingly encountered the disease in their work in Southwest Michigan.

OAK WILT – WHAT IS IT?

Oak Wilt is a fungal disease that infects several types of oak trees but is particularly deadly to Red Oaks. The fungus can be spread via:

- 1) underground through the root systems as oaks grow and their roots become grafted to the roots of other oaks, or
- 2) above ground from beetles that carry the spores from an infected tree to an open wound on a freshly pruned or injured tree.

Once the tree is infected, the fungus begins to clog the natural fluid flow in the tree, causing the leaves tips to brown. Symptoms of OW most often appear from late June until September. Affected trees will suddenly wilt from the top down rapidly dropping leaves, which can be green, brown or a combination of both colors. Once a tree is infected, it will die as there is no effective treatment to revive or save the tree.

Significant loss to the HSA forested area, due to OW, not only will impact the look and feel of the Association, but potentially affect the wooded areas of the Tibberon Association to the south and Woodlawn Association to the north.

The HSA is unique in that each Co-Owner has a specific building envelope. Anything outside of the Co-Owner's building envelope is considered Limited Common Element (LCE) and is owned and maintained by the Association. Given the threat of OW and the loss of trees already experienced, the Board and the Architectural Review Board (ARB), who oversees the Architectural guidelines and elements for the building and renovating of homes, including landscaping plans, realized the need for a Tree Survey to help both the Board and Co-Owners understand how to manage and treat Red Oak trees. With a forested area as large as the HSA, it would not be economically feasible to treat all Oak trees. And, if the spread of the disease continues, removal of the dead Oaks will be quite costly.

The forested areas* are referred to as:

- The Tibberon area: the limited common element area to the south between Tibberon Association and Sand Dune Drive, including the area at the entrance of the Association.
- The Woodlawn area: the limited common element area to the north between Woodlawn Road and Highland Shores Drive.

- The Circle area: the limited common element encircled by Sand Dune Road, Lakeland Road and the lower part of Highland Shores Drive.
- The Ravine: the limited common element area along the ravine path and the turn of Highland Shores Drive going up to the beach access points.
- The Dune area: the limited common element area extending from the top of Highland Shores Drive down to the beach.

*Refer to Exhibit A below

THE APPROACH

The HSA engaged with Phil Graf, Great Lakes Urban Forestry Management, to conduct a tree survey of the Association identifying and mapping all trees. He worked with C&A Arborists to determine what are the most beneficial and cost-effective data points to collect. It was determined that three (3) data fields to be collected on all trees measuring 12" DBH (Diameter at Breast Height) and greater.

The three (3) data fields are:

- GPS location (along with Michigan State-Plane XY coordinates).
- Tree Species. All tree species are recorded using common names and are identified to the species level. Specific cultivars, hybrids, or varieties will not be identified. This is because certain genera such as Apple trees, Hybrid Elms, and other ornamentals have such great variation that it is unnecessarily time consuming and unnecessary to identify to this level.
- Tree Size. DBH measured to the half inch and rounded to the full inch with a forestry diameter tape at 4.5' above ground level on the uphill side of the tree.

Additionally, the survey captured the condition of the tree, noting if it was in Good Condition, Declining Condition or Dead.

THE REPORT

Phil provided a detailed report complete with interactive maps.

The ability to have a full survey allows Omega Tree Services and C&A Arborists to guide the Board, ARB and Co-Owners on treatment and removal recommendations and provides useful information if/when there is another threat to our forest surfaces.

Survey Total Cost: \$15,990

What is the tree make-up of the HSA?

The survey showed that Red Oak trees are the most highly represented tree species and make up more than 44% of the tree population and the average DBH is 20.52". Out of the 524 Red Oaks there are 157 that are declining.

At this time, the center island is primarily being affected with OW. It does not appear to have spread to other areas.

From 2019 to 2023, tree removal costs totaled \$62,550. A strategic approach to containment will help keep removal costs down. If a containment approach is not undertaken, removal costs could skyrocket into the hundreds of thousands of dollars.

MANAGEMENT PLAN

The containment for OW varies. The survey provides useful information for all involved parties:

- The Board and Co-Owners now have an interactive map that shows what significant Oaks reside within the LCE or on a Co-Owner's building envelope.
- Omega Tree Services and C&A Arborists have the information needed to make educated and strategic containment or removal recommendations.

Oak trees infected with OW or already dead pose a challenge. The common practice is to leave standing for two (2) winters before removal to limit the spread of the disease. It is important to not prune or remove any infected Oak trees from April 1 to September 30. Remove it too early and the disease can spread through the root systems. A newer theory is that even though the Oak tree is dead above ground, the root system still is active. The roots need to die to prevent OW spores from moving.

What are the treatment or containment options?

