

Charlotte Public Tree Inventory Summary Report



*Prepared for the Town of Charlotte and the Charlotte Tree Warden
by the Vermont Urban & Community Forestry Program
November 2016*



Acknowledgements

This summary report was developed by Vermont Urban & Community Forestry Program (VT UCF) staff based on field work conducted by VT UCF staff, VT Department of Forests, Parks, & Recreation staff, and Eco AmeriCorps members for the Town of Charlotte and the Charlotte Tree Warden in the fall of 2016. We would like to thank Mark Dillenbeck, Charlotte's Tree Warden, for his assistance in initiating this effort and providing VT UCF with information necessary to conduct the public tree inventory.

About the Vermont Urban & Community Forestry Program

The field of forest management is not confined to the natural areas and forests of Vermont, but extends to the populated urban and rural spaces where trees play important roles. The trees in public parks, along roadsides, on town greens, and in municipal forests compose our urban and community forests and merit careful stewardship. VT UCF is a collaborative effort of the Vermont Department of Forests, Parks, & Recreation and University of Vermont (UVM) Extension. The program provides technical and financial assistance as well as educational programs and resources for the management of trees and forests in and around Vermont communities. The mission of VT UCF is ***to lead citizens, businesses, and governments in understanding the value of urban and community forests and promote civic responsibility for and participation in the stewardship of these resources for this and future generations.*** Since 1991, the program has been guided by a small staff and a twenty-member advisory council. The council meets quarterly to share information and advise the program; its members come from various professional associations, non-profits, educational institutions, municipal tree boards and committees, and state agencies. VT UCF works with state and municipal officials, as well as dedicated volunteers and local organizations, to steward the urban forest's ecological integrity and diversity. More information about VT UCF and its programming can be found at www.vtcommunityforestry.org.

Photographs of the Charlotte Public Tree Inventory: fall 2016



Project Summary & Methodology

The goal of the Charlotte public tree inventory was to accurately locate and assess town-owned trees within the public right-of-way (ROW) on streets, parks, and cemeteries in order to establish and maintain a record of the location and the maintenance needs of public trees, and to support future community forest planning. The information collected in the inventory and presented in this summary report should provide local decision makers – and citizens – a better understanding of the composition, condition, and benefits of Charlotte’s public trees and will allow the Charlotte Tree Warden to plan for tree maintenance and future tree planting using a map-based tree inventory tool.

This project was initiated in the summer of 2016. To plan for the public tree inventory, VT UCF staff coordinated with Mark Dillenbeck – at the time Charlotte’s Deputy Tree Warden and now the Tree Warden – in order to decide what streets and properties should be included in the inventory, and to determine the public right-of-way (ROW) boundaries for Ferry Road. VT UCF has developed a tree inventory tool in collaboration with the Vermont Agency of Natural Resources’ (ANR) GIS team. The map-based tool uses the free application *Collector for ArcGIS*, developed by Esri (<http://doc.arcgis.com/en/collector/>), for data collection and is linked to the publicly-accessible ANR Atlas online mapping website (<http://anr.vermont.gov/maps/nr-atlas>).

On two days in the fall of 2016, VT UCF staff worked with a State Lands Forester from the VT Dept. of Forests, Parks, & Recreation

The Importance of Conducting a Public Tree Inventory

A public tree inventory establishes a record of the town-owned trees present in a municipality. An inventory can provide information about the species, size, health, maintenance needs, and location of each tree. This detailed information allows community leaders to estimate the numerous contributions and management requirements of the trees of which it is in charge. In the event of a disease outbreak or invasive insect infestation, data from an inventory may assist in monitoring and preventing spread, as well as supporting the response to the disease or infestation. An inventory can also help build public support for expanding community forests and to guide future urban planning.

Urban and community trees improve the quality of life for Vermont communities in a variety of ways. The most readily apparent benefit is the aesthetic value that trees provide a street, home, or public space. Along with this beauty is the functional benefit of providing shade in the summertime and blocking wind to reduce heating costs in the wintertime. The presence of trees has been shown to positively affect property values and boosts foot traffic in commercial areas. Parks and tree-lined sidewalks promote physical activity by creating shaded, comfortable outdoor spaces. Many types of urban wildlife depend on trees as sources of food and shelter. Unseen benefits of urban trees include improvements in air quality and temperature regulation through reduction of the heat island effect. Trees can mitigate noise pollution common in an urban environment and can clean and conserve water by controlling run-off. Additionally, urban and community forests create opportunities for education, community engagement, and in some instances can be related to crime reduction. Trees are an integral part of the green infrastructure of a place and contribute to keeping our communities healthier and our everyday lives more fulfilling

and Eco AmeriCorps members to complete an inventory of **342 trees** located within the public ROW of **1 street** and on **4 town-owned properties**. In total, the inventoried land area was under 1 square mile, a small fraction of the Town of Charlotte’s 41 square mile total land area, but encompassed the town center and most visited public green spaces of town. A list of streets and sites with ROW boundaries and number of trees inventoried is found in Table 1 below. A series of GIS maps highlighting the tree inventory results can be found in Appendix C.

Table 1: Charlotte streets and sites included in the public tree inventory.

Street or Site	What was Inventoried	Number of Trees Inventoried
Ferry Road		
<i>within public right-of-way along the road</i>	Trees within public ROW: 66'	31
<i>Charlotte Library</i>	All planted and naturally growing landscape trees	30
<i>Charlotte Senior Center</i>	All planted and naturally growing landscape trees	30
<i>Charlotte Town Offices Building</i>	All planted and naturally growing landscape trees	24
<i>Charlotte Fire Department</i>	All planted and naturally growing landscape trees	8
Charlotte Beach (Lake Road)	Planted and naturally grown trees around the parking area and recreation spaces	127
Charlotte Park & Wildlife Refuge (Greenbush Road)	Planted and naturally grown trees around the parking area	41
East Burying Grounds (Spear Street)	Planted and naturally grown trees around the parking area and along Spear Street	38
Barber Cemetery (Greenbush Road)	All planted and naturally growing landscape trees	13
	TOTAL	342

Each public tree inventoried was recorded into the *Collector for ArcGIS* application using an iPad, provided by VT UCF. The application is map-based and uses GPS and a base layer map to allow the user to input information about a tree, linking it to a particular geographic location. Data recorded for each public tree in Charlotte, outlined in Table 2 below, included street name, overall condition, species, diameter class (using a measurement for diameter at breast height, or

DBH), a recommendation for monitoring (yes/no), if the tree needed to be pruned (yes/no), additional comments, and the nearest house or building address. In most cases, a picture was also taken of each tree. All inventory data collected on public trees in Charlotte is available for viewing on the ANR Atlas website and instructions for accessing that tool are included in Appendix A.

Table 2: Data collection parameters for the Charlotte public tree inventory.

Data Parameters	Description
Site ID	Street name or property name.
Species	Common name. Include in comments box if not listed.
Tree Condition	<ul style="list-style-type: none"> ● <i>Good</i>: full canopy (75-100%), no dieback of branches over 2" in diameter, no significant defects, minimal mechanical damage ● <i>Fair</i>: thinning canopy (50-75%), medium to low new growth, significant mechanical damage, obvious defects/insects/disease, foliage off-color and/or sparse ● <i>Poor</i>: declining (25-50%), visible dead branches over 2" in diameter, significant dieback, severe mechanical damage or decay (over 40% of stem affected) ● <i>Dead</i>: no signs of life, bark peeling; scratch test on twigs for signs of life (green) ● <i>Vacant</i>: potential spot for a tree within the public ROW. Add "small", "medium", or "large" in the comments box <ul style="list-style-type: none"> - Small= max 30' at maturity, presence of overhead wires, minimum planting space 4' x 4' - Medium= 30-50' at maturity, green belts over 6' wide, no overhead wires - Large= 50'+ at maturity, parks and open space
Diameter (DBH)	Diameter taken at 4.5' above ground in classes of 0-3", 3-6", 6-12", 12-18", 18-24", 24-36", 36-42", 42"+. If on slope, uphill side measured. If abnormal growth, measured above or below growth. If multi-stemmed, each stem's DBH is squared, all squares summed, and the square root taken; indicate "multi-stemmed" in comments box.
Monitor	Yes: any one visible defect is affecting >40% of the tree, the tree poses a hazard to people/infrastructure/cars, the trunk or branches are growing into utility wires, the tree is dead or in poor condition, or the tree is an ash tree showing evidence of woodpecker flecking, blanding, epicormic branching/water sprouts, and/or suspicious exit holes No: no major defects, tree in good or fair condition
Prune?	Yes: Flag trees for pruning if any of the following signs are present: broken branches, branches are overlapping /touching/growing on each other, the tree is overcrowded, branches are interfering with utility lines or other built infrastructures, the branches can interfere with pedestrians/vehicles/bikes, etc. No: No branch needs to be trimmed
Comments	Notes, elaborate on any existing conditions; max 255 characters.
House Number	Corresponding house address, numerical field. If a corner lot house is on a different street, enter house number and write "House located on X Street; corner tree" in comments box.
Collection Date/Time	Date and time.
Photo	Photo of full tree. Additional photos of any significant defects.

Summary of Findings

Community Forest Diversity

- Of the 342 public trees, there are 31 different species in 21 different genera.
- The five most common tree genera by number of trees are *Populus* (poplar) at 24%, *Acer* (maple) at 16%, *Fraxinus* (ash) at 14%, *Pinus* (pine) at 8%, and *Carya* (hickory) at 7%. See Figure 1 below.
- Invasive tree pests currently threaten trees in the *Acer*, *Fraxinus*, and *Tsuga* genera in Vermont: the Asian long horned beetle (ALB), the emerald ash borer (EAB), and the hemlock woolly adelgid (HWA), respectively. Combined, these three genera represent approximately a third (30%) of Charlotte's public tree population.
- The five most common species are eastern cottonwood (*Populus deltoids*) at 24%, green ash (*Fraxinus pennsylvanica*) at 14%, bitternut hickory (*Carya cordiformis*) at 7%, eastern white pine (*Pinus strobus*) at 7%, and crabapple (*Malus* species) at 6%. See figure 2 below. It is important to note that there was a high density of naturally grown eastern cottonwood at Charlotte Beach, and a high density of naturally grown bitternut hickory at the East Burying Ground; these trees were not planted as part of any intentional public tree program. In general, and considering the planted landscape trees in the town center and at the public properties, Charlotte has a relatively diverse public tree population. A full species list is included in Appendix B.
- There are 46 green ash (*Fraxinus pennsylvanica*) in Charlotte, mostly concentrated along Ferry Road and at the Charlotte Park and Wildlife Refuge. As communities in Vermont are encouraged to plan for the arrival of the EAB, the locations and conditions of these trees should be monitored. See Appendix C for a map indicating the specific location of these ash trees.

