

GOVERNMENT OF THE DISTRICT OF COLUMBIA
OFFICE OF PLANNING



Office of the Director

MEMORANDUM

TO: Zoning Commission
FROM: *US for*
Andrew Altman, Director
DATE: July 18, 2004
SUBJECT: Forest Hills Tree and Slope Overlay District - **ZC 02-19**
Response to the Zoning Commission – Supplemental Final Report

This supplemental memo highlights some key points raised in OP's July 12, 2004 final report and to recognize issues raised at the Zoning Commission's public hearing on July 22, 2004 regarding OP's Alternate Proposal including:

- a. Best Practices, Methodology and Findings.
- b. Imperviousness and Slope Protection.

Best Practices, Methodology and Findings

Best Practices

The Office of Planning's July 12, 2004 report focused on changes to the Alternate Proposal, which OP believes would satisfy the preservation goals for tree canopy in Forest Hills, and offered a compromise position to bridge a divide among the community's factions, including:

- Those in favor of the overlay as setdown,
- Those who believed while an overlay was a favorable idea did not agree with the provisions as setdown, and
- Those who did not desire another land use regulation.

OP's preservation and restoration approach through canopy assessment was initiated in part by questions raised to OP by the Forest Hills Citizen's Association that Forest Hills was a heavily canopied neighborhood of mature trees with over 70% canopy. Based on these questions, OP researched various methodologies to determine canopy coverage based on current technology to ultimately derive some estimate of tree coverage, particularly for the privately owned developed lots within defined squares of the prescribed overlay.

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While results of the GIS focused on these squares and yielded 36% (mean % coverage), OP believes, as do the applicants, that the entire neighborhood of Forest Hills could have the a 70 percent coverage, if the results included coverage of trees in public space and more of the parklands within the neighborhood. In this instance, GIS was used as a planning tool in assisting OP in the determination of how to apply canopy coverage across the proposed overlay, specifically to determine equity in the percentage requirements for **private property**.

For comparative analysis of how tree preservation was addressed in other jurisdictions locally and nationwide, OP's research determined that many jurisdictions did in fact apply percentage canopy requirements as part of their land use regulations. For instance, the City of Fairfax has used this requirement since 1978. Similarly, Fairfax County, Arlington and Alexandria also require percentage coverage as part of their zone requirements. As recently as July 2004, the Arlington County Board adopted its Urban Forest Master Plan (UFMP), which includes a GIS based canopy satellite analysis. In addition, the Metropolitan Washington Council of Government (MWCOC) informed OP that a canopy assessment study was currently being conducted for urban areas within the Chesapeake Bay watershed. One possible recommendation to improve the health of the Bay would be a percent tree canopy coverage requirement for these areas, including Washington, D.C.

Canopy control through the zoning regulation is a common tool for tree preservation and is utilized by local area jurisdictions and model ordinances nationwide. OP's small-scale analysis based on GIS analysis of recent aerial photography could assist in evaluation of development impacts on the tree cover in the proposed overlay by requiring adjustments to conform to the tree cover goals of OP's Alternate Proposal. This provides an equitable balance between the preservation of Forest Hill's treed character and that of private property development rights within the overlay.

Methodology and Findings

The overlay area covers private properties, street trees, U.S. government-owned parkland, District-owned property, embassy-owned properties and special properties such as Hillwood.

OP's GIS Division conducted digital image analysis on aerial photos¹ dated June 2003. These photos were overlaid with property boundary outlines from the Office of Tax and Revenue (OTR) maps. Using the digitized images, polygons were created which represented the tree canopy within the squares of the defined area. The tree canopy outlines were then traced on screen at scale of approximately 1:700 (where 1 inch on screen equals approximately 60 feet on the ground). Tree locations were determined from the center points of their canopies. Trees that were located in public space were not traced, even if part of their canopies fell within their property boundary. ArcGIS software analyzed these polygons and determined their total area and the canopy cover (represented by the digitized polygons) for each of the squares within the defined overlay area. In this instance, the attempt is not to measure individual canopy on individual lots, but to determine an aggregate for the defined area. The GIS analysis determined that tree

¹ These aerial photos are provided for District Government use through the Office of the Chief Technology Officer (OCTO).

canopy coverage within the overlay boundaries² is approximately 55% percent and includes lots and squares not subject to the overlay's requirements such as U.S. Park Service properties. To ensure that canopy coverage is maintained for the overlay *as a whole*, the overlay would need to stipulate canopy coverage requirements for Federal and District land, including street trees.

OP's further analysis to focus solely on privately owned properties attempts to address the issue of the neighborhood's character with respect to its tree coverage. Specifically, OP is concerned that if the larger properties within the overlay (some of which include entire squares) were to be developed, the development pattern should reflect the existing coverage of Forest Hills to maintain the neighborhood's existing "treed character".

However, while there is more canopy coverage within Forest Hills, contributed to by private properties, street trees and the park properties as an aggregate, the relevant coverage is approximately 36% for privately owned and developed R-1-A lots. The existing database provided in earlier reports informs which squares are predominantly privately owned, developed, and R-1-A. Using those squares, both the mean and the median are 34-36% canopy coverage, providing for a normal distribution (the assertion made at the public hearing is incorrect that what was calculated was the mean of the means). OP used the percent coverage of the square, not the mean of the lots on the square and what was calculated was the mean of the percent coverages.

Therefore, when development is necessary on any property, at the micro-level, an arborist is able to determine through measurement, exactly how much canopy is on the respective property and how much can be removed to permit development. In addition, if no trees exist, that property owner should plant to meet the lot's zoning requirement. In response to comments that canopy measurement was difficult, attached is a reference of canopy measurement tools listed in the National Forestry Handbook, published by the USDA, Natural Resources Conservation Service.

Error Factors

OP understands that questions were raised regarding the accuracy of the digital image analysis produced by OP's GIS staff with reference made to Squares 2277 and 2263. Based on these questions and testimony at the July 22, 2004 public hearing, GIS staff re-examined the specific squares. Specifically it was asserted that trees inadvertently not included would significantly change the canopy measurement results.

However, when GIS staff reviewed and included what appeared to be missed trees on private property in those squares; there was no appreciable mathematical change with the inclusion of the additional trees/canopy. With the changes included, the mean percentage (%) changed from 36.1% to 36.8% with no change in the overall canopy assessment of 55% for all the squares, which included the heavily canopied public park and private properties. In fact, the changes are more in line with the percent coverage of the other privately owned developed R-1-A lots and well within the mean percentage of these squares. GIS staff has repeatedly advised that error factors are minimal (+/- 3%) and changes would not appreciably affect the outcome.

² The December 13 Proposal and the Alternate Proposal apply to R-1, R-1-B and R-2 residential zones in the squares listed in Section 1516.1.

Finally, OP supports the GIS analysis produced by GIS staff that are qualified in this discipline and who routinely do so for various projects District wide.

Imperviousness and Slope Protection

While OP understands that regulation of imperviousness and slope protection is instrumental in environmental preservation, for the District's purposes the Department of Health (DOH) remains the responsible agency for review of all sediment control and stormwater plans to ensure that development complies with environmental regulations. DOH has guidance manuals for erosion and sediment control in stormwater management that address proper site design to ensure various parameters such as steep slopes are adequately addressed through the design guidelines.

OP understands that the Department of Health's (DOH) Watershed Protection Branch is in the process of its 2nd revision/update of its storm water management design manual and guidebook to include Low Impact Development (LID) practices, including "smart site design" for stormwater management, and erosion and sediment control, both for private and public property involving land disturbance. Land disturbance activities related to construction are governed by the Erosion and Sediment Control Regulations (21 DCMR Chapter 5), and for areas 1 acre or greater, a developer has an additional requirement to obtain an NPDES permit. DOH coordinates with the EPA on this type of development.

CONCLUSION

OP believes it has provided the Commission alternative views and provisions through which tree preservation can be accomplished based on current practice and what exists in the original provision as set down. Through research, a "middle of the road alternative" was sought to bridge the differences that currently divide the community concerning the best approach to address tree preservation in the Forest Hills neighborhood.

OP believes the amended alternate text would encourage property owners to maintain and care for existing trees on their property to facilitate any future development. Instead of being an obstacle in the path of development, canopy preservation and restoration is a life cycle strategy trees and become an asset in meeting canopy coverage requirement. Canopy measurement would now become routine in the overlay district, as is any other current zone requirement.

In comparison to the original proposal, this recommendation:

- * Provides flexibility in meeting tree planting and preservation requirements;
- * Creates an easily enforceable mechanism that incorporates UFA's review;
- * Reduces impact on the buildable area of lots; and
- * Maintains a characteristic canopy coverage for Forest Hills.

Therefore, based on the above discussion and citizen concerns, OP highlights the following changes to the Alternate Proposal as submitted at the July 22nd, 2004 hearing as follows:

1516 FOREST HILLS TREE PROTECTION OVERLAY DISTRICT

1516.1 The Forest Hills Tree Protection (FH/TP) Overlay District is established for Forest Hills, which includes all lots in Squares 2030 through 2033, 2040 through 2043, 2046, 2049 except for lots 804 (Van Ness North), 805 (Van Ness Center), 806 (Van Ness South), 2231, 2232, 2238, 2239, 2241, 2242, 2244 through 2251, 2256, 2258, 2262 through 2270, 2272, 2274 through 2277 and 2282.