Containment and/or treatment options include:

- Fungicide Injection: C&A Arborists are licensed to handle this type of treatment and have the equipment.
 - Treatment is done every two years.
 - The Injection goes deep into the roots and is drawn up through the root system. **It does not kill the tree.**
 - It is best used for high-value, **live trees** that are not showing any active symptoms of OW.
 - Cost: approx. \$15 per inch
- Girdling: Omega Tree Services makes a trench around the tree approximately 2" wide and deep and fill-ins with the main ingredient of Round Up.
 - This attacks the disease more quickly and makes a 2-year process of waiting to remove a dead Oak tree happen more quickly. This helps to contain the spread of OW.
 - The Round Up ingredient won't affect other tree species.
 - Collateral damage may occur and may sacrifice a few Oak trees to save more, however, the success rate has been tremendously high with little to no loss to neighboring oaks.
 - Cost: approximately \$100- \$150 per tree; final cost based on the DBH.
- Aggressive Removal: The Department of Natural Resources will draw a straight line from the infected Oak 150 feet out and draw a radius. Everything within the radius is removed.

A combination of treatments may be employed, depending on the size and location of already infected oaks. Inquiries to Chikaming Township and Berrien County Conservation District did not yield any resources or information at this time on OW.

SUMMARY

The research and collaboration with Omega Tree Services and C&A Arborists has been invaluable. The survey provides incredible information for our Association and future Board's to track and manage the disease, as well as any other threats.

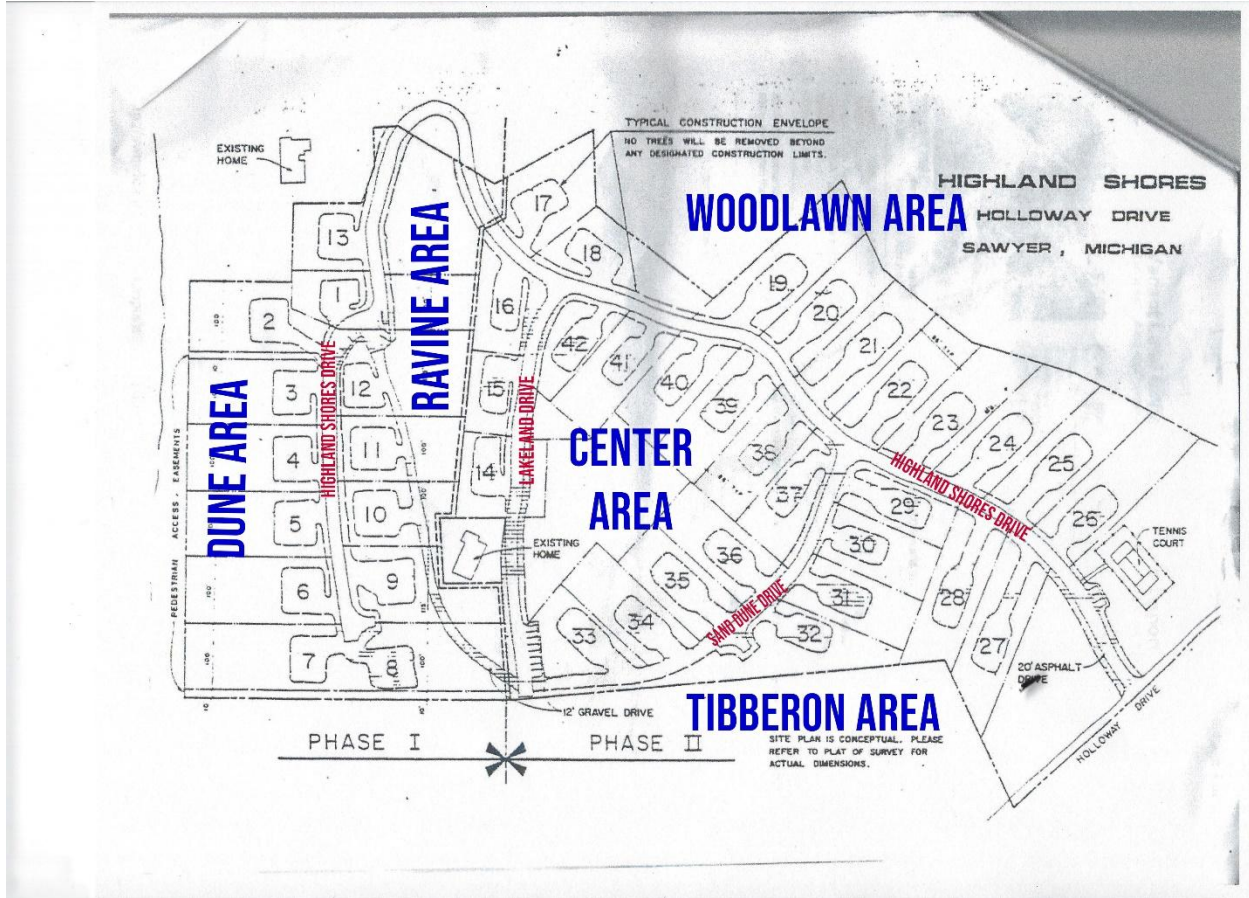
KEY CONTACTS

Phil Graf
Great Lakes Urban Forestry Management
phil@graftreecare.com
630-281-0164 cell

Christian Siewert
C&A Arborists
treephilosophy@yahoo.com
269-756-2571

Omega Tree Services
Dan Birochak
omegatreehealth@gmail.com
269.876.8300

EXHIBIT A – LOT MAP WITH FORESTED AREAS IDENTIFIED



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