Genera Distribution of Charlotte Public Trees

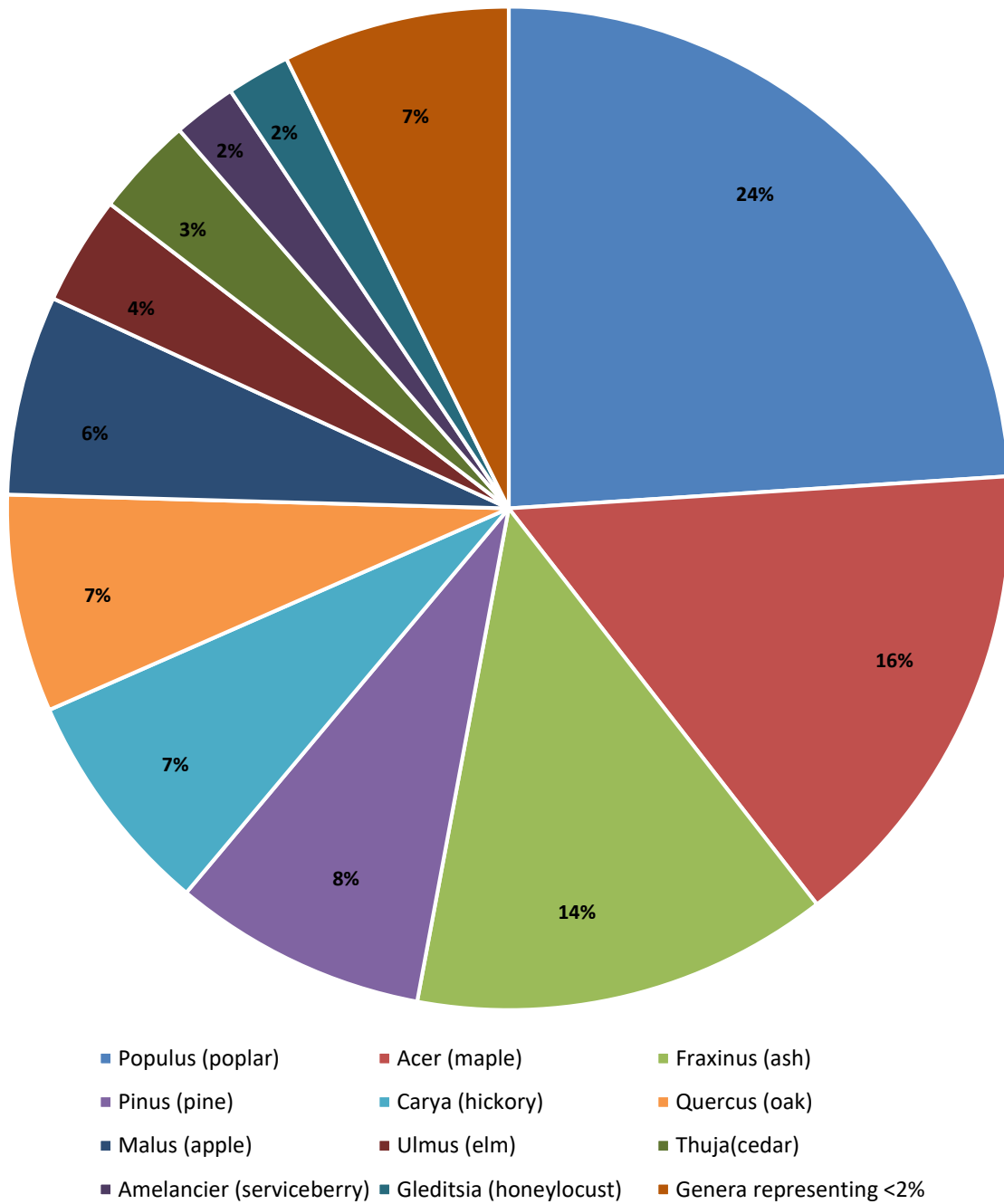
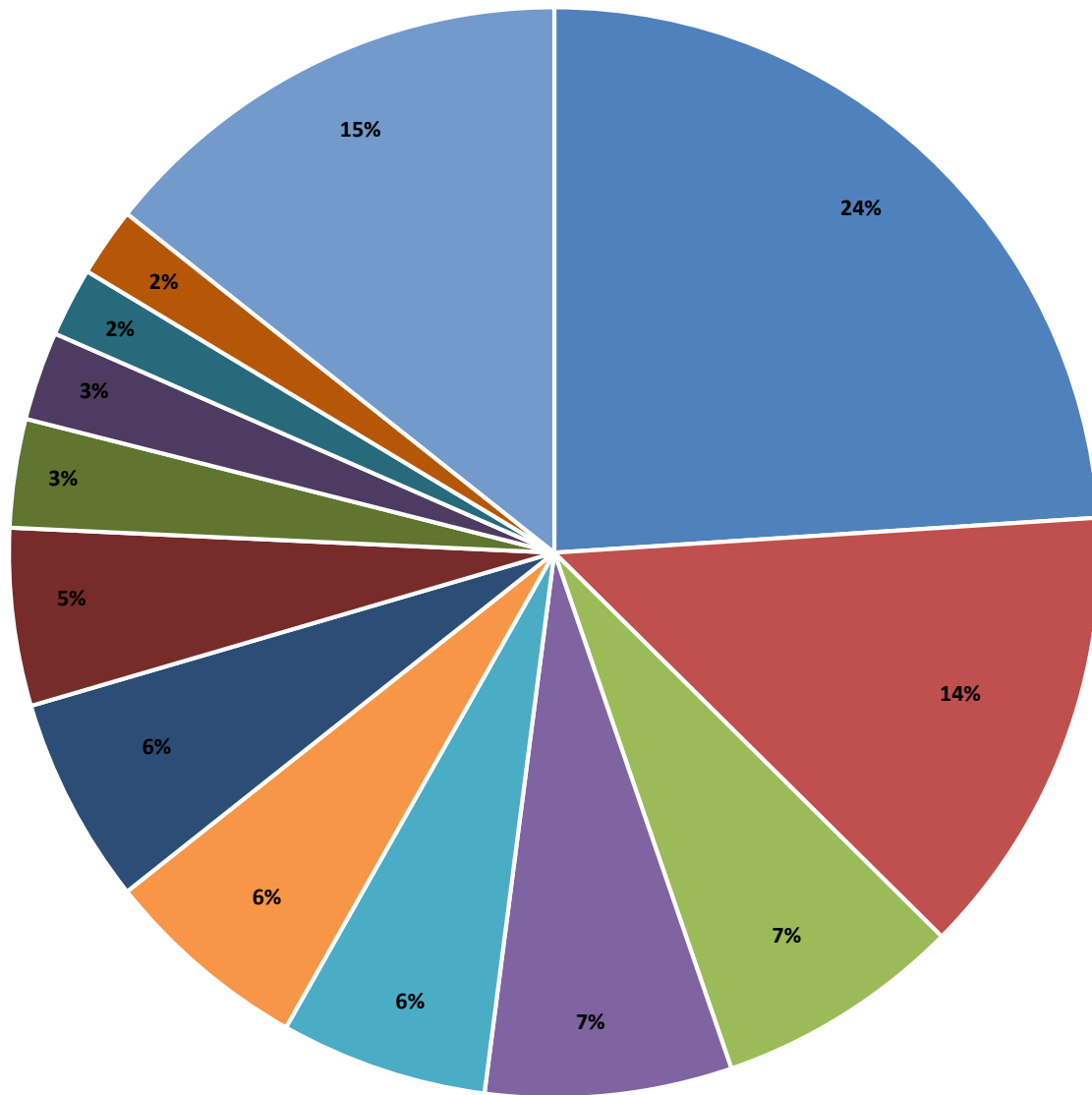


Figure 1: Genera distribution of Charlotte’s public trees.

Species Distribution of Charlotte Public Trees



- eastern cottonwood (*Populus deltoides*)
- green ash (*Fraxinus pennsylvanica*)
- bitternut hickory (*Carya cordiformis*)
- eastern white pine (*Pinus strobus*)
- crabapple (*Malus sp.*)
- Freeman maple (*Acer freemanii*)
- sugar maple (*Acer saccharum*)
- swamp white oak (*Quercus bicolor*)
- northern white cedar (*Thuja occidentalis*)
- American elm (*Ulmus americana*)
- honeylocust (*Gleditsia triacanthos*)
- serviceberry (*Amelanchier canadensis*)
- species representing < 2%

Figure 2: Species distribution of Charlotte's public trees.

Community Forest Structure

- The inventoried public trees in Charlotte are represented in the following size classes: 0-3" (14), 3-6" (67), 6-12" (155), 12-18" (80), 18-24" (10), 24-30" (8), 30-36" (6), 36-42" (0), and 42"+ (2). See figure 3 below.
- Charlotte's public tree population is young; 70% (236) of the public trees are under 12" in diameter. It is important to note that large, mature, shade trees provide significantly more environmental and human health benefits. Given proper care, Charlotte's young public tree population will mature and its ecosystem services value will increase with time.
- Efforts should be made to protect and maintain the few large public trees in Charlotte.
- The largest public trees inventoried in Charlotte are a sugar maple (52") and a northern white cedar at the Barber Cemetery on Greenbush Road.

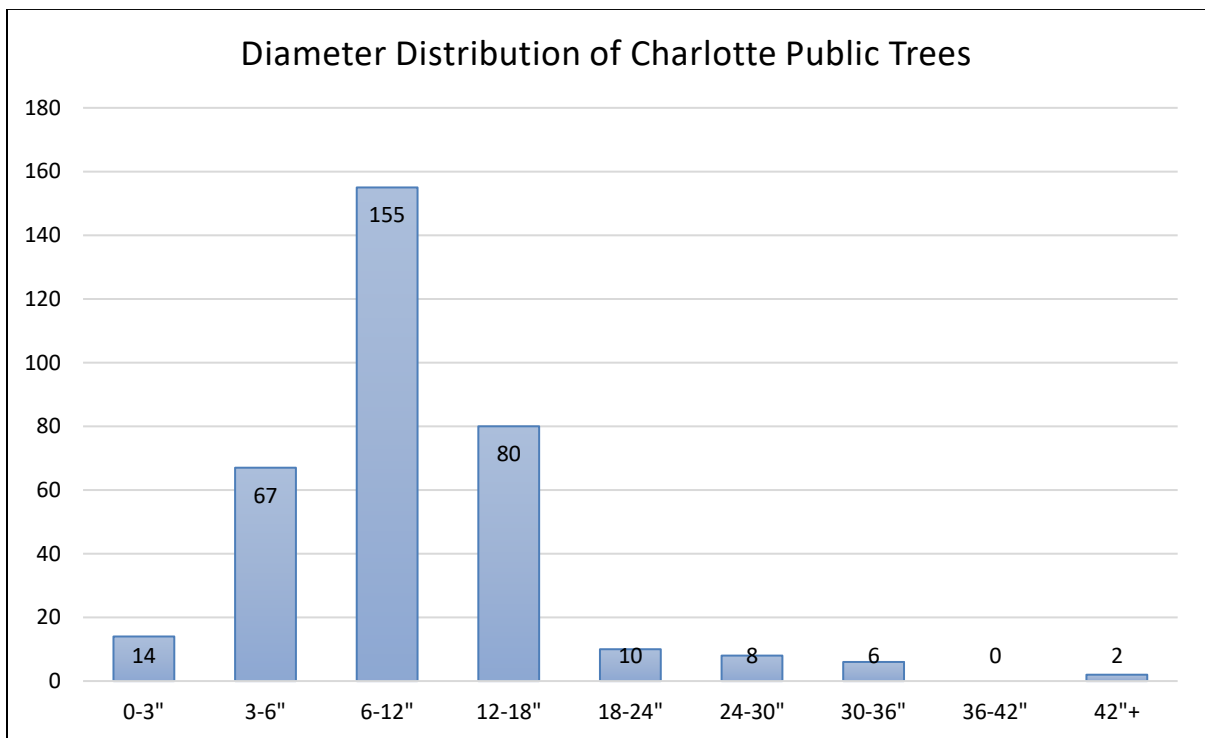


Figure 3: Diameter distribution of Charlotte's public trees.

Community Forest Health

- The vast majority of Charlotte’s public trees (293, or 86%) were assessed as being in “Good” condition. Of the remaining trees, 34 (10%) were considered to be in “Fair” condition, 6 (2%) were in “Poor” condition, and 9 trees (3%) were found to be “Dead”. (Figure 4). The 9 dead trees should be prioritized for removal. All but one of the dead trees are under 12” in diameter. The dead trees are located at Charlotte Beach (3), the Charlotte Park and Wildlife Refuge parking area (2), along Spear Street at the East Burying Ground (1), and along Ferry Road (3). One of the dead trees along Ferry Road is located at the Charlotte Fire Department and was already marked for removal at the time the inventory was conducted.
- 63 (18%) public trees were assessed to be in need of monitoring by a Certified Arborist, the Charlotte Tree Warden, or another qualified individual (Figure 5). Trees that were flagged as in need of monitoring expressed one or more of the following conditions:
 - The tree has a visible defect affecting >40% of the tree,
 - The tree poses a risk to people/infrastructure/vehicles or other property,
 - The tree is growing into utility wires, or
 - The tree is dead or in poor condition.
- 52 (24%) of the public trees were assessed to be in need of pruning (Figure 5). For the most part, these trees either had dead branches in their crown or were young trees in need of structural pruning.
- Maps of both the trees in need of monitoring and the trees recommended to be pruned are included in Appendix C.

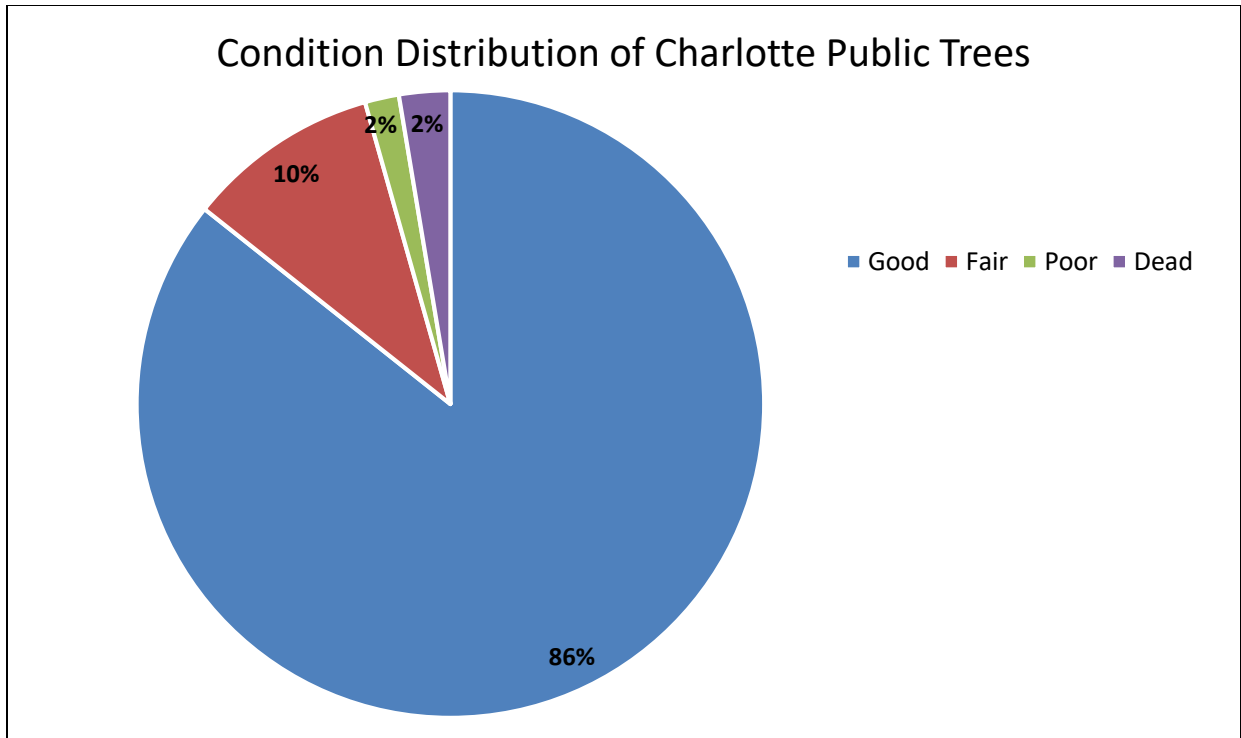


Figure 4: Condition class distribution of Charlotte's public trees.

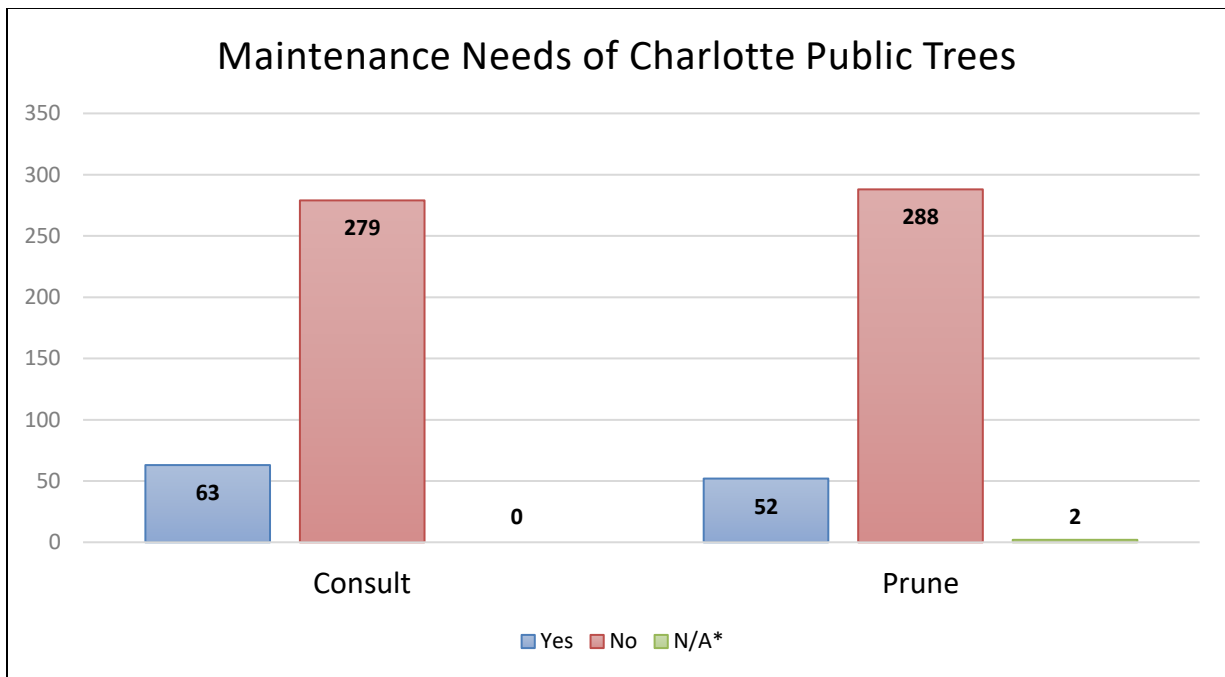


Figure 5: Maintenance needs and health indicators of Charlotte's inventoried public trees. Data was not collected for trees in the N/A category because of user error.