1516.2 The purposes of the FH/TP Overlay District is to preserve the tree canopy of Forest Hills, to preserve wooded areas in Forest Hills, to promote conservation practices appropriate within an urban context, and to encourage the replanting of trees.

1517 GENERAL PROVISIONS (FH/TP)

1517.1 The FH/TP Overlay District is mapped in combination with the underlying zoning district, and not in lieu of the underlying district.

1517.2 Any application for a building permit to allow the construction of a building, accessory building, or an addition to a building or other work that disturbs the soil beneath the existing canopy on a lot shall provide certification from a certified landscape architect or an ISA certified arborist that a tree canopy, resulting from trees' driplines within the lot lines of the subject property, will cover the following percentages of the lot after construction is completed or no later than ten (10) years after the date of the issued building permit:

- (a) For a lot less than 7,500 in area, 25 percent;
- (b) For a lot 7,500 square feet or greater, 36 percent of the square footage.

1517.3 The percentages in § 1517.2 may be reduced by the Board of Zoning Adjustment to avoid one or more of the following:

- (a) Overcrowding of existing trees;
- (b) Planting in areas with a lack of adequate root space; or
- (c) Any other factors that may jeopardize the health of a tree.
- (d) The Board may impose requirements as to design, appearance, and tree protection practices during construction, buffering, and other

requirements, as it deems necessary to achieve the purpose of this section, and may vary side and rear yard requirements in order to achieve the purposes of this section.

(e) An applicant for a special exception shall submit at least the following materials:

- (i) A site plan for development, including computation and illustration of total lot occupancy, existing and proposed trees for removal, and existing and proposed canopy percentage.
- (ii) Tree protection plan as specified by Section 1517.6
- (iii) Photos showing existing site conditions.

1517.4 Any application filed under § 1517.3 shall be referred to the Urban Forestry Administration for compliance with these provisions and recommendations to the Zoning Administrator.

1517.5 Any tree planted to meet the requirement of this section shall be a nursery stock tree of at least a two (2) inch caliper, balled and burlaped, in good health, and shall not be of a species identified in the Urban Forestry Administration's Recommended Tree List for Medium and Large Trees as appropriate by regulations promulgated by the District Department of Transportation pursuant to the Urban Forest Preservation Act of 2002.

1517.6 The certification required by §1517.2 shall be accompanied by a tree protection plan that will show:

- (a) The location, size, and species of all existing trees measured at DBH, i.e. four and one half (4½) feet above the ground;
- (b) The location, size, and species of all trees to be removed;
- (c) The location, number and species of any trees to be planted in replacement;
- (d) Proposed grade changes or other potentially injurious work to be performed adjacent to trees to be retained; and
- (e) Methods to be used to protect existing trees during construction including, but not limited to:
 - (1) Drip line protection, including construction or snow fencing, around all tree preservation areas; and
 - (2) Installation of tree wells, retaining walls or other structures necessary to protect individual trees.
 - (3) Proposed procedures to guard against long-term damage by such factors as soil compaction.

- 1517.7 The Zoning Administrator shall not take final action on a building permit application until a report is received from the Urban Forestry Administration or until thirty (30) days have passed since the tree protection plan was submitted to the Urban Forestry Administration, whichever is sooner.
- 1517.8 No building permit shall be granted if a tree protection plan received pursuant to § 1517.6 fails to demonstrate that the tree canopy requirements of this section will be met.
- 1517.9 No earlier than two (2) years and no later than three (3) years after the building permit is issued, the property owner shall present to the Zoning Administrator a certification from an ISA certified arborist or certified landscape architect that the applicable tree canopy percentage has been maintained or will be achieved by the date stated on the original certification. If trees were planted to achieve the canopy requirement, the certification shall also state that the replacement trees met the requirements of §1517.2. Failure to present a certification that meets the requirements of § 1517.9 within the time provided therein shall be a violation of this section pursuant to Section 3201.1
- 1517.10 No further building permits shall be issued for the subject property until the certification required by §1517.9 is received by the Zoning Administrator.
- 1517.11 No person shall remove a tree identified in the tree plan in § 1517.6 so as to reduce the canopy percentage below the applicable level established in § 1517.2 unless the tree is certified by an ISA certified arborist to be dead, dying, diseased or hazardous.
- 1517.12 The issuance of a tree removal permit by the Department of Transportation- Urban Forestry Administration under the Urban Forestry Preservation Act, 2002 does not relieve any person from meeting the requirements of this section.

The following definitions are proposed:

199 DEFINITIONS

DBH - the diameter of the trunk of a tree, when measured at a height of four feet, six inches (4'6").

Caliper - The diameter of a tree trunk in inches taken at a point six or 12 inches above the ground.

Drip Line - an imaginary line on the ground beneath a tree, which delineates the extent of the tree's canopy.

ISA - International Society of Arboriculture.

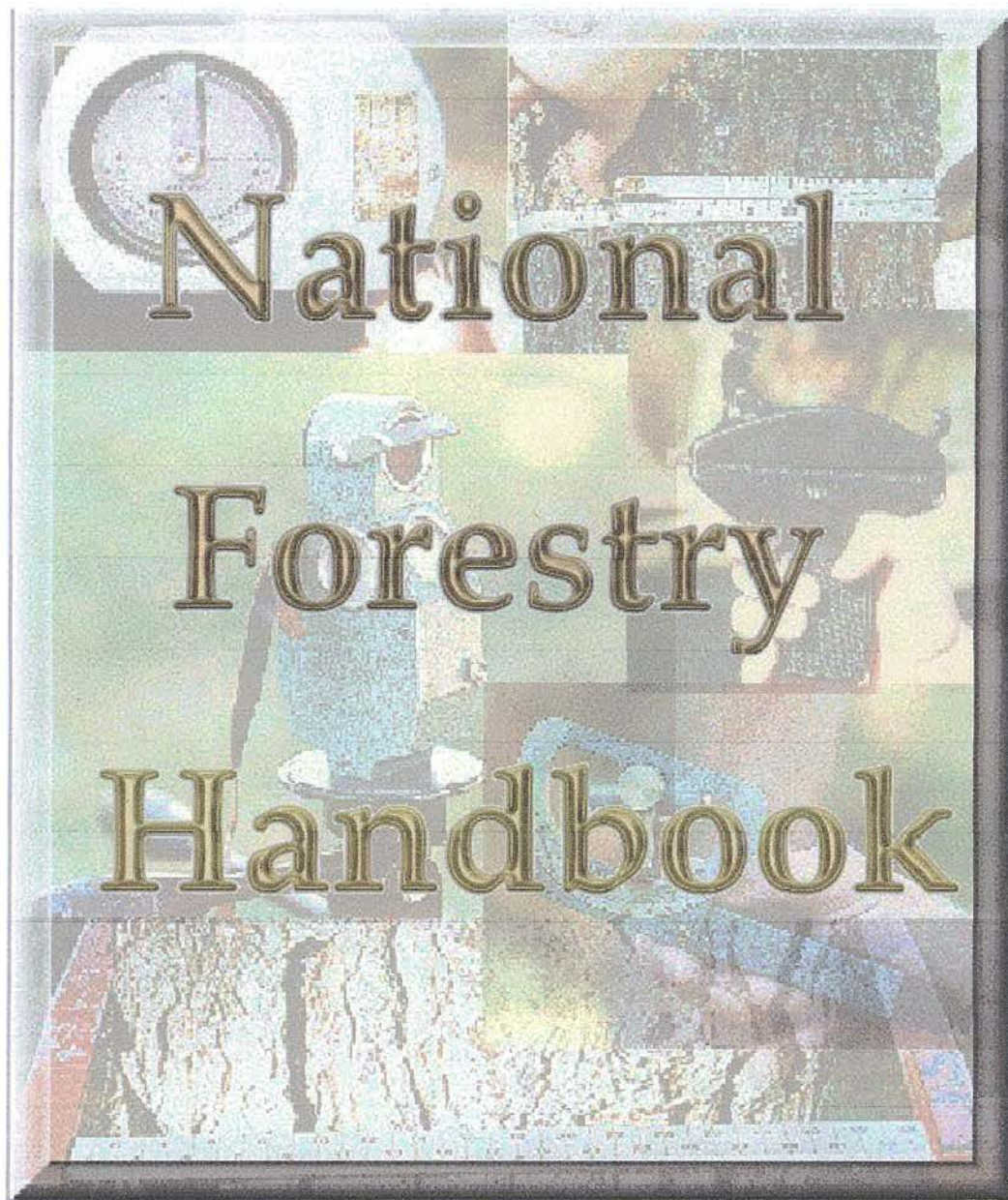
APPENDIX I:

OP's Power Point Presentation – July 22nd 2004

United States
Department of
Agriculture

Natural
Resources
Conservation
Service

NATIONAL FORESTRY HANDBOOK



To measure tree height with the Woodland Information Stick, hold the stick vertical at 25 inches from the eye and align the top of the stick with the top of the tree. Without moving your head, sight alongside the scale of the stick to the base of the tree and read the tree height from the inverted scale.

(f) Comparison of Height Measuring Devices

(1) Precision

When properly calibrated and used, the Abney, Haga, Relaskop and Suunto® have equal precision of about 2.5%. The Vertex has a precision of less than 1%. Stick hypsometers are accurate within about 5 to 10 feet.