Economic Benefit and Ecosystem Services

The Charlotte public tree inventory data were analyzed using i-Tree Streets software to determine the monetary value of the ecosystem services provided by the public trees. The 342 public trees provide a total of \$39,838 in annual benefits by filtering air pollutants, mitigating stormwater runoff, sequestering carbon dioxide (CO₂), conserving energy, and increasing property values. On average, each public tree offers \$116, or \$10.61 per capita, annually in savings or services.

Figure 6 and Table 3 provide an overview of each ecosystem service provided by Charlotte's public trees. It is important to recognize that the trees inventoried through this project are located on less than 1 square mile of land in the town center and at public green spaces; expanding the inventory would increase these figures. It is also noteworthy that larger (mature) and long-lived trees provide substantially more benefits than small and young trees. Regular maintenance and care are needed to provide for public tree health, longevity, and maximized urban forest benefits.

Annually Charlotte's 342 public trees provide

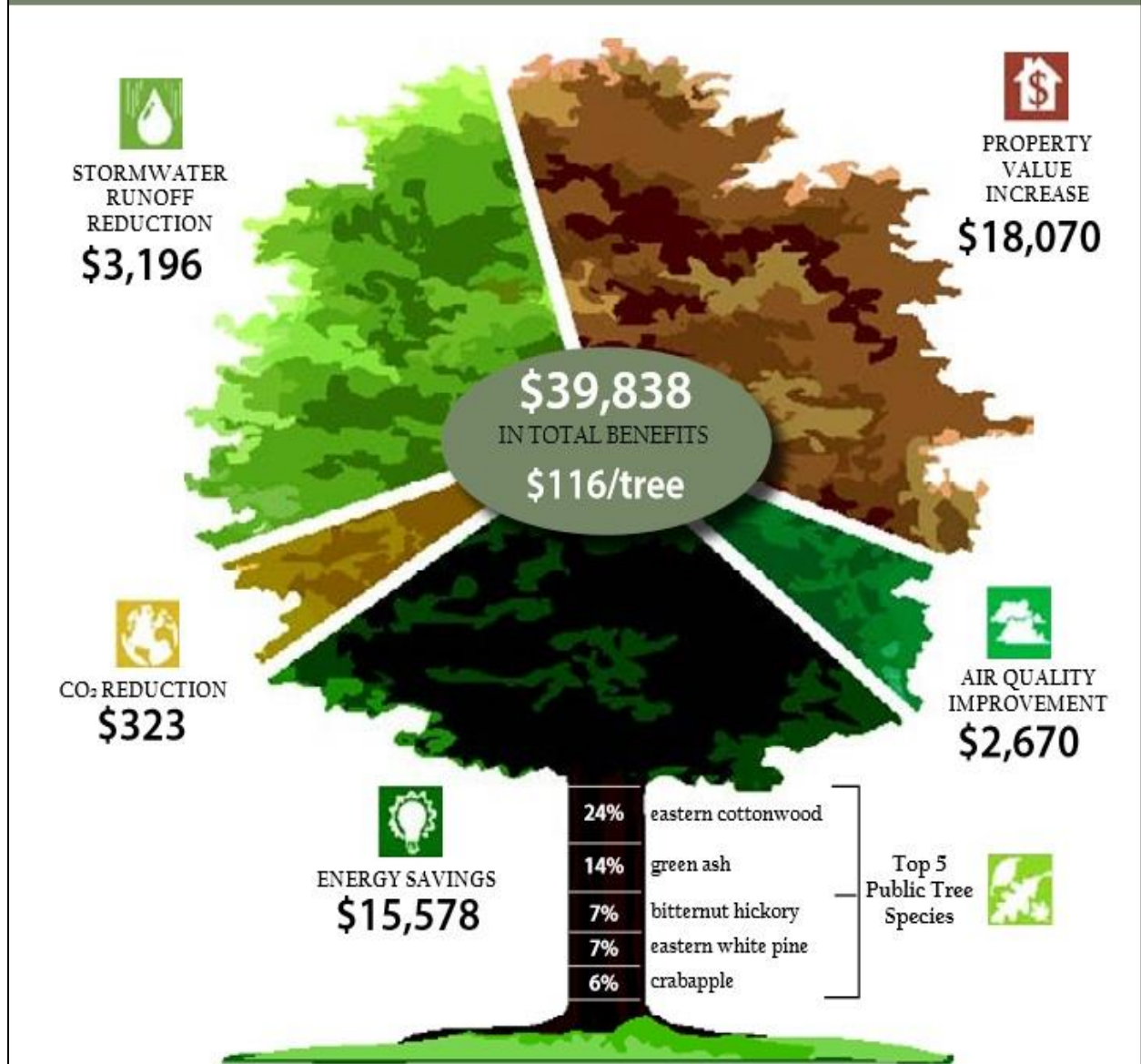


Figure 6: Summary of the benefits provided by Charlotte's public trees inventoried through this project, according to the i-Tree Streets assessment. Tree graphic concept courtesy of City of New York Department of Parks & Recreation.

Table 3. Annual environmental and monetary benefits provided by Charlotte’s public trees.

Benefit Type	Benefit Description	Total Value of Trees Inventoried	Average Value/Tree
Energy conservation	Reduced natural gas use in winter and reduced electricity use for air conditioning in summer	\$15,578	\$45.55
Carbon dioxide	Annual reductions in atmospheric CO2 due to sequestration by trees and reduced emissions from power plants due to reduced energy use. The model accounts for CO2 released as trees die and decompose and CO2 released during the care and maintenance of trees.	\$323	\$.95
Air quality	Quantifies the air pollutants (O3, NO2, SO2, PM10) deposited on tree surfaces and reduced emissions from power plants (NO2, PM10, VOCs, SO2) due to reduced electricity use. Also reported are the potential negative effects of trees on air quality due to BVOC emissions.	\$2,670	\$7.81
Stormwater	Reductions in annual stormwater run-off due to rainfall interception by trees.	\$3,196	\$9.35
Aesthetic/other	Tangible and intangible benefits of trees reflected in increases in property values.	\$18,070	\$52.84
Stored carbon dioxide	Tallies all of the carbon dioxide stored in the urban forest over the life of the trees as a result of sequestration; *not an annual benefit but a cumulative benefit.	\$1,875*	\$5.48*

Recommendations

A healthy public tree population is contingent upon proper management, stewardship, and a municipality's commitment to understanding and maintaining its urban and community forest. A comprehensive public tree inventory is an important piece of a sustainable community tree program. Based on the results of the Charlotte public tree inventory, our priority recommendations are:

- Prioritize the removal of the 9 dead trees within the public right-of-way or on public land in Charlotte.
- Prioritize the timely assessment and, if needed, maintenance or removal of the 63 public trees that were identified as in need of monitoring by a Certified Arborist or the Charlotte Tree Warden.
- Specifically, assess the pruning needs of the 52 public trees identified. Many of these trees have dead wood or broken branches in their crown, some are in need of structural pruning, and some merely need corrective pruning, as they have been improperly pruned in the past. Ensure that whomever performs structural pruning is properly trained; to access a list of ISA Certified Arborists in the area, visit www.isa-arbor.com/findanarborist/arboristsearch.aspx
- There are few mature public trees in Charlotte; promote their health and integrity with a systematic and regular inspection program.
- In consideration of the high population of public trees in the *Acer* (maple) and *Fraxinus* (ash) genera, prepare for the arrival of EAB and ALB by developing a strategic invasive forest pest community preparedness plan. Refer to the VT UCF website's community preparedness page at <http://vtcommunityforestry.org/community-planning/tree-pests> for resources and guidance in the community preparedness process and considerations.
- Continue to engage citizens in Windsor that care about trees; promote educational opportunities, such as VT UCF's Stewardship of the Urban Landscape and Forest Pest First Detector trainings, and consider organizing tree maintenance opportunities for volunteers.

Conclusion

Trees in our downtowns and densely populated landscapes contribute to environmental integrity, social cohesiveness, economic activity, cultural heritage, and overall well-being. This summary public tree inventory report should help the leaders and citizens of Charlotte to understand, manage, and steward Charlotte's public tree population. The recommendations outlined in this report should be considered by the Charlotte Tree Warden based on long-term vision and capacity. With monitoring, regular maintenance, and an engaged and informed citizenry, the potential for a healthy, sustainable community forest is possible.

Appendix A: Instructions for Accessing Public Tree Data in ANR Atlas

Anyone with Internet access can view all of Charlotte's inventoried public trees by using the Vermont Agency of Natural Resources' (ANR) Atlas mapping tool. Follow these simple steps:

1. Set your web browser (Internet Explorer works best, Chrome does not work) to <http://anr.vermont.gov/maps/nr-atlas> (or search "VT ANR Atlas").
2. Zoom in to Charlotte using the +/- scale navigation tool or the "Zoom to Town" function in the dropdown menu in the upper left portion of the map (the tree data layer won't show up unless you are zoomed in to the city-level so that you can see the street names).
3. In the information pane on the left of the screen switch to the "map layers" tab at the bottom.
4. Expand the "Forests, Parks, & Recreation" heading,
5. Click on the box to the left of "Urban Tree Inventory" to load public tree data (it might take a moment for the layer to load).
6. Once you see all the trees on the map, you can zoom in and right-click on any individual tree and click on "What's here"; when you do this, the left information pane will change to give you the basic details for that specific tree.
 - o To access all of the information collected on that specific tree, click on the grey text title of the tree in the left pane and a new window will open with the inventory data.
 - o In this new window there are three tabs: "Details" and "Attributes" display the same information in different formats and if a photo was taken of the tree, it will show up in the "Attachments" tab.



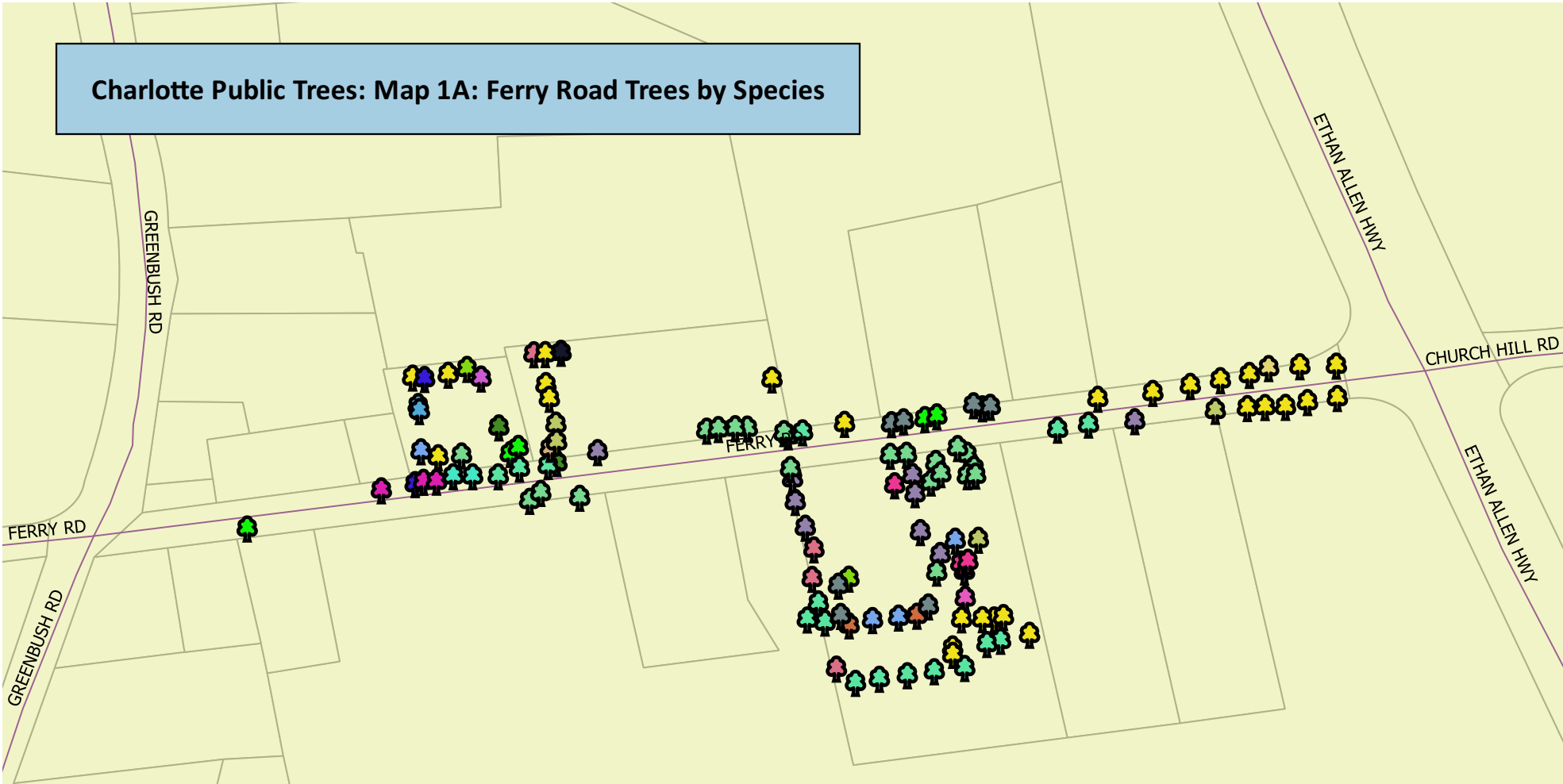
Appendix B: Full Species List of Charlotte Public Trees

Species: common and scientific name	Number of public trees inventoried in Charlotte	Percent of total public tree population
eastern cottonwood (<i>Populus deltoides</i>)	82	24.0%
green ash (<i>Fraxinus pennsylvanica</i>)	46	13.5%
bitternut hickory (<i>Carya cordiformis</i>)	25	7.3%
eastern white pine (<i>Pinus strobus</i>)	25	7.3%
crabapple (<i>Malus sp.</i>)	21	6.1%
Freeman maple (<i>Acer freemanii</i>)	21	6.1%
sugar maple (<i>Acer saccharum</i>)	21	6.1%
swamp white oak (<i>Quercus bicolor</i>)	18	5.3%
northern white cedar (<i>Thuja occidentalis</i>)	11	3.2%
American elm (<i>Ulmus americana</i>)	9	2.6%
honeylocust (<i>Gleditsia triacanthos</i>)	7	2.0%
serviceberry (<i>Amelanchier canadensis</i>)	7	2.0%
Norway maple (<i>Acer platanoides</i>)	6	1.8%
black willow (<i>Salix nigra</i>)	6	1.8%
American basswood (<i>Tilia americana</i>)	4	1.2%
red maple (<i>Acer rubrum</i>)	4	1.2%
river birch (<i>Betula nigra</i>)	4	1.2%
elm (<i>Ulmus sp.</i>)	3	0.9%
red pine (<i>Pinus resinosa</i>)	3	0.9%
American sycamore (<i>Platanus occidentalis</i>)	2	0.6%
black gum (<i>Nyssa sylvatica</i>)	2	0.6%
bur oak (<i>Quercus macrocarpa</i>)	2	0.6%
eastern hemlock (<i>tsuga canadensis</i>)	2	0.6%
horsechestnut (<i>Aesculus hippocastanum</i>)	2	0.6%
northern red oak (<i>Quercus rubra</i>)	2	0.6%
white oak (<i>Quercus alba</i>)	2	0.6%
Apple (<i>Malus sp.</i>)	1	0.3%
boxelder (<i>Acer negundo</i>)	1	0.3%
Colorado blue spruce (<i>Picea pungens</i>)	1	0.3%
Japanese tree lilac (<i>Syringa reticulata</i>)	1	0.3%
southern hackberry (<i>Celtis laevigata</i>)	1	0.3%
TOTAL	342	

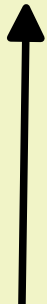
Appendix C: Maps

1. Ferry Road Public Trees:
 - a. Species Distribution
 - b. Diameter Distribution
 - c. Condition Distribution
 - d. Trees in Need of Monitoring and/or Pruning
 - e. Ash Trees
2. Charlotte Beach
 - a. Species Distribution
 - b. Diameter Distribution
 - c. Condition Distribution
 - d. Trees in Need of Monitoring and/or Pruning
 - e. Ash Trees
3. East Burying Ground
 - a. Species Distribution
 - b. Diameter Distribution
 - c. Condition Distribution
 - d. Trees in Need of Monitoring and/or Pruning
4. Charlotte Park & Wildlife Refuge
 - a. Species Distribution
 - b. Diameter Distribution
 - c. Condition Distribution
 - d. Trees in Need of Monitoring and/or Pruning
 - e. Ash Trees
5. Barber Cemetery
 - a. Species Distribution
 - b. Diameter Distribution
 - c. Condition Distribution
 - d. Trees in Need of Monitoring and/or Pruning

Charlotte Public Trees: Map 1A: Ferry Road Trees by Species



Charlotte Public Trees			
American elm	crabapple	honeylocust	southern Hackberry
black gum	eastern cottonwood	horsechestnut	sugar maple
boxelder	eastern hemlock	Japanese tree lilac	swamp white oak
bur oak	elm	northern white cedar	white oak
Colorado blue spruce	Freeman maple	red maple	Charlotte Roads
	green ash	river birch	Charlotte Parcels
		serviceberry	