(2) Ease of Use

The stick hypsometer is the simplest tool to use. The Haga and Vertex are easier to hold steady than the Abney, Relaskop, and Suunto®. The Suunto® causes eyestrain in some people due to the method of projecting the line of sight. Sighting with the Abney and Relaskop is through a tube of narrow dimension or through the instrument. This restricted field of view (especially with the Abney) is important under poor light conditions. The Haga has external sights.

(3) Robustness

Ranked from best to worst:

1. Stick Hypsometer
2. Vertex
3. Relaskop
4. Suunto®
5. Haga
6. Abney

(4) Speed of Use

Ranked from fastest to slowest:

1. Stick Hypsometer
2. Vertex
3. Haga, Relaskop, Suunto®
4. Abney

(5) Price

Ranked from least to most expensive:

1. Stick Hypsometer
2. Suunto®
3. Abney
4. Haga
5. Relaskop, Vertex

(6) Compactness

Ranked from most to least compact:

1. Suunto®
2. Vertex
3. Relaskop
4. Haga, Abney
5. Stick Hypsometer

636.34 Canopy Measurement Tools

(a) Spherical Densiometer

The spherical densiometer is used to determine crown canopy density. (see Figure 636-22).

These data are useful for determining herbage and crown canopy relationships, comparing crown canopy and basal area relationships by species or forest types, and determining stocking percent.

To use the spherical densiometer:

- Hold the densiometer 1 to 1.5 feet away from your body at elbow level. Make sure that the bubble is in the center of its circle, indicating that the densiometer is level.
- Imagine that each of the 24 boxes in the densiometer is subdivided into four quadrants. Count how many of these quadrants contain the reflection of leaves. Record the number.
- Repeat this procedure as many times as necessary to get a representative sample of the area under consideration.

- Average the four measurements. For example:

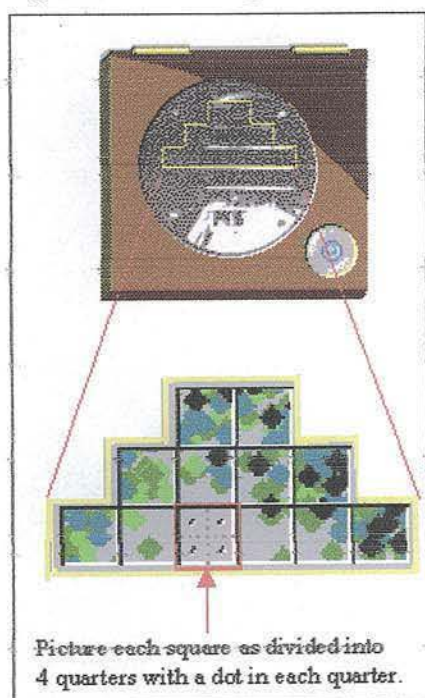
	Quadrants Covered
Measurement 1	45
Measurement 2	47
Measurement 3	48
Measurement 4	46
Sum	186
Average Quadrants	46.5

- To determine the percentage of canopy cover, multiply the average value by 1.04. For example: $46.5 \times 1.04 = 48.4\%$

To use the measuring tube:

- Hold the tube above your head.
- Look up through the tube. Make sure that the weight is directly below the center of the X so you know you are looking straight up.
- If you see leaves touching the center of the X, record a plus sign (+) to indicate that there are leaves directly overhead. If no leaves are touching the X, record a minus sign (-).
- Repeat this procedure as many times as necessary to get a representative sample of the area under consideration.

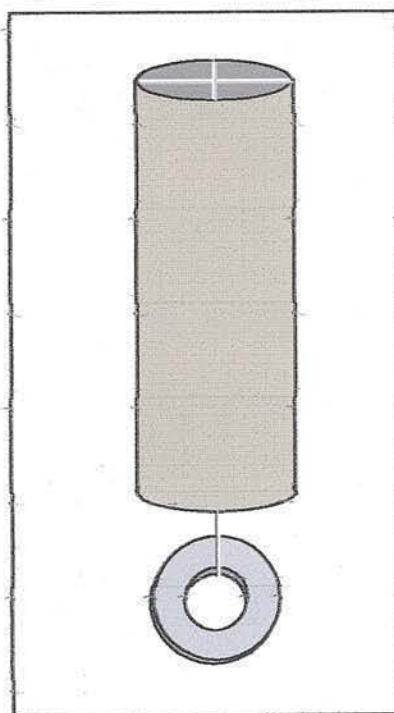
Figure 636-22 Spherical Densimeter



(b) Leaf Tube

A simple and inexpensive canopy measuring device can be constructed by attaching two pieces of string across one end of a toilet paper tube to form an X. A third piece of string, about 8 inches long, is tied to the center of the X and extends through the tube, and a weight is attached to the opposite end of the string. (see Figure 636-23).

Figure 636-23 Canopy Cover Measuring Tube



To determine the percentage of canopy cover:

- Sum the total number of plus signs (+) where you observed leaves.
- Sum the total number of pluses and minuses (-) to reflect the number of observations.

- Divide the number of +’s by the total number of observations (sum of +’s and –’s) to determine the fraction of the area which is covered by canopy cover.
- Multiply the fraction by 100 to determine the percentage of the area covered by canopy cover. For example:

Number of +’s: 18

Number of +’s and –’s: 49

Division result: 0.37

Percentage of canopy cover (x 100): 37%

636.35 Basal Area Measurement Tools

Tools used to measure basal area are useful in determining stand density and are the primary instruments used in variable plot sampling. See Part 636.21(d) for details on variable plot sampling.

(a) Wedge Prism

The wedge prism is a wedge-shaped piece of glass that refracts light rays, thus establishing a critical angle. (see Figure 636-24). A tree viewed through the prism is displaced through an angle depending on the diopter strength of the prism. One prism diopter is equivalent to the right angle displacement of an object by one unit per 100 units of distance.

The diopter of the prism determines the prism’s basal area factor (BAF). The most commonly used prisms are those with a BAF between 5 and 40. The larger the average diameter of the stand to be measured, the larger the BAF used. The smaller the average diameter, or the more open the stand, the smaller the BAF used.

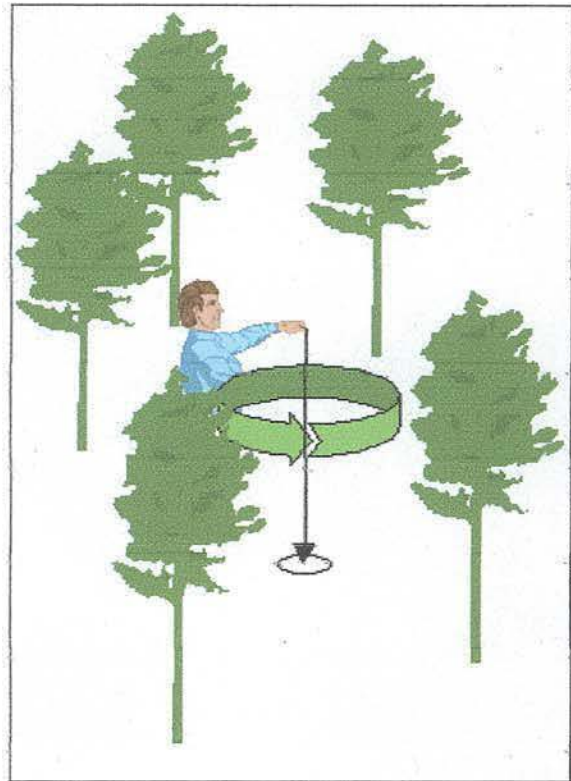
Figure 636-24 Wedge Prism



To use the wedge prism, establish a fixed point on the ground. This fixed point becomes the plot center. The prism, and not the cruiser’s body, must be held directly over the plot center. The distance the prism is held from the eye is not critical.

While holding the prism at eye level, check each tree in a 360° circle, making certain to keep the prism exactly over the center point as you rotate around the plot center. (see Figure 636-25).

Figure 636-25 Fixed-Point Plot Center

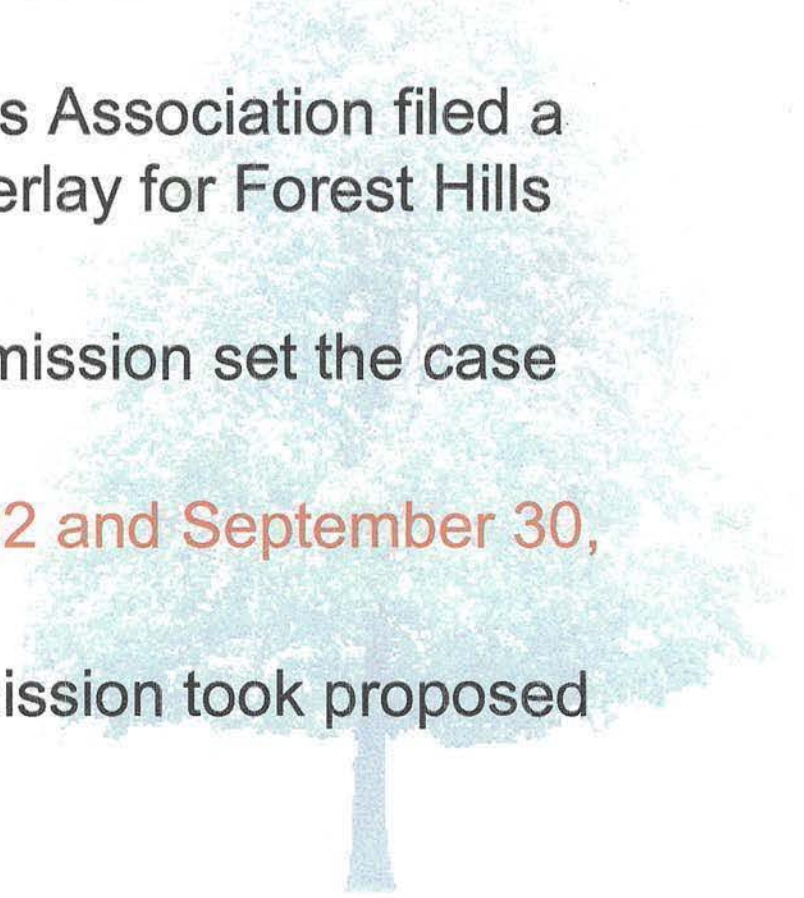


As demonstrated in Figure 636-26, when looking through the prism, the edge of the tree is offset to one side. If the offset is greater than the diameter of the tree, the tree is not tallied. If the offset is smaller than the diameter of the tree, the tree is tallied. If the offset is the same as the diameter of the tree, the tree is borderline. Either borderline trees are tallied as half trees, or every other borderline tree is tallied. Another method of determining whether a borderline tree is in or out is to multiply the tree DBH times the plot radius factor (see Table 636 - 1). If the product is greater than the distance from the plot center to the borderline tree, the tree is not tallied.

Forest Hills TSO

THE STORY THUS FAR

- ★ **April 5, 2002:** Forest Hills Citizens Association filed a request for a Tree and Slope Overlay for Forest Hills (FH/TSO).
- ★ **April 19, 2002:** The Zoning Commission set the case down for public hearing.
- ★ **June 27, 2002, September 5, 2002 and September 30, 2002:** Public Hearings Held
- ★ **October 28, 2002:** Zoning Commission took proposed action.

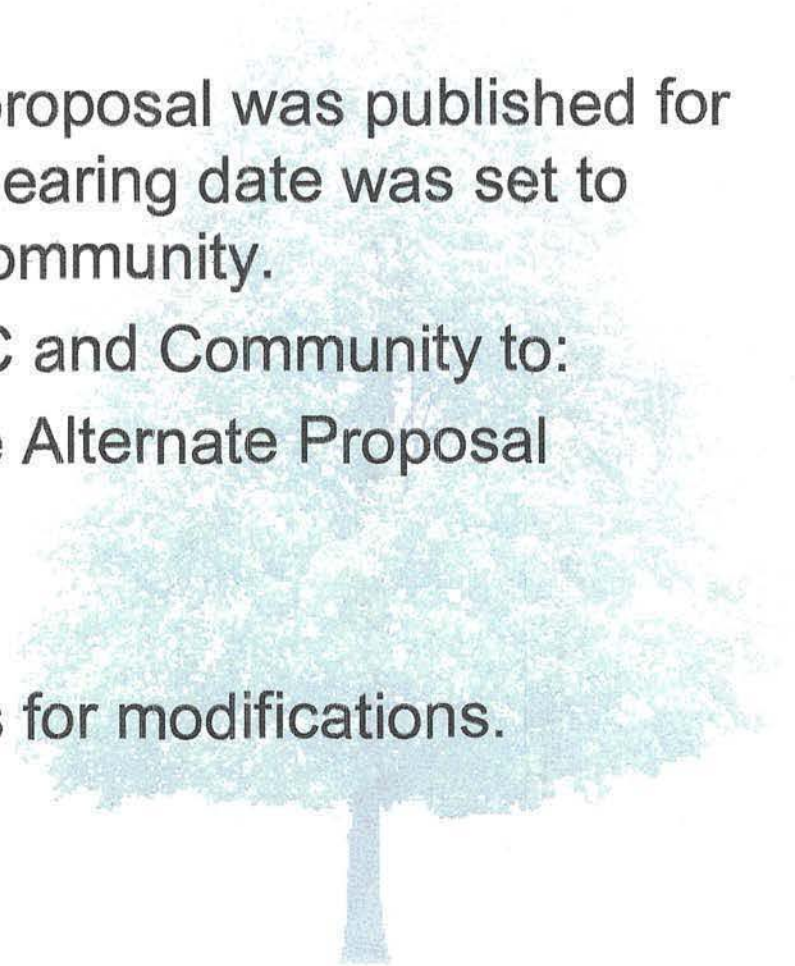


More History: 2003

- ★ **March 10, 2003:** ZC considers final action and asks OP to research how the template has worked in other areas of DC, and consider an alternative approach.
- ★ **July 31, 2003:** Based on this, OP proposed canopy protection as an alternate approach
- ★ **September 8, 2003:** ZC requests OP to coordinate with DCRA and UFA
- ★ **November 12, 2003:** The Zoning Commission suggested refinements to the December 13, 2002 draft (still in effect) and asked OP to prepare another draft for public comment and hearing.

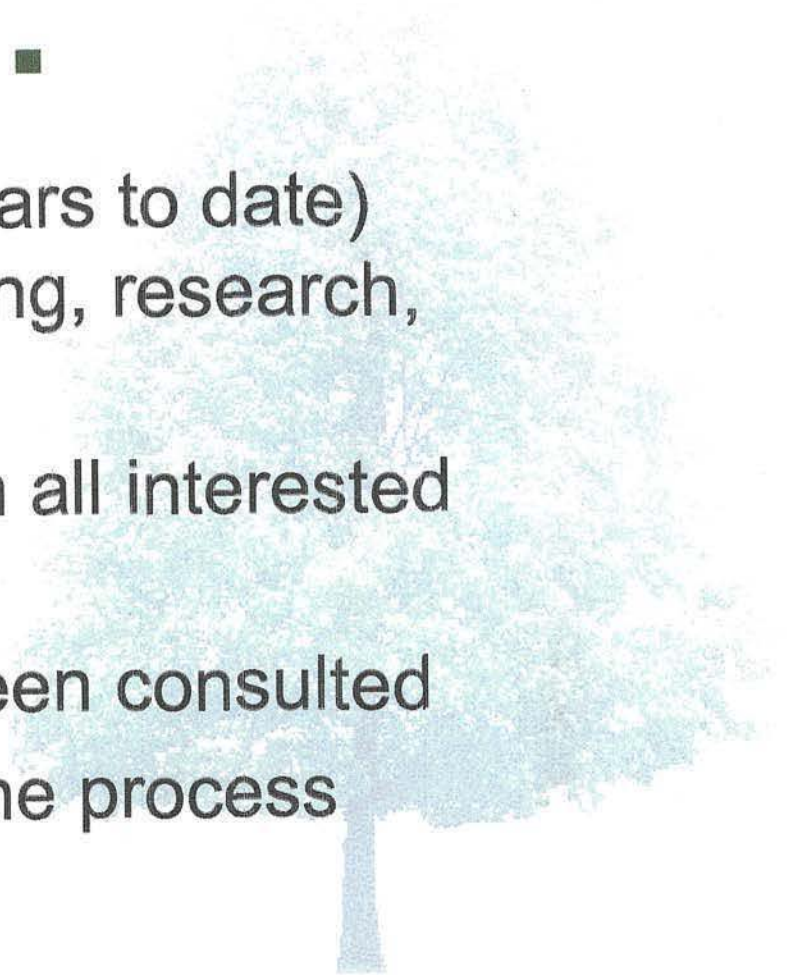
Which Brings Us to 2004...

- * **In February, 2004:** The alternate proposal was published for public comment; a new public hearing date was set to consider the response by the community.
- * **March 31, 2004:** OP met with ANC and Community to:
 - Present the provisions of the Alternate Proposal
 - Explain the process
 - Answer questions
 - Solicit input and suggestions for modifications.



In Short. . .