Map created by VT UCF staff using QGIS, November 2016

Charlotte Public Trees: Map 1B: Ferry Road Trees by Condition



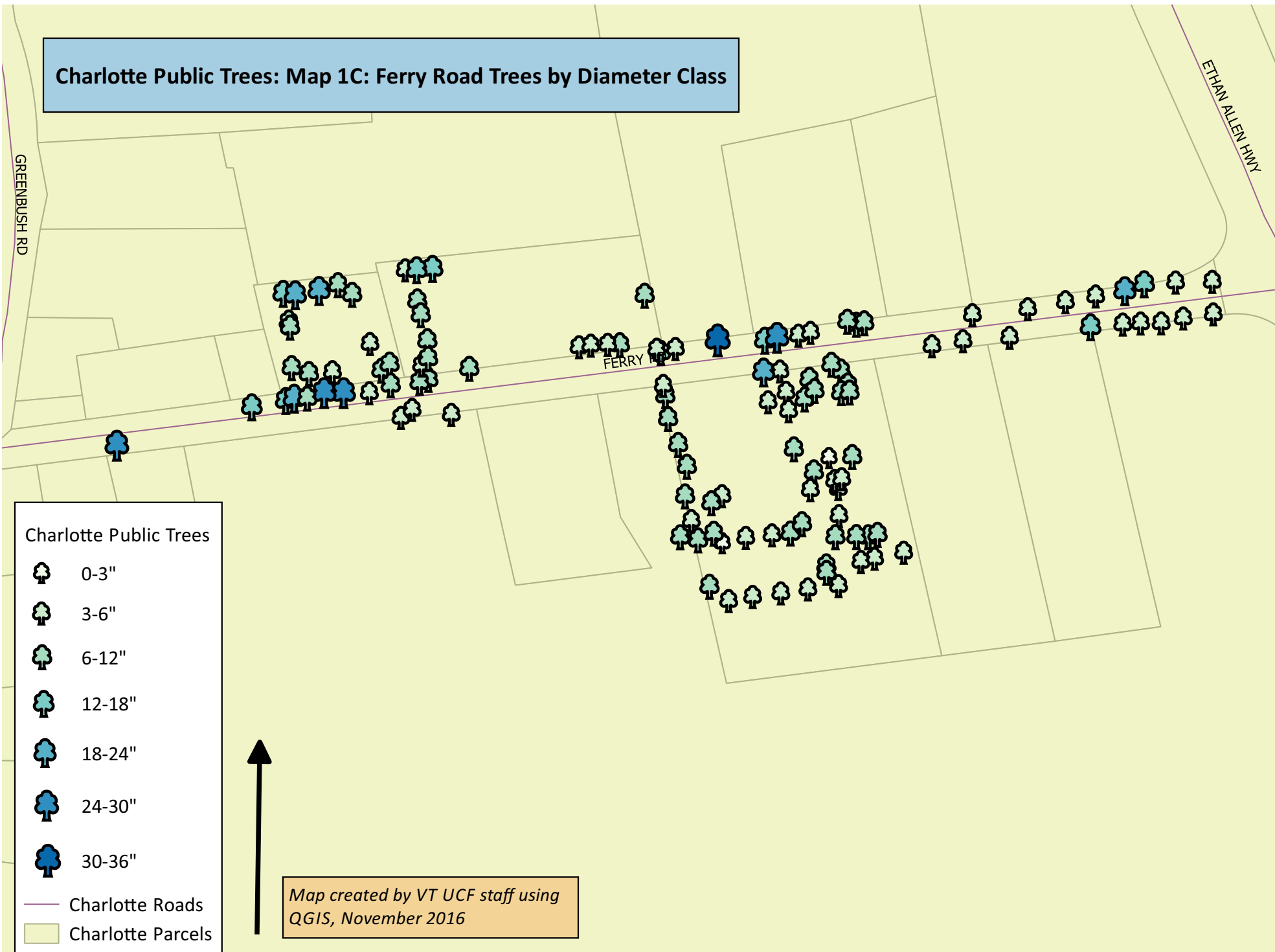
Charlotte Public Trees

- Good
- Fair
- Poor
- Dead

- Charlotte Roads
- Charlotte Parcels

Map created by VT UCF staff using QGIS, November 2016

Charlotte Public Trees: Map 1C: Ferry Road Trees by Diameter Class






Charlotte Public Trees: Map 1D: Trees Requiring Monitoring and/or Pruning



GREENBUSH RD

ETHAN ALLEN HWY

FERRY

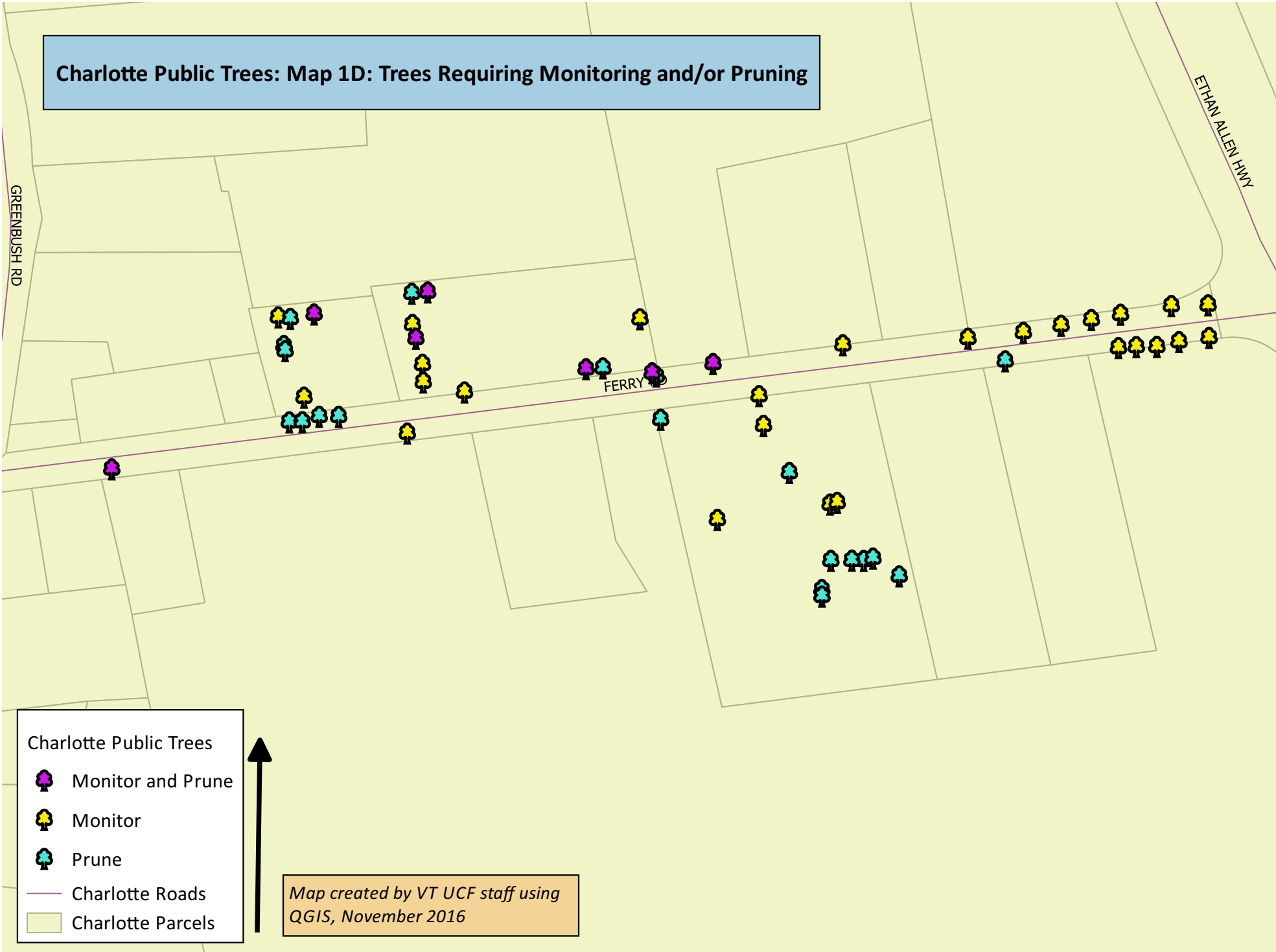
Charlotte Public Trees

-  Monitor and Prune
-  Monitor
-  Prune

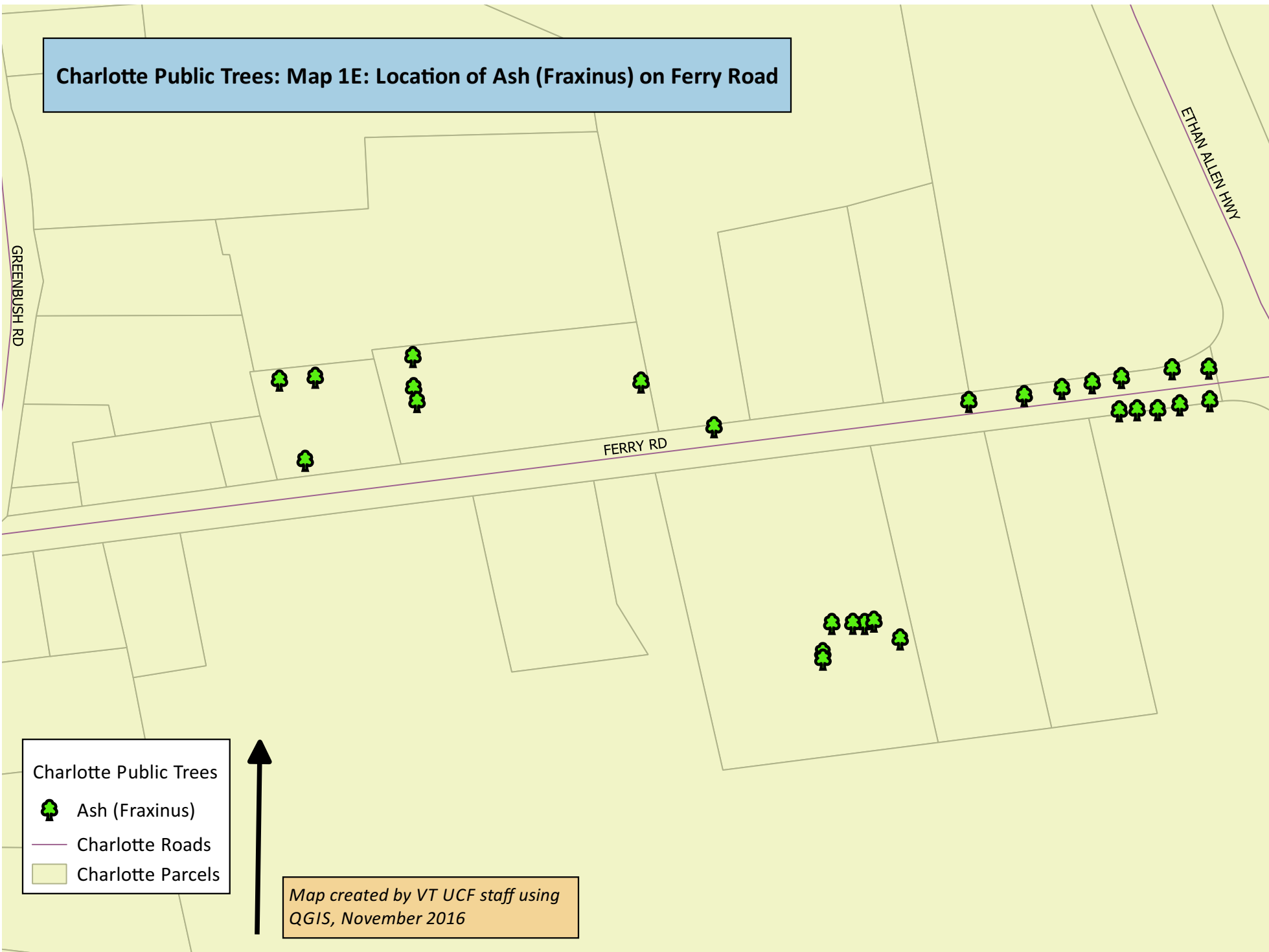
-  Charlotte Roads
-  Charlotte Parcels



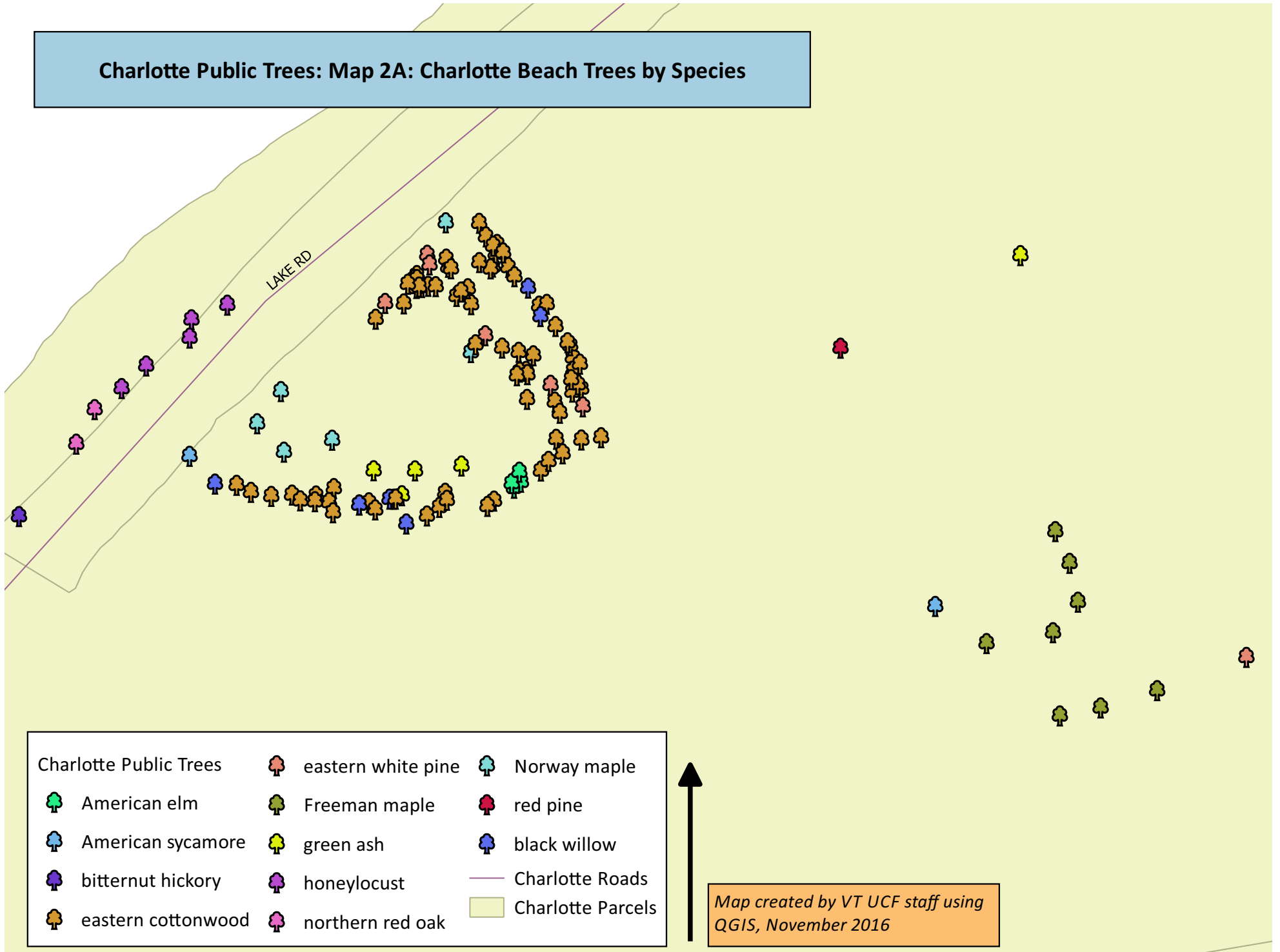
Map created by VT UCF staff using QGIS, November 2016