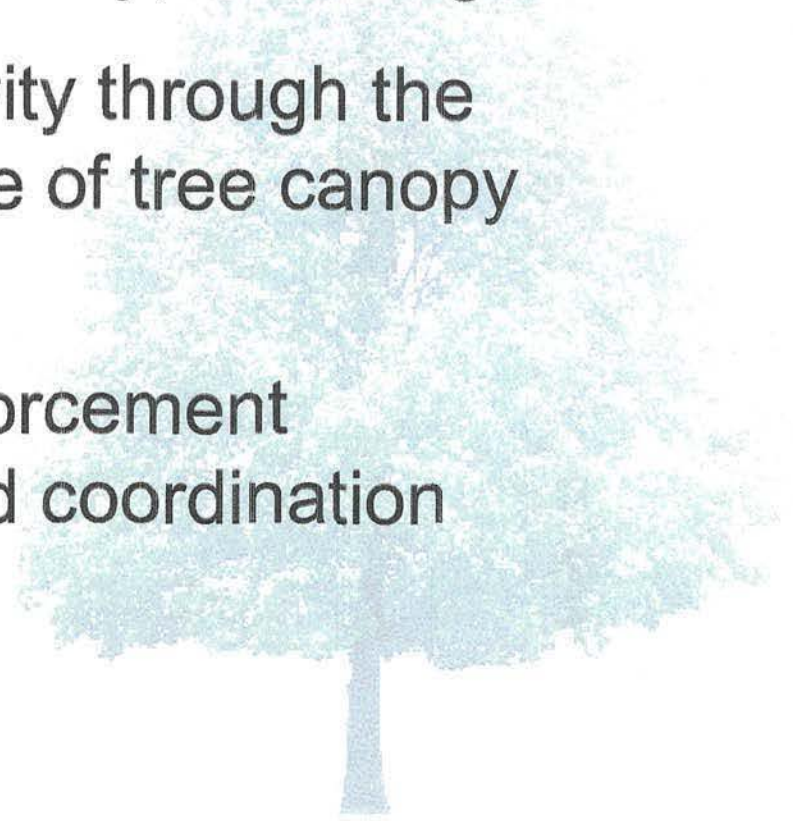
- ★ This has been a long (two years to date) and careful process of listening, research, deliberation
- ★ Input has been received from all interested parties and considered fully
- ★ Independent experts have been consulted
- ★ Specific goals have guided the process



The alternate proposal sought to address:

The protection and expansion of the existing canopy within the proposed overlay, including:

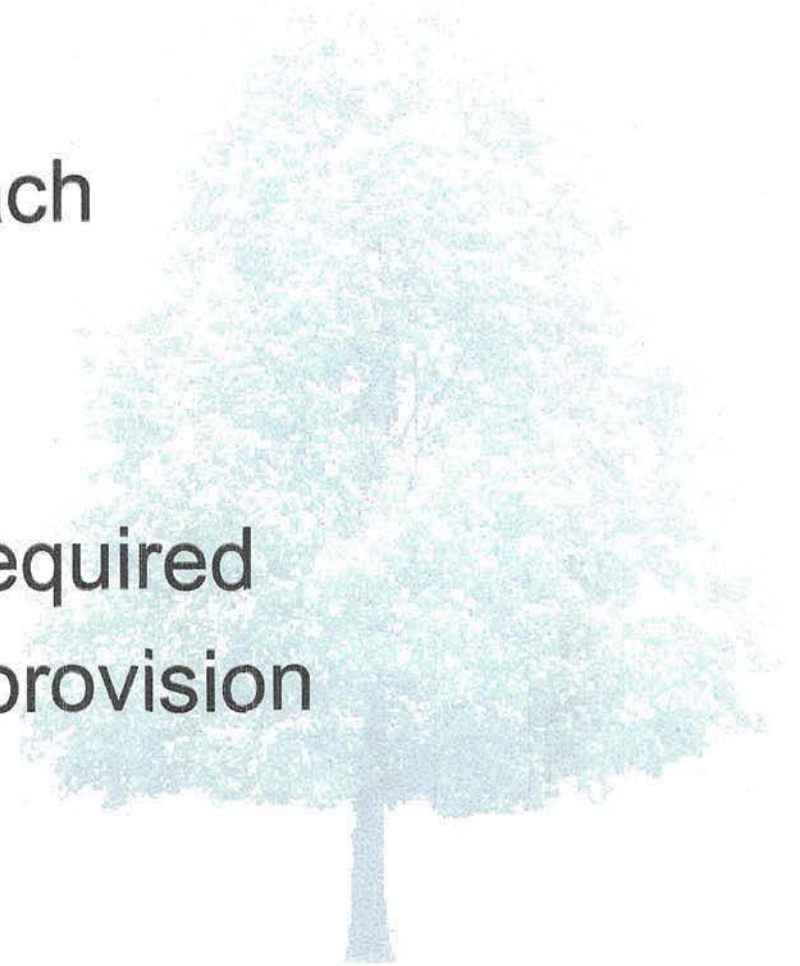
- Guiding development activity through the preservation of a percentage of tree canopy on lots, and
- Tree replacement and enforcement mechanisms, which involved coordination with DCRA and UFA.



Canopy Proposal

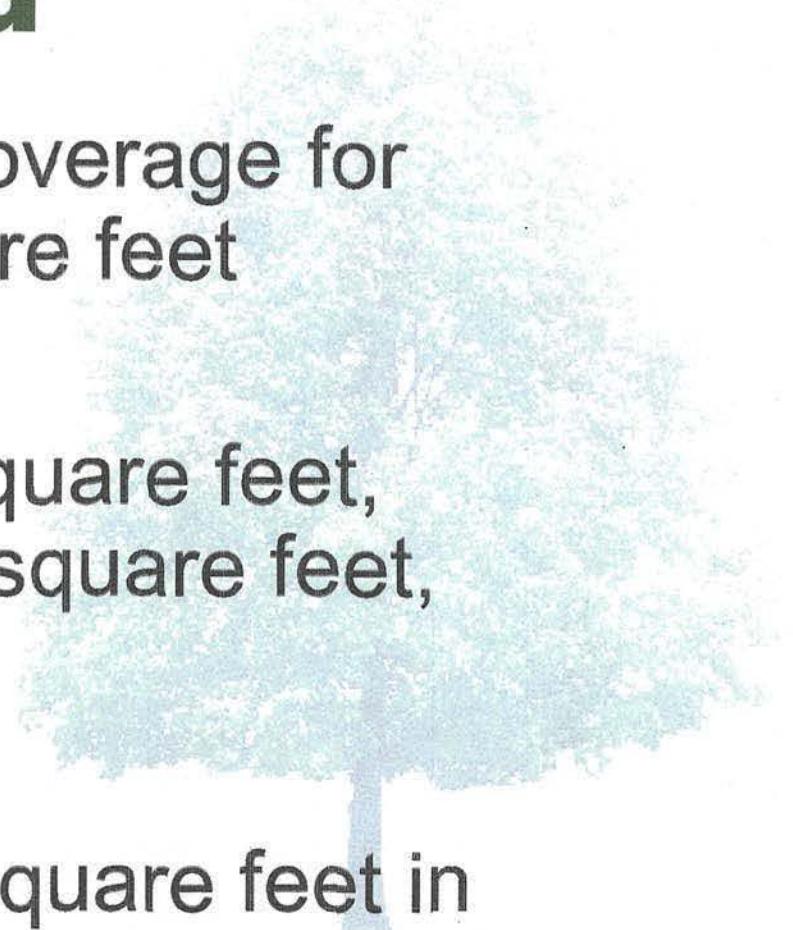
Major Elements

- ★ Expands Tree Bill approach
- ★ Tree survey
- ★ Tree management plan
- ★ Urban Forestry Review required
- ★ Replacement/replanting provision
- ★ Nursery Stock Trees



Advertised Canopy Proposed

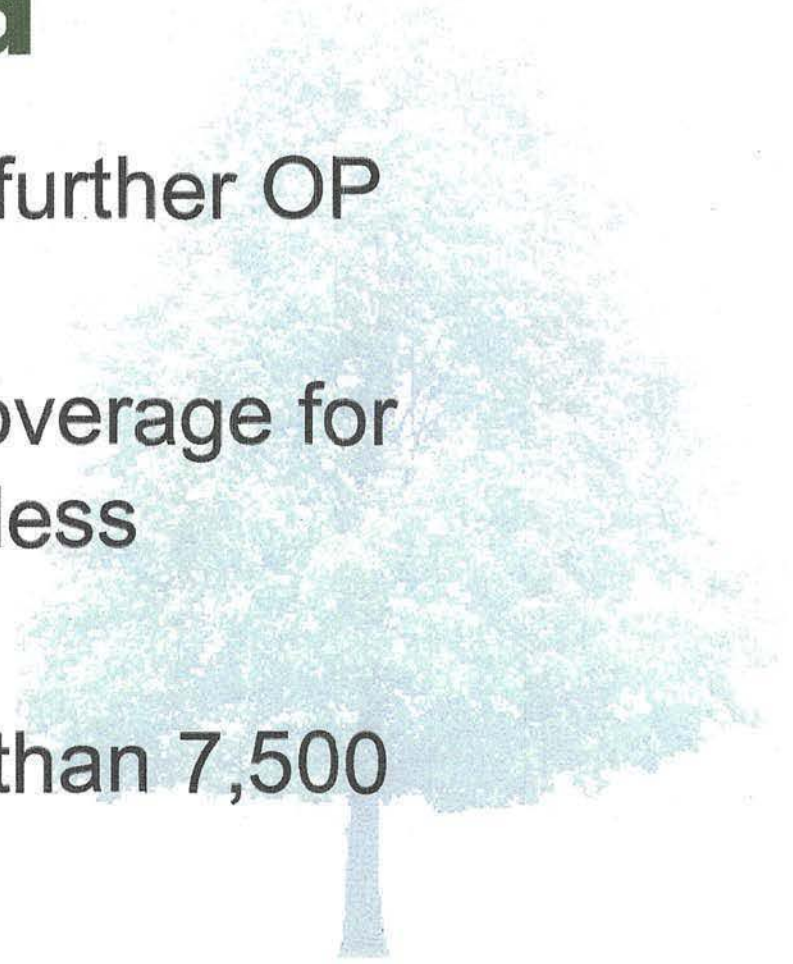
- ★ (a) 20% Tree Canopy coverage for lots less than 9,500 square feet
- ★ (b) 25% for lots 9,500 square feet, but not less than 20,000 square feet, and
- ★ (c) 40% for lots 20,000 square feet in area or greater.



Recommended Canopy Proposed

After community input and further OP analysis

- ★ (a) 25% Tree Canopy coverage for lots 7,500 square feet or less
- ★ (b) 36% for lots greater than 7,500 square feet



Tree Canopy Measurement

- ★ Approximate circumference of the dripline

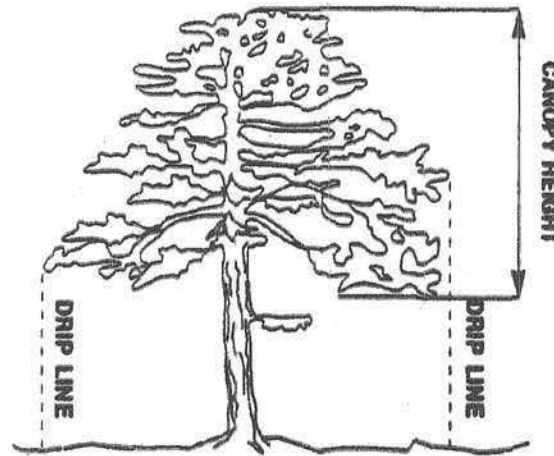
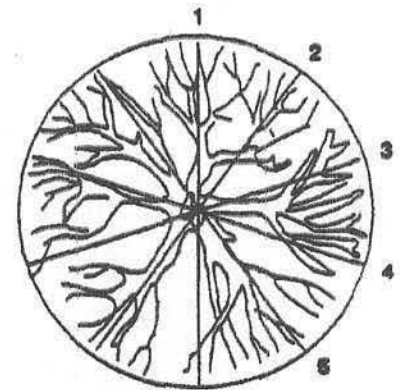


FIGURE E-2B

SIDE VIEW OF A TREE
SHOWING THE
LOCATIONS OF
THE CANOPY AND
THE DRIP LINE.

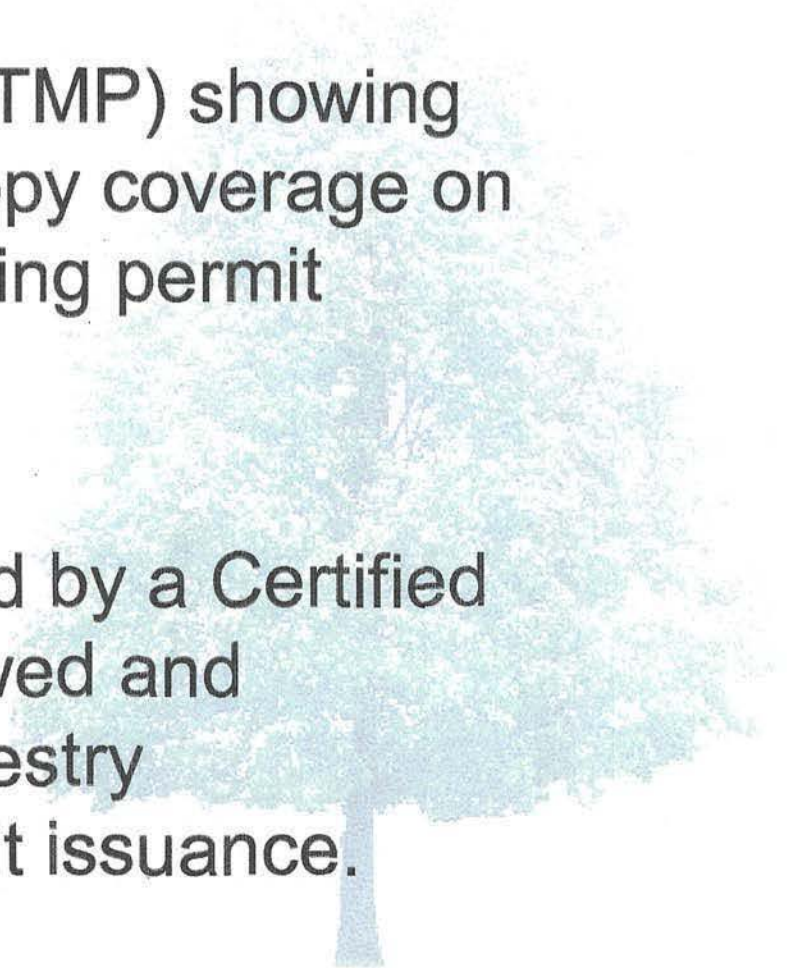
FIGURE E-2C

THE AVERAGE CROWN SPREAD CAN BE CALCULATED
BY MEASURING THE LENGTH OF FIVE DIFFERENT
DISTANCES FROM DRIP LINE TO DRIP LINE. ADDING
THOSE FIVE NUMBERS, AND DIVIDING BY 5.



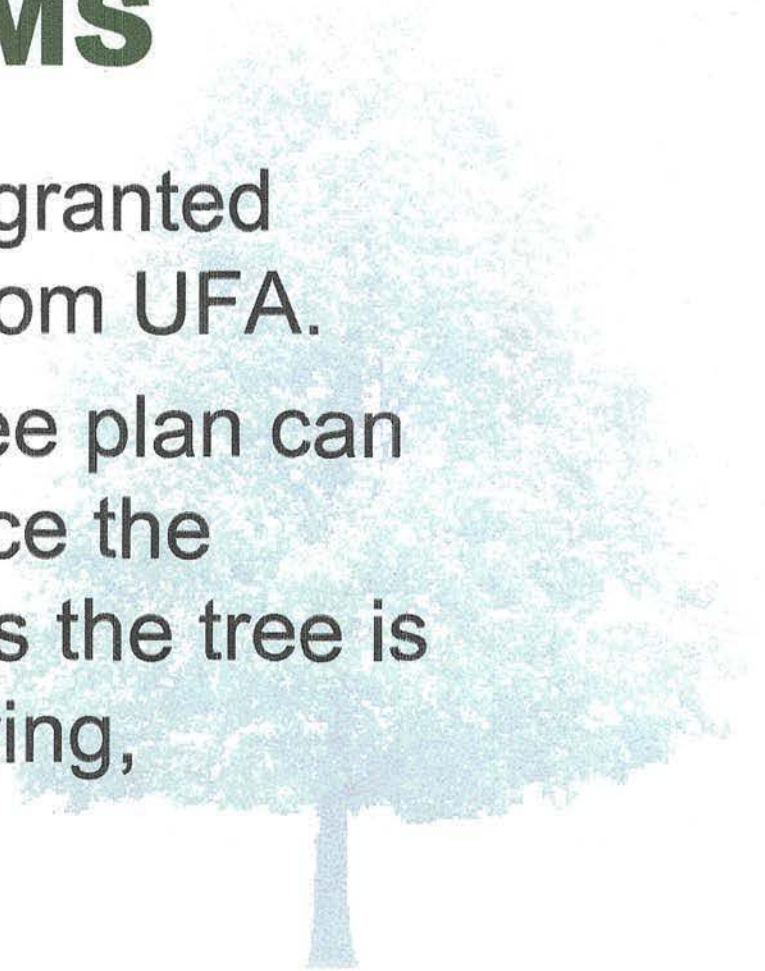
Tree Management Plan

- ★ A Tree Management Plan (TMP) showing existing and proposed canopy coverage on a lot is required with a building permit application.
- ★ This TMP must be produced by a Certified Arborist and must be reviewed and approved by the Urban Forestry Administration before permit issuance.



ENFORCEMENT MECHANISMS

- ★ No building permit will be granted without a positive report from UFA.
- ★ No tree identified in the tree plan can be removed so as to reduce the canopy percentage, unless the tree is determined to be dead, dying, diseased or hazardous.



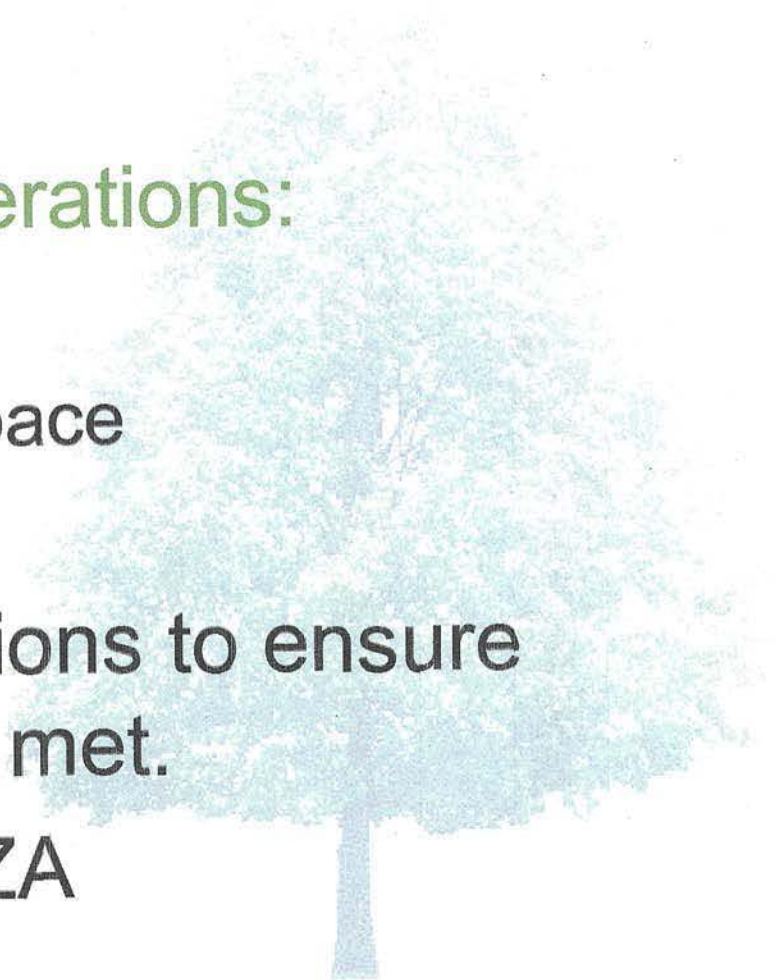
How relief can be granted

Special Exception considerations:

- Overcrowding of trees
- Lack of adequate root space
- Other related factors

Board may impose conditions to ensure purposes of section are met.