Charlotte Public Trees: Map 1E: Location of Ash (Fraxinus) on Ferry Road

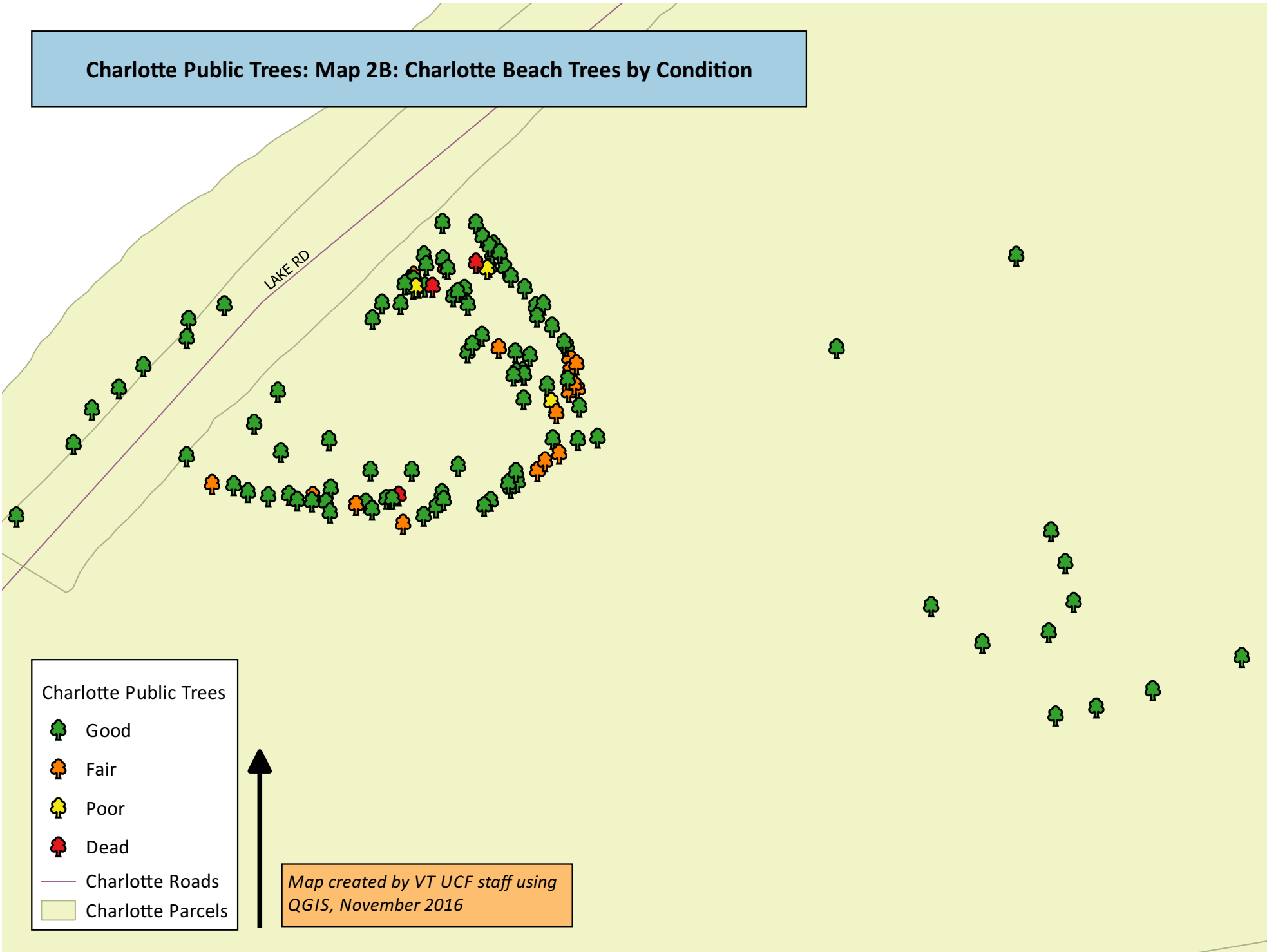


Charlotte Public Trees: Map 2A: Charlotte Beach Trees by Species

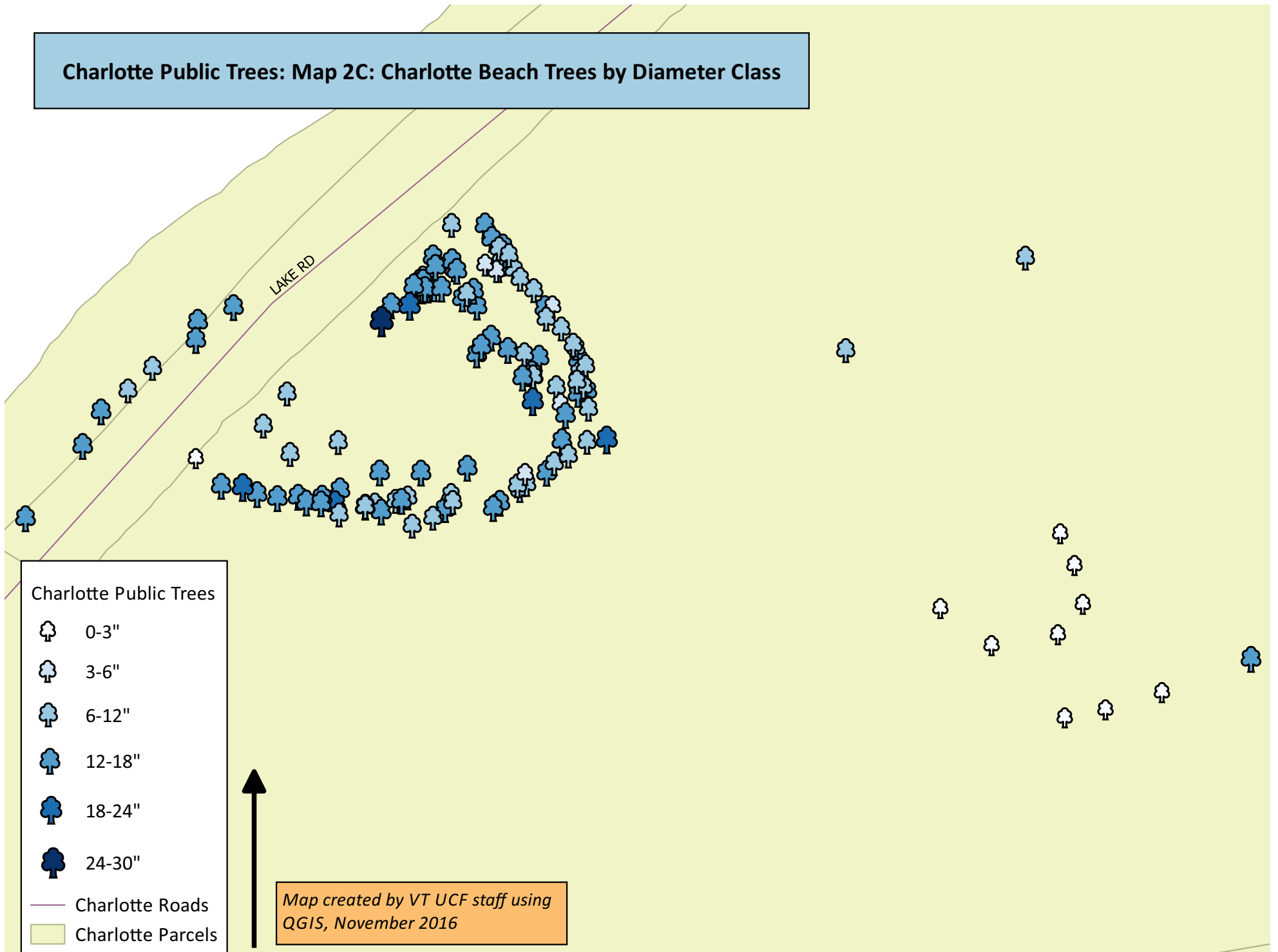


Map created by VT UCF staff using QGIS, November 2016

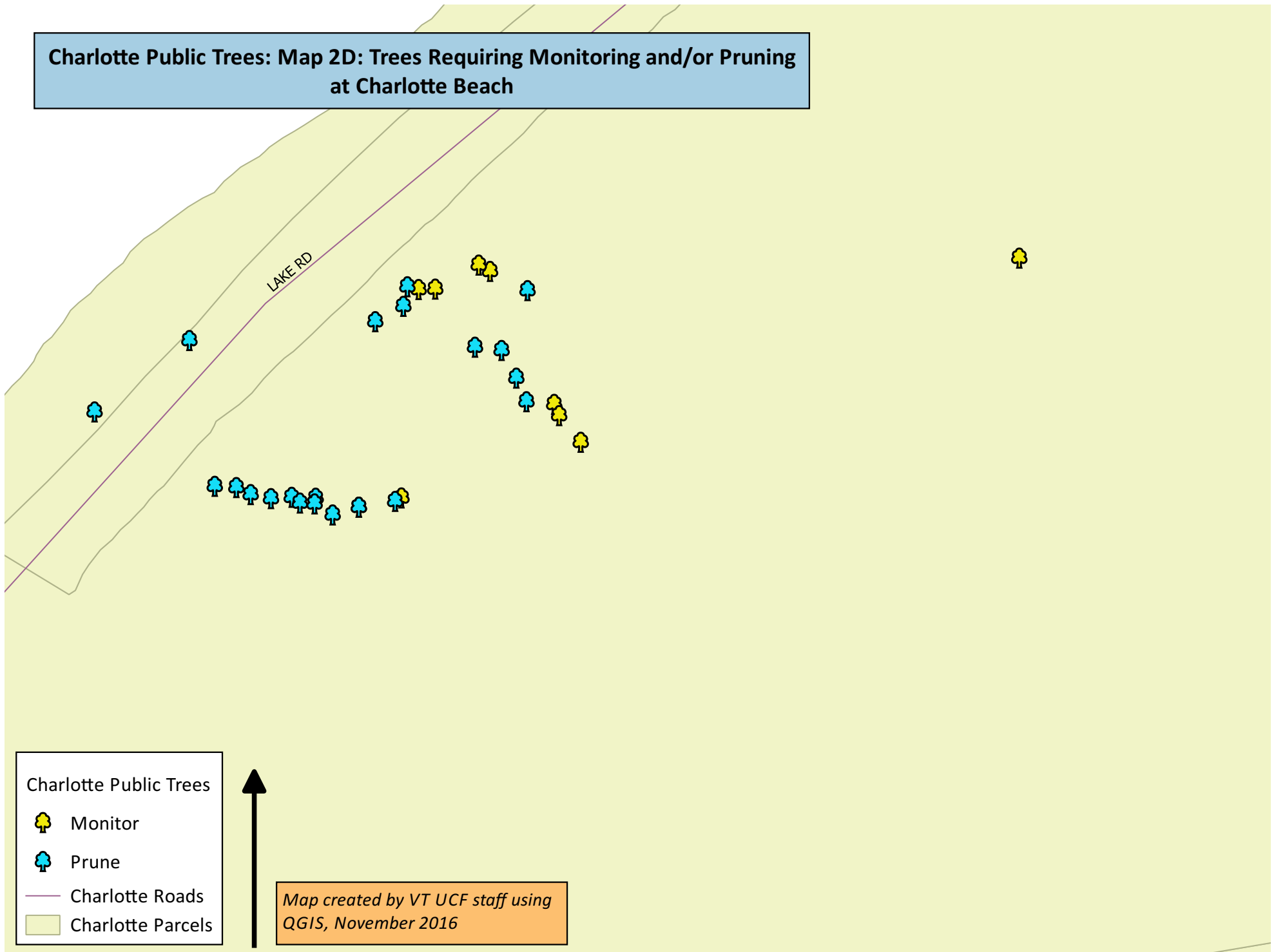
Charlotte Public Trees: Map 2B: Charlotte Beach Trees by Condition



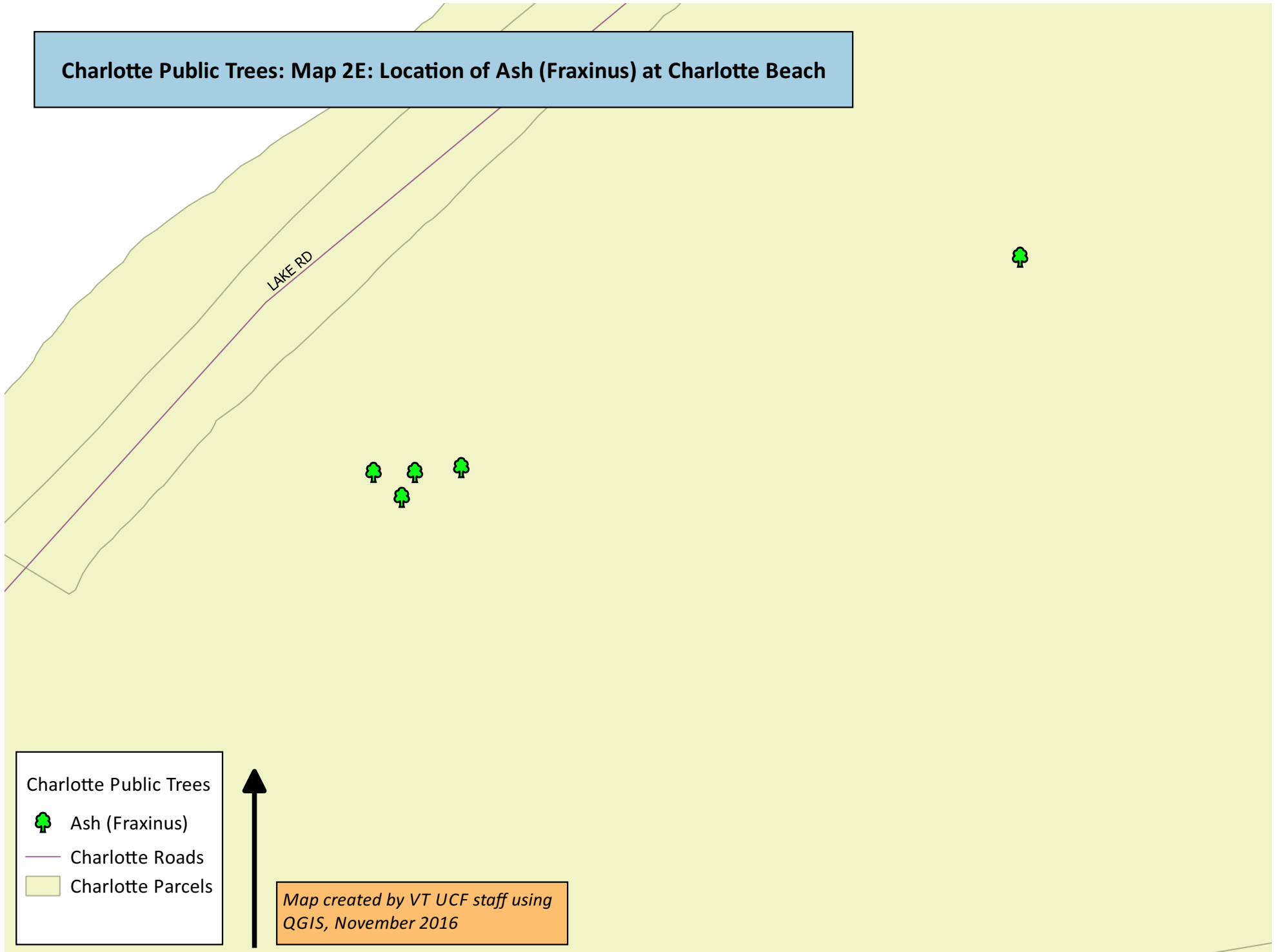
Charlotte Public Trees: Map 2C: Charlotte Beach Trees by Diameter Class



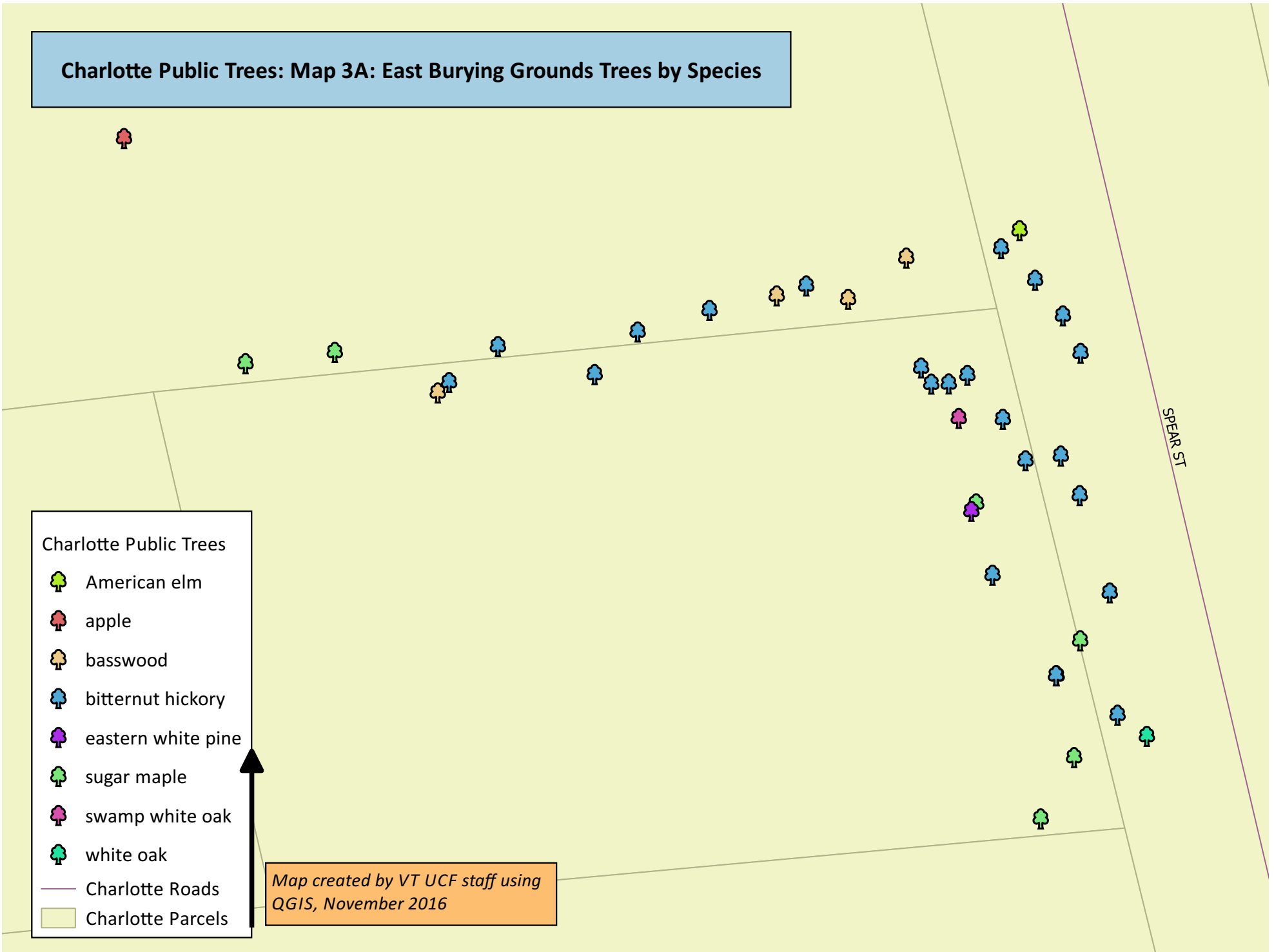
Charlotte Public Trees: Map 2D: Trees Requiring Monitoring and/or Pruning at Charlotte Beach



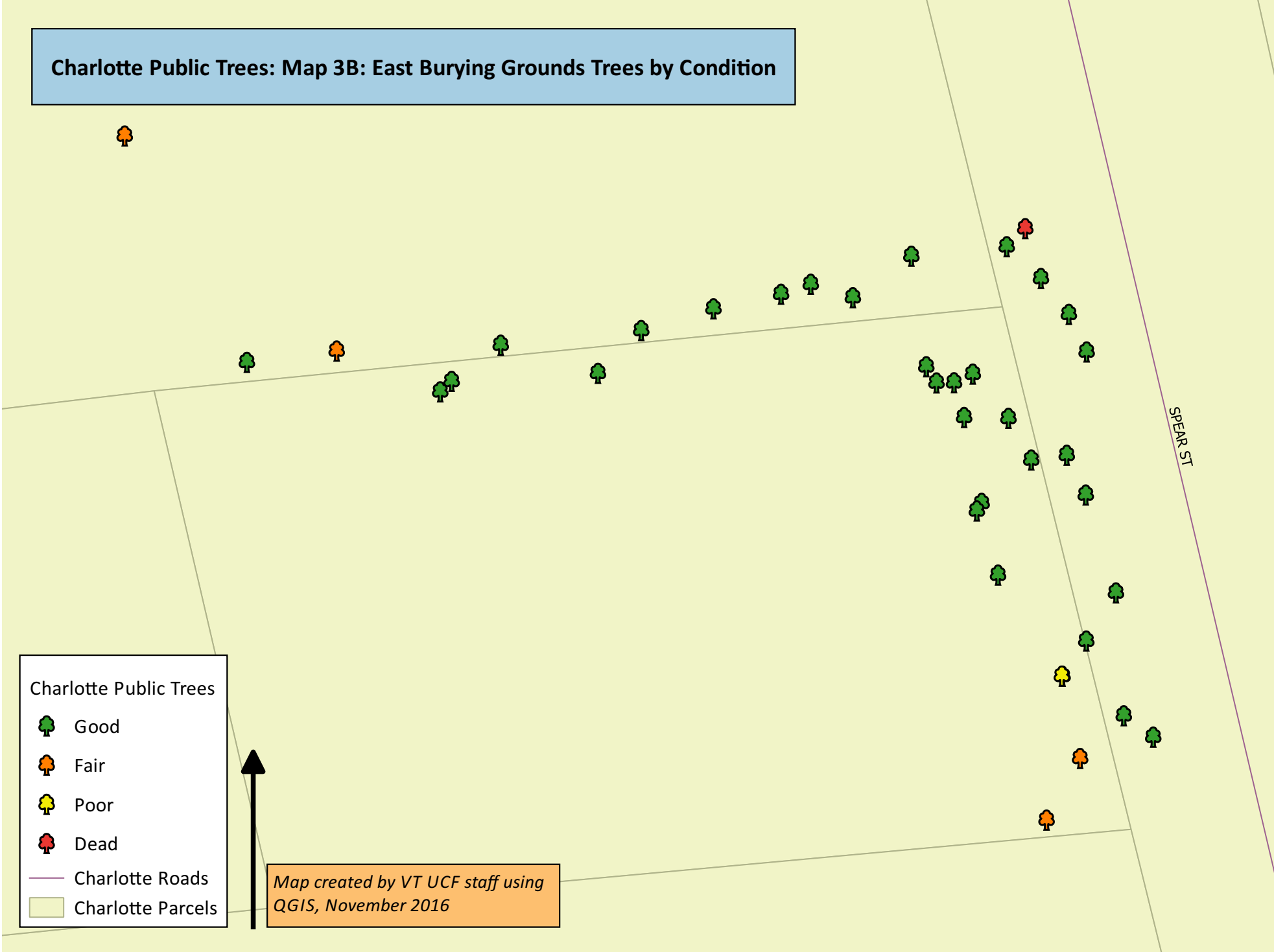
Charlotte Public Trees: Map 2E: Location of Ash (Fraxinus) at Charlotte Beach



Charlotte Public Trees: Map 3A: East Burying Grounds Trees by Species





Charlotte Public Trees: Map 3B: East Burying Grounds Trees by Condition



Charlotte Public Trees

-  Good
-  Fair
-  Poor
-  Dead

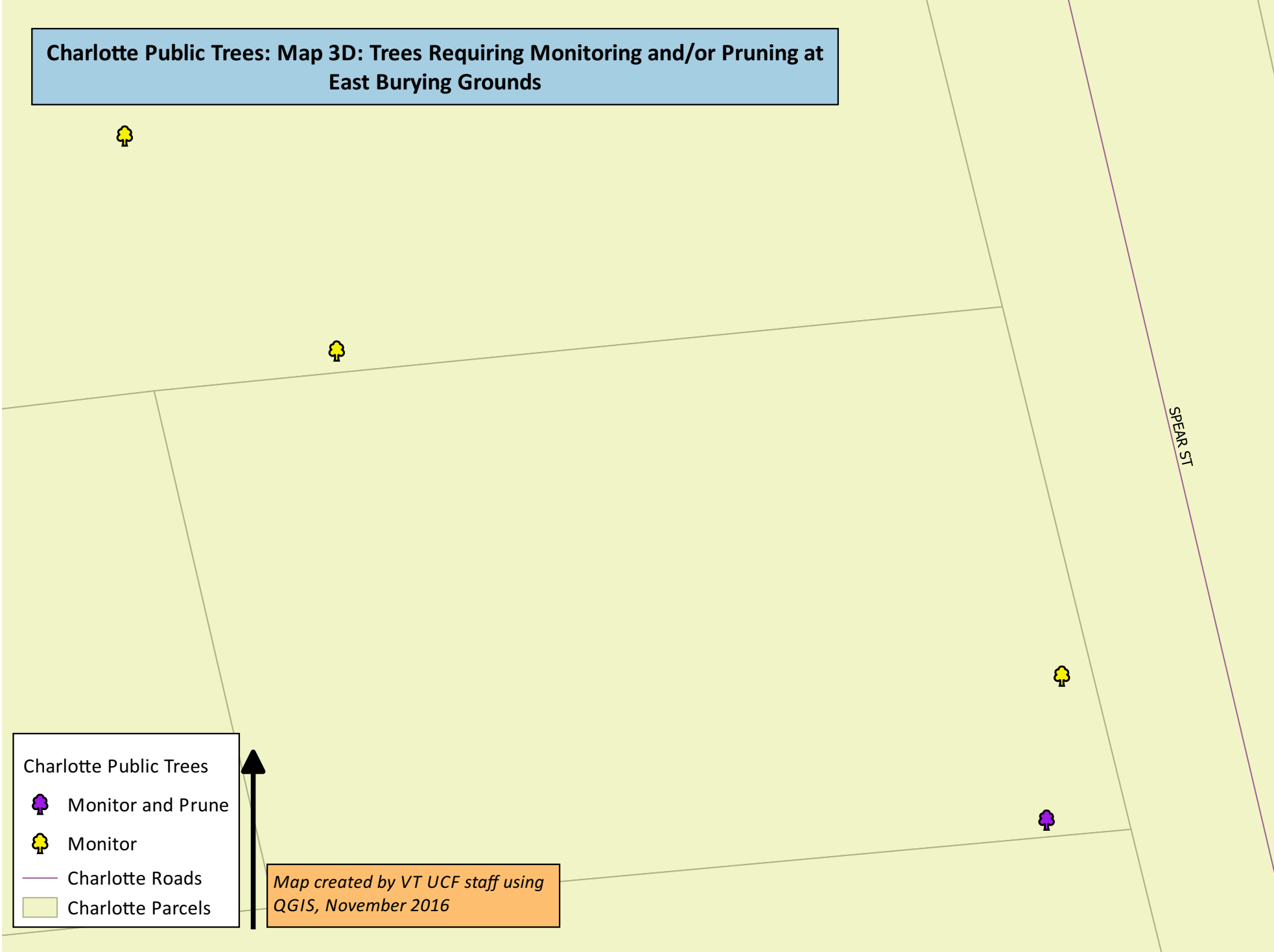
-  Charlotte Roads
-  Charlotte Parcels

Map created by VT UCF staff using QGIS, November 2016

Charlotte Public Trees: Map 3C: East Burying Grounds Trees by Diameter Class



Charlotte Public Trees: Map 3D: Trees Requiring Monitoring and/or Pruning at East Burying Grounds










- Charlotte Public Trees
- Monitor and Prune
 - Monitor
 - Charlotte Roads
 - Charlotte Parcels



Map created by VT UCF staff using QGIS, November 2016

Charlotte Public Trees: Map 4A: Charlotte Park & Wildlife Refuge Trees by Species

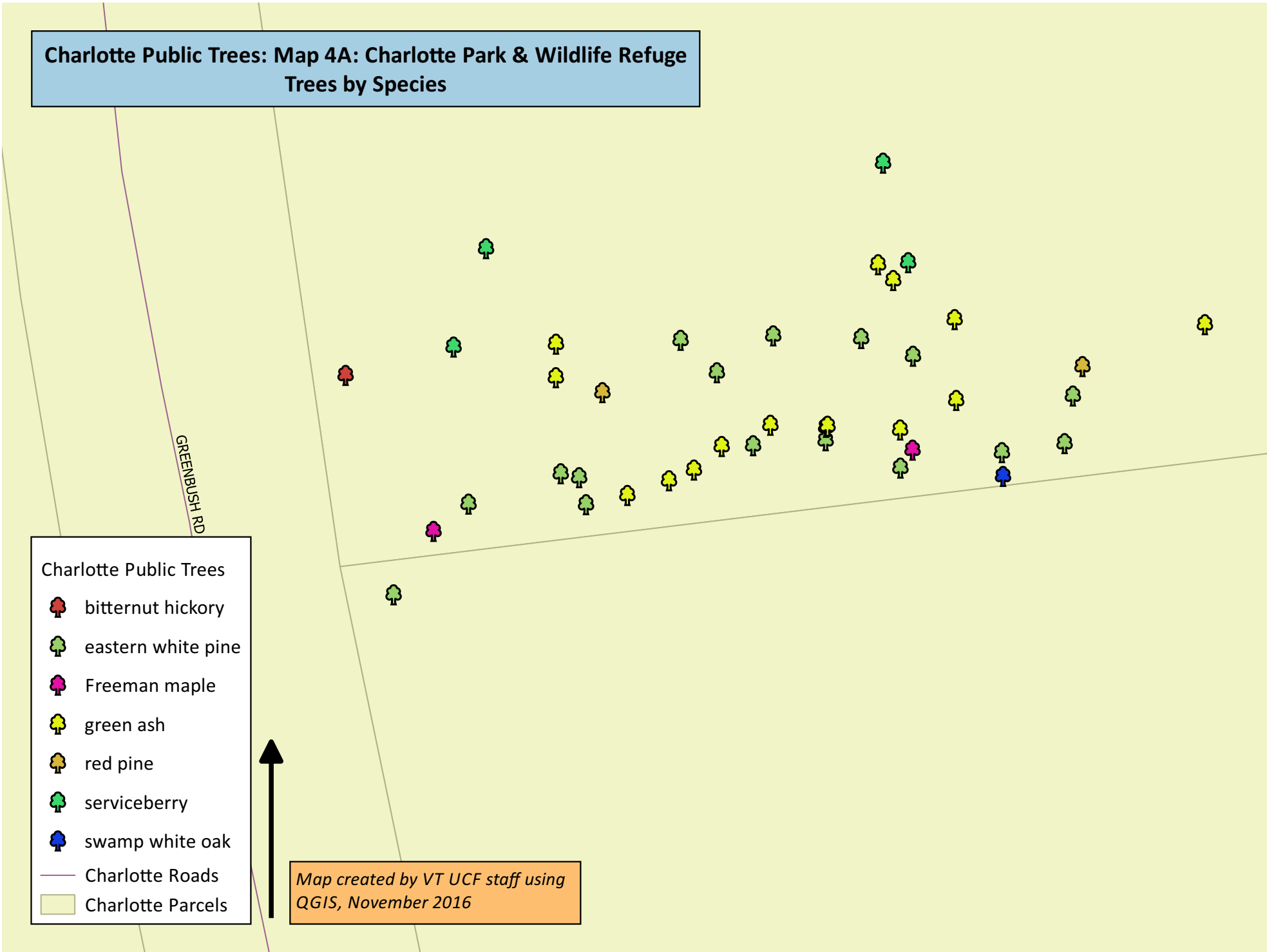
GREENBUSH RD

Charlotte Public Trees

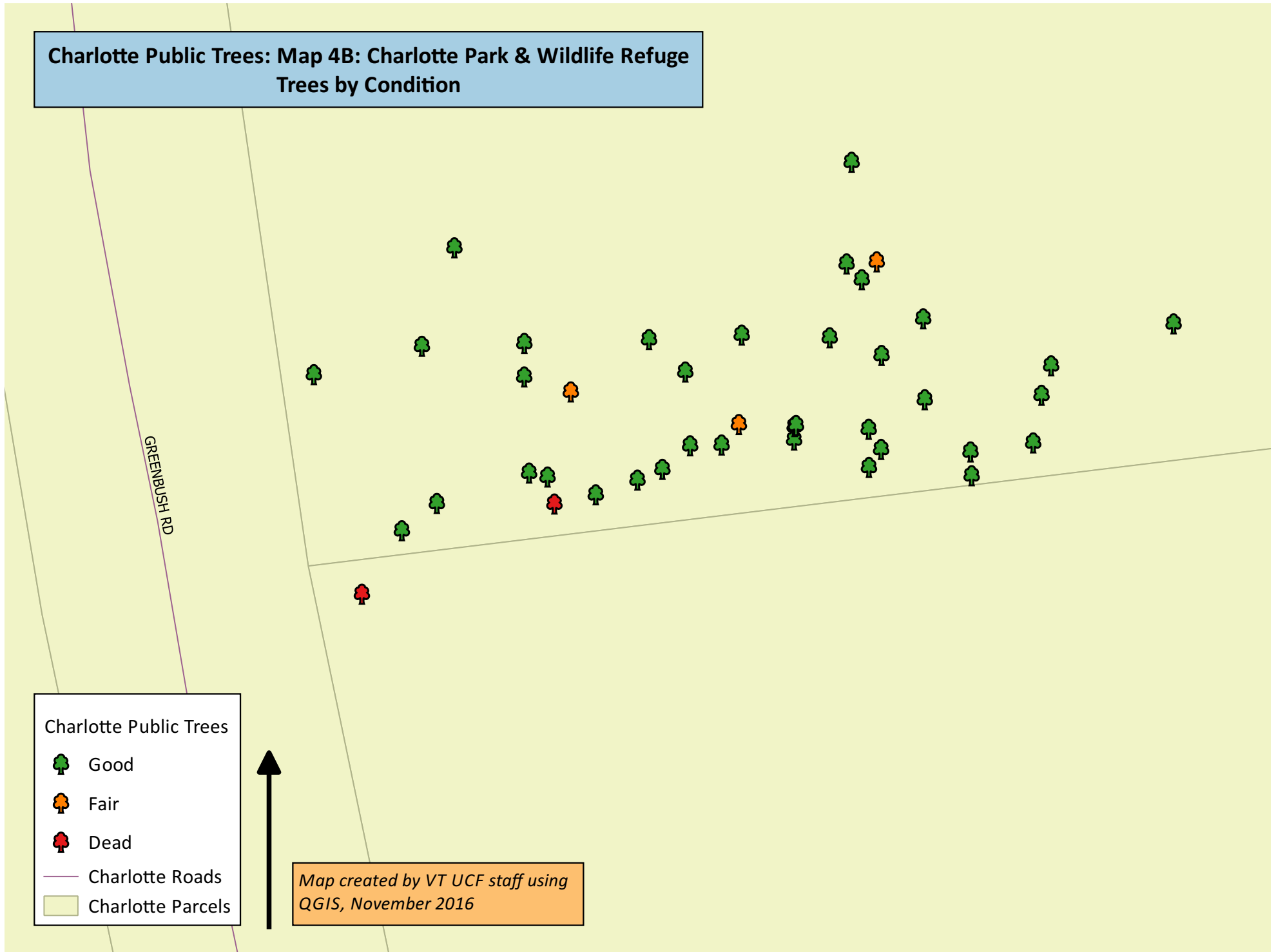
-  bitternut hickory
-  eastern white pine
-  Freeman maple
-  green ash
-  red pine
-  serviceberry
-  swamp white oak