UFA provides report to BZA



Sources and Research



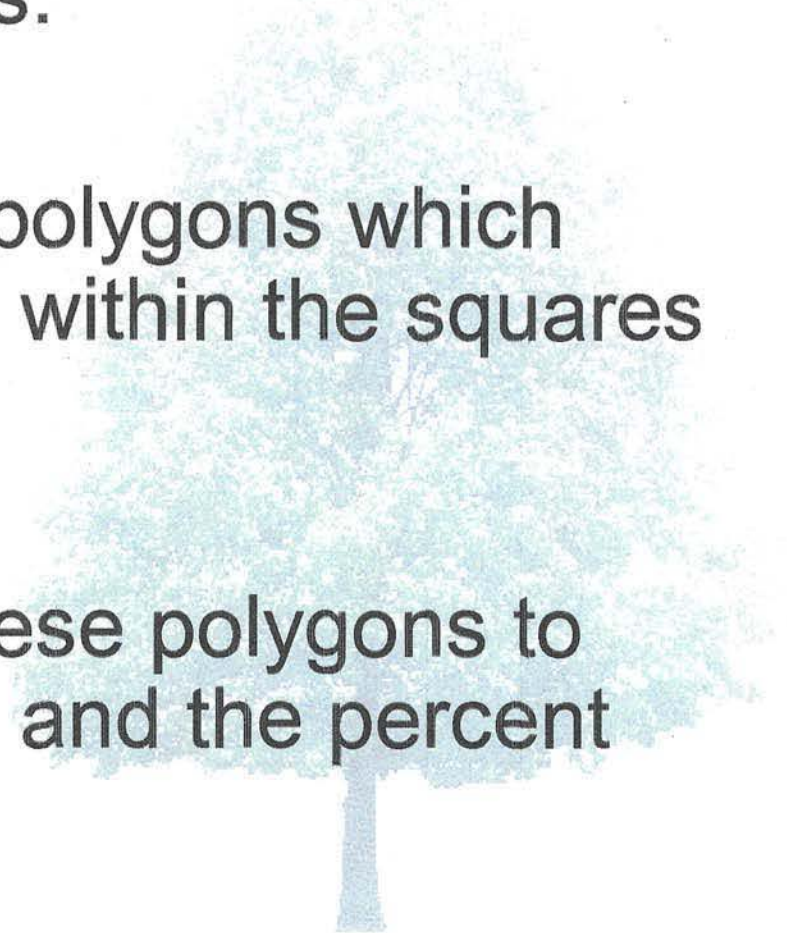
★ Research

- Literature from research institutions
- Local area jurisdictions
- Canopy assessment methods using aerial photos:
 - ★ Visual estimation
 - ★ Line intercept or transect
 - ★ Dot Grid Method
 - ★ Digital Image Analysis

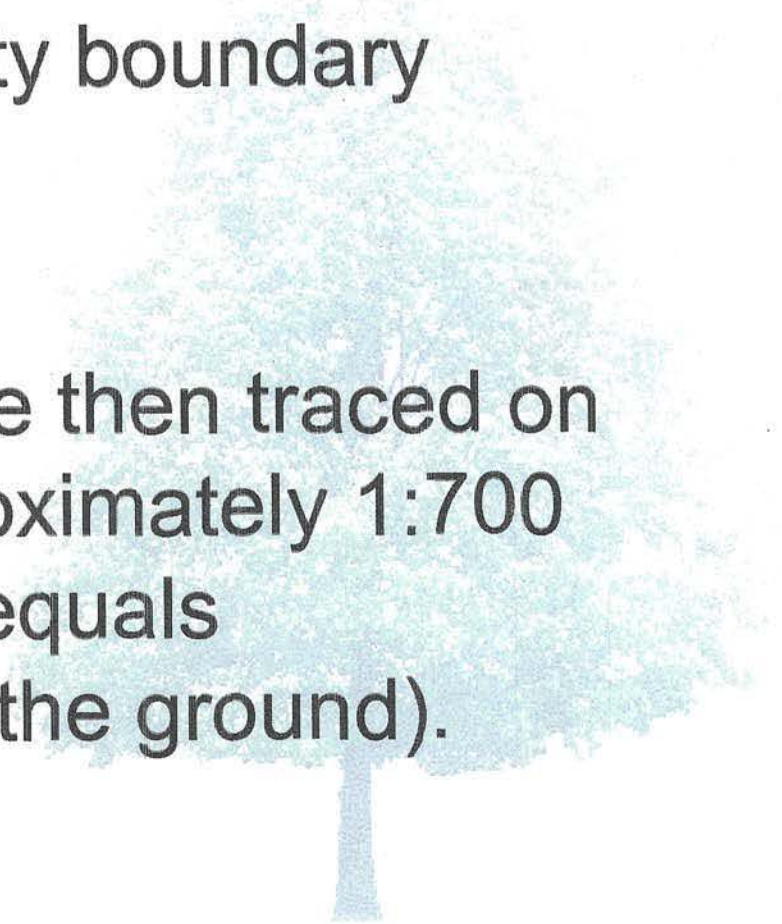


WHAT WAS DONE

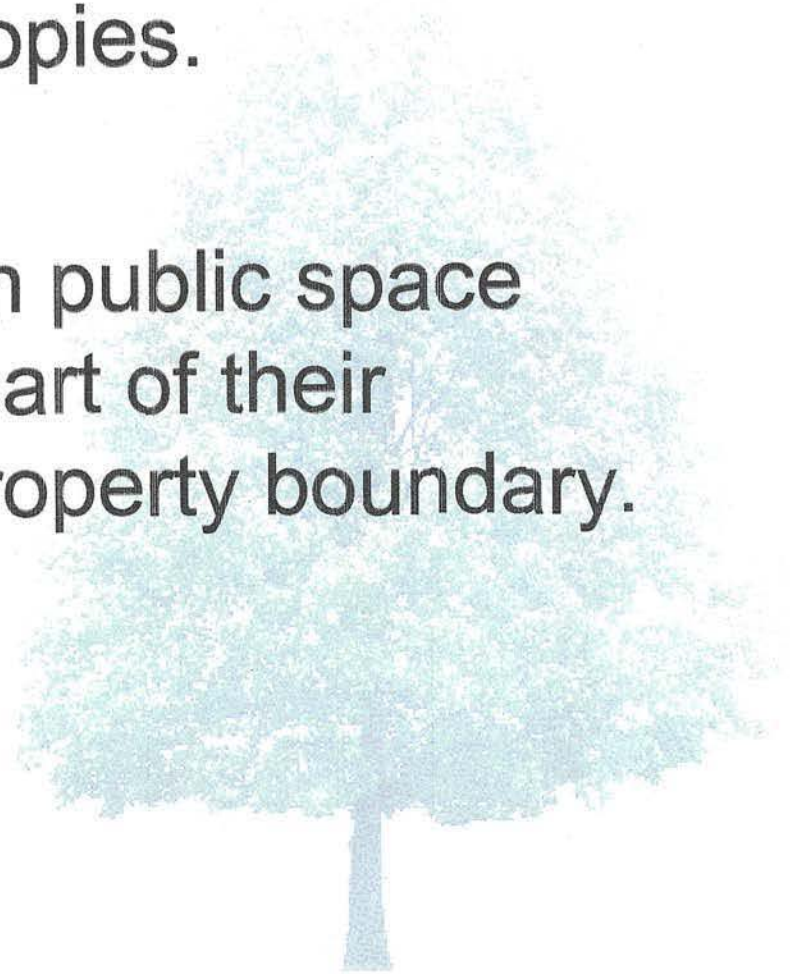
- ★ GIS Team produced a digital image analysis of June 2003 aerial photos.
- ★ Digitized images created polygons which represent the tree canopy within the squares of the defined area.
- ★ The GIS program used these polygons to determine their total area, and the percent canopy cover



- ★ Specifically, using ArcGIS software, aerial photos of study area taken in June 2003 were overlaid with property boundary outlines from OTR maps.
- ★ Tree canopy outlines were then traced on screen at a scale of approximately 1:700 (where 1 inch on screen equals approximately 60 feet on the ground).