-  Charlotte Roads
-  Charlotte Parcels

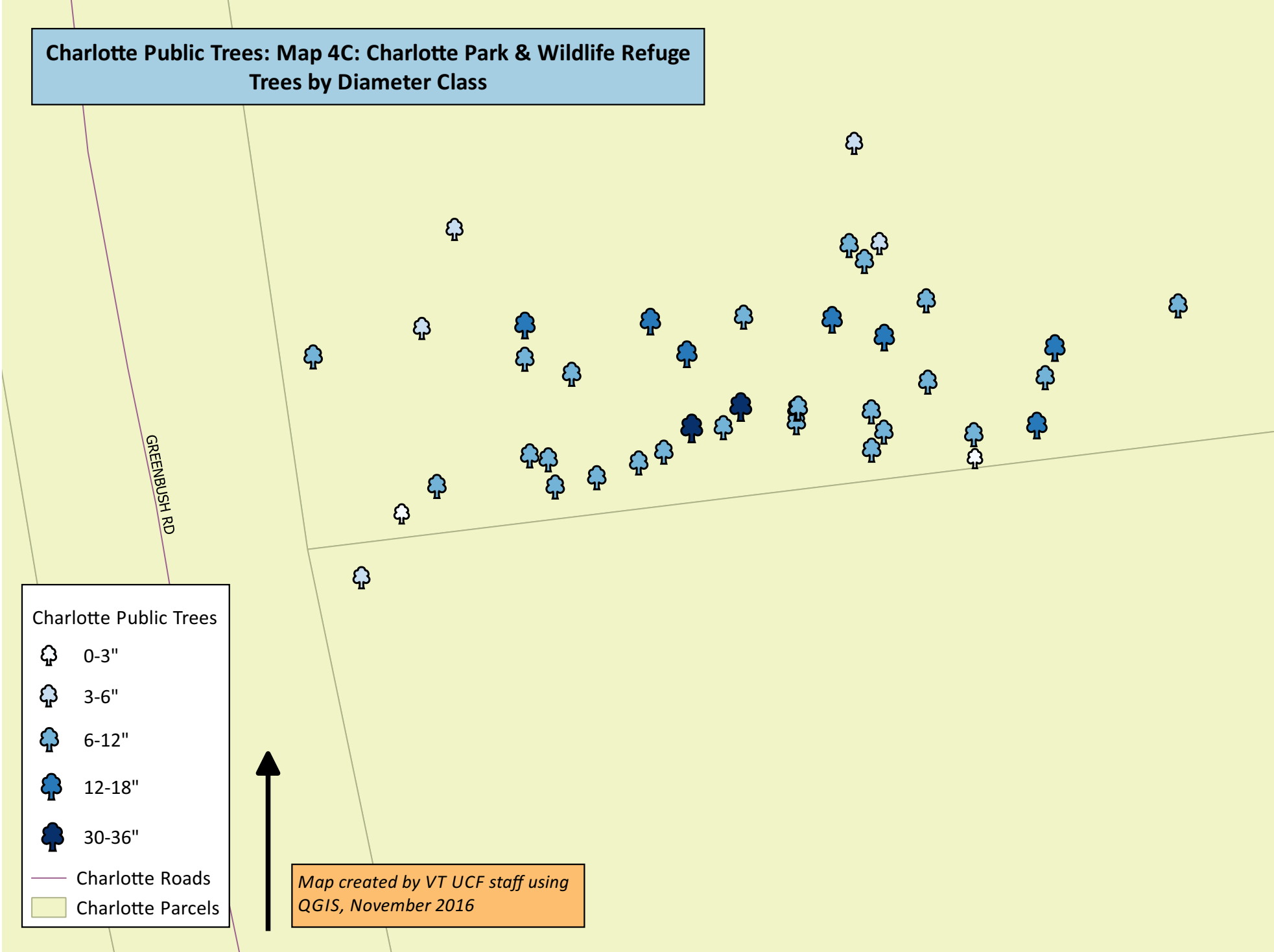
Map created by VT UCF staff using
QGIS, November 2016



Charlotte Public Trees: Map 4B: Charlotte Park & Wildlife Refuge Trees by Condition



Charlotte Public Trees: Map 4C: Charlotte Park & Wildlife Refuge Trees by Diameter Class



Charlotte Public Trees

- 0-3"
- 3-6"
- 6-12"
- 12-18"
- 30-36"

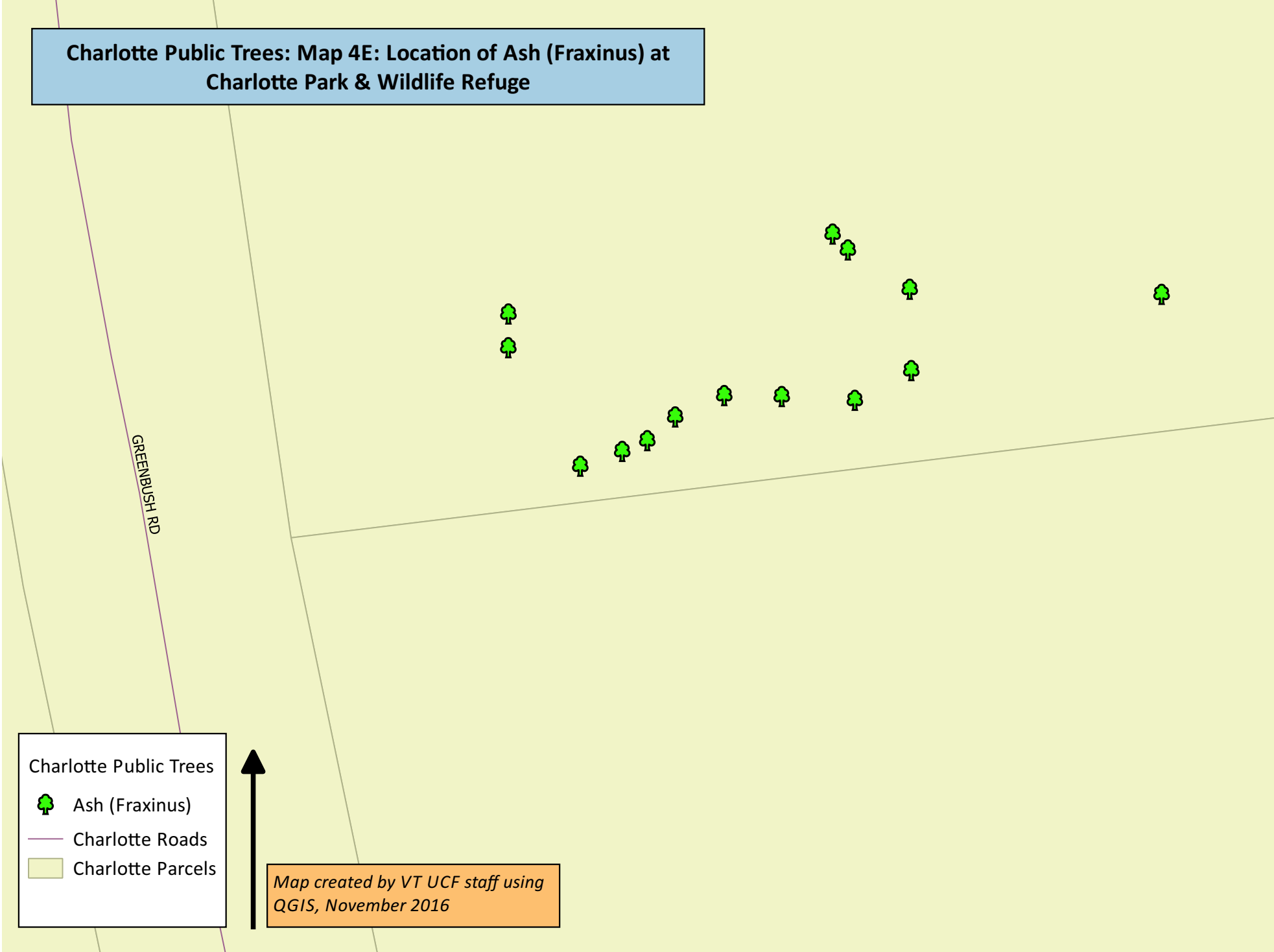
Charlotte Roads
Charlotte Parcels




Map created by VT UCF staff using QGIS, November 2016

Charlotte Public Trees: Map 4D: Trees Requiring Monitoring and/or Pruning at Charlotte Park & Wildlife Refuge



Charlotte Public Trees: Map 4E: Location of Ash (Fraxinus) at Charlotte Park & Wildlife Refuge




- Charlotte Public Trees
-  Ash (Fraxinus)
 -  Charlotte Roads
 -  Charlotte Parcels

Map created by VT UCF staff using QGIS, November 2016

Charlotte Public Trees: Map 5A: Barber Cemetery Trees by Species

GREENBUSH RD

Charlotte Public Trees

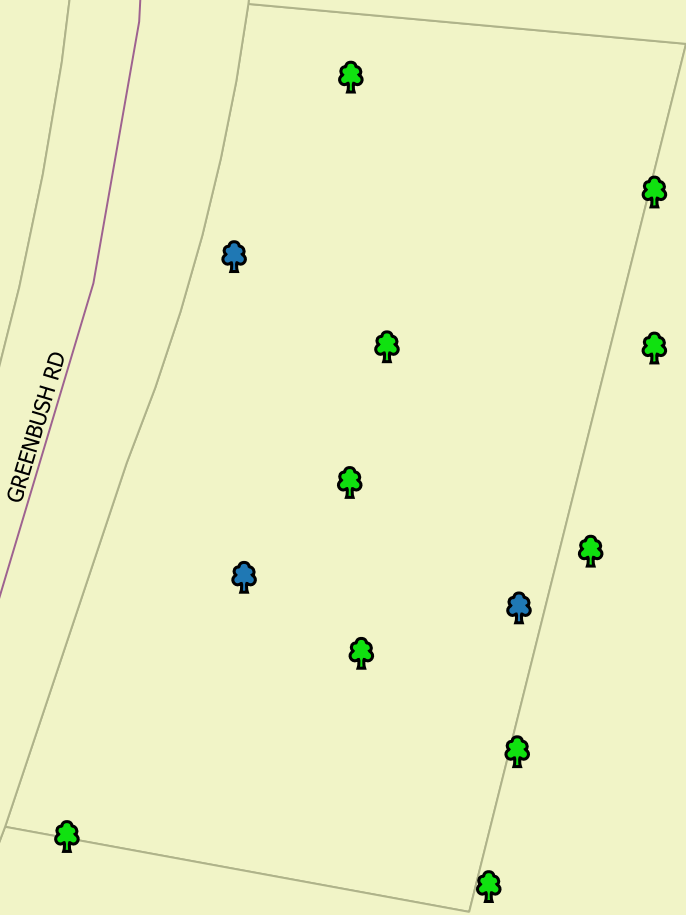
 northern white cedar

 sugar maple

 Charlotte Roads

 Charlotte Parcels




Map created by VT UCF staff using QGIS, November 2016



Charlotte Public Trees: Map 5B: Barber Cemetery Trees by Condition

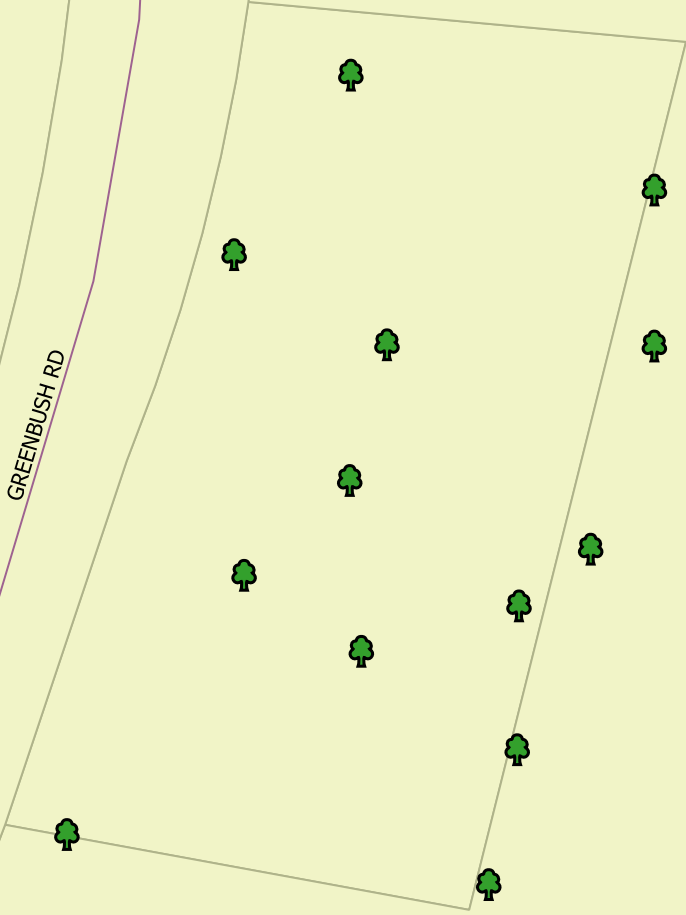
GREENBUSH RD

Charlotte Public Trees

-  Good
-  Charlotte Roads
-  Charlotte Parcels








Map created by VT UCF staff using QGIS, November 2016



Charlotte Public Trees: Map 5C: Barber Cemetery Trees by Diameter Class

Charlotte Public Trees

-  3-6"
-  6-12"
-  24-30"
-  30-36"
-  42+"

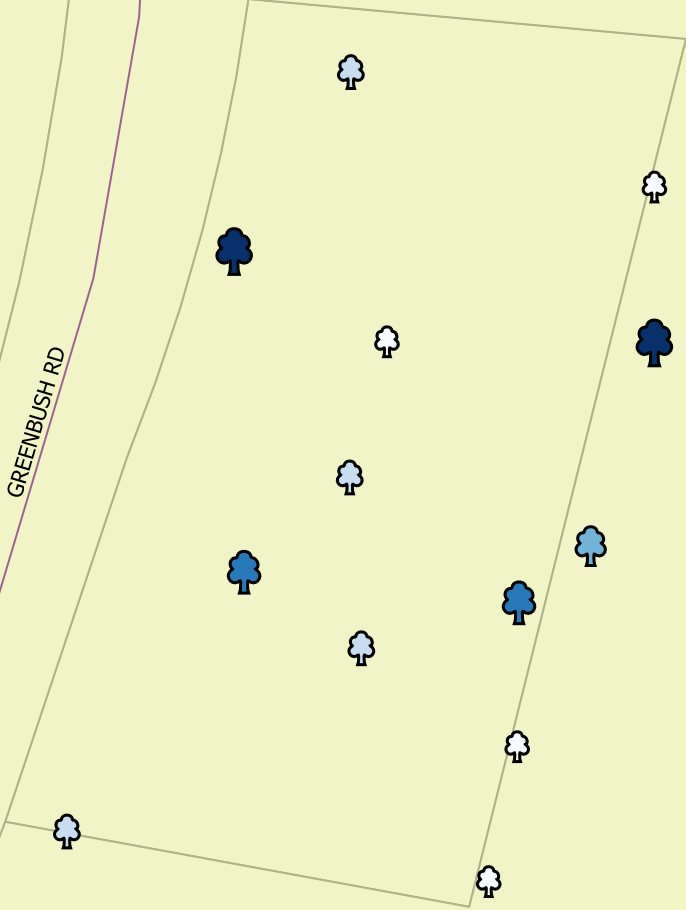
— Charlotte Roads

■ Charlotte Parcels



Map created by VT UCF staff using QGIS, November 2016

GREENBUSH RD






Charlotte Public Trees: Map 5D: Trees Requiring Monitoring and/or Pruning at Barber Cemetery

GREENBUSH RD



Charlotte Public Trees

-  Prune
-  Charlotte Roads
-  Charlotte Parcels



Map created by VT UCF staff using QGIS, November 2016