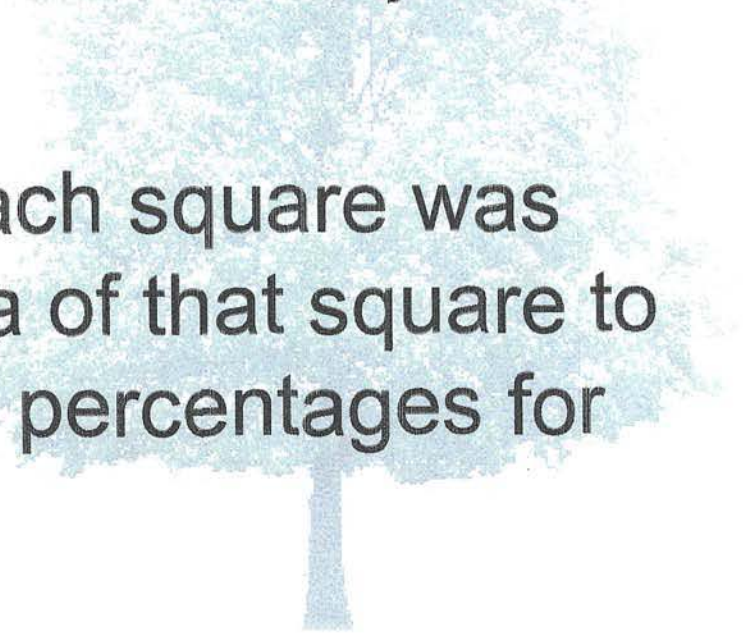


- ★ Tree locations were determined from the center points of their canopies.
- ★ Trees that were located in public space were not traced, even if part of their canopies fell within the property boundary.



Once the canopy was traced:

- ★ The total area of the traced canopy coverage was divided by the total area of the private property in the study area to determine the percent canopy coverage of the study area.
- ★ Additionally, the area of each square was divided by the canopy area of that square to obtain individual coverage percentages for each square.

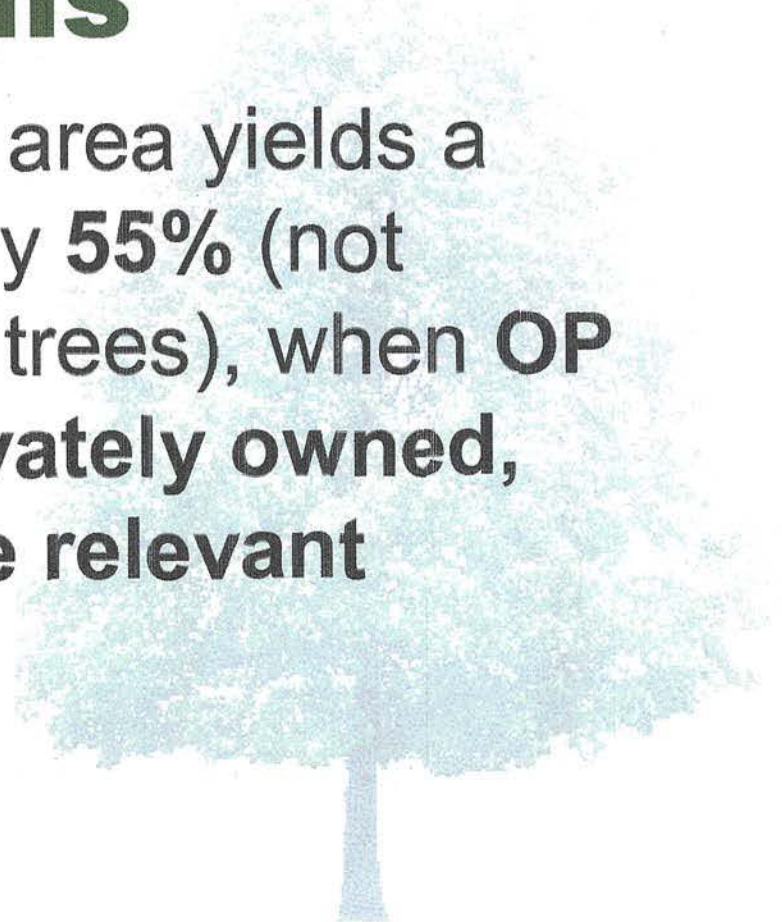


- ✳ Similarly, this square has a canopy which was mapped by approximately 11 polygons - not 11 trees

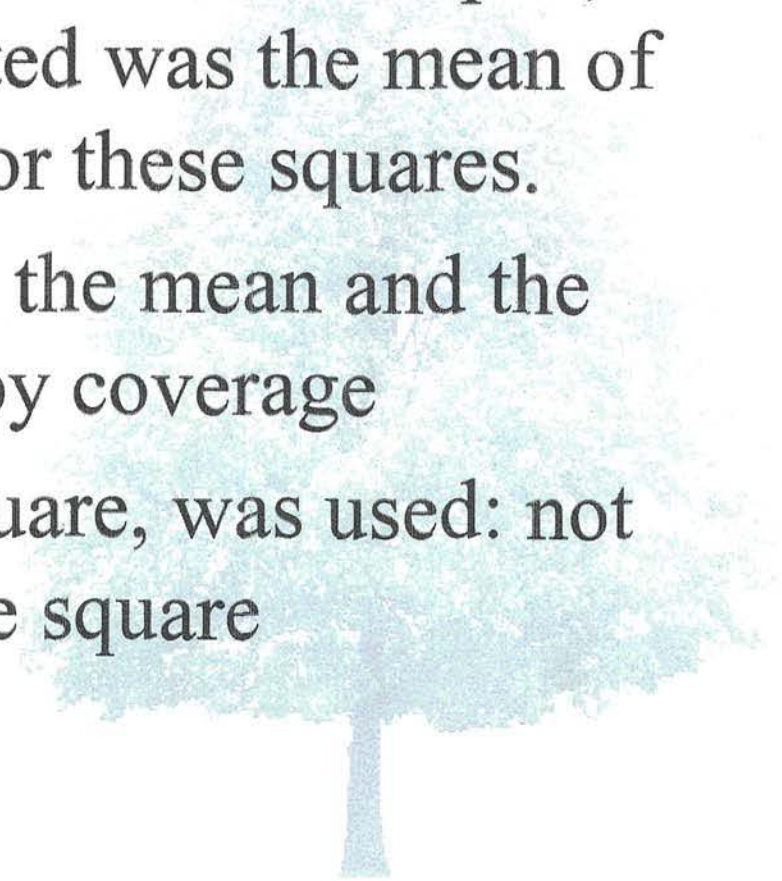


The Character of Forest Hills

- ★ Although the entire study area yields a coverage of approximately **55%** (not including street and alley trees), when **OP** looked solely at the privately owned, developed R-I-A lots the relevant coverage is **36%**

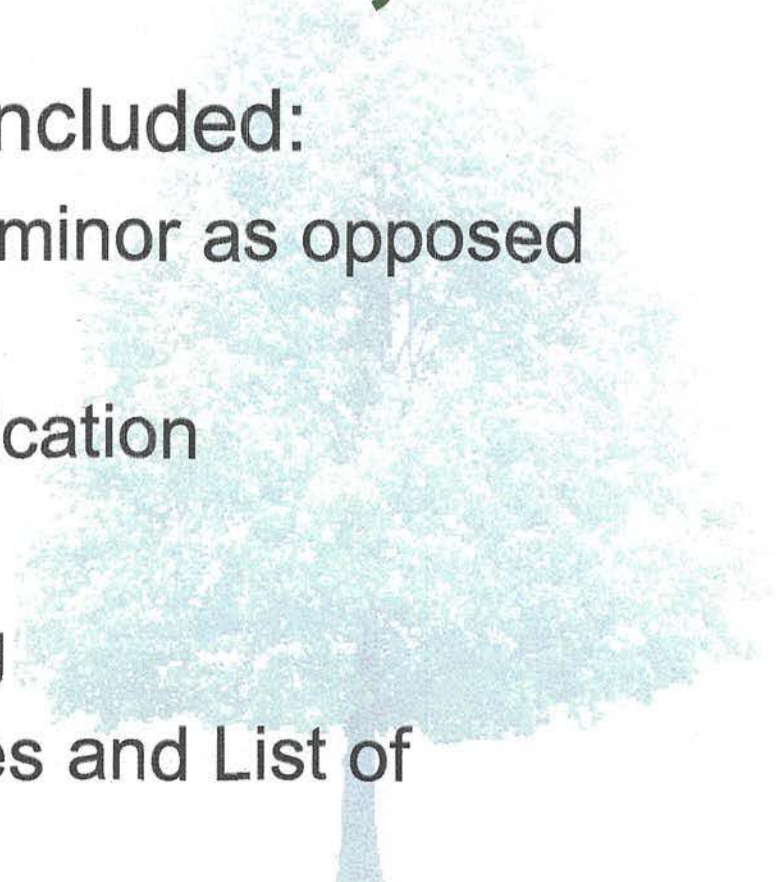


- ✱ The database tells us which squares are predominantly privately-owned, developed, R-1-A. What was calculated was the mean of the % canopy coverage for these squares.
- ✱ Using those squares, both the mean and the median are 34-36% canopy coverage
- ✱ The % coverage of the square, was used: not the mean of the lots on the square



Community's Comments at ANC Meeting March 31, 2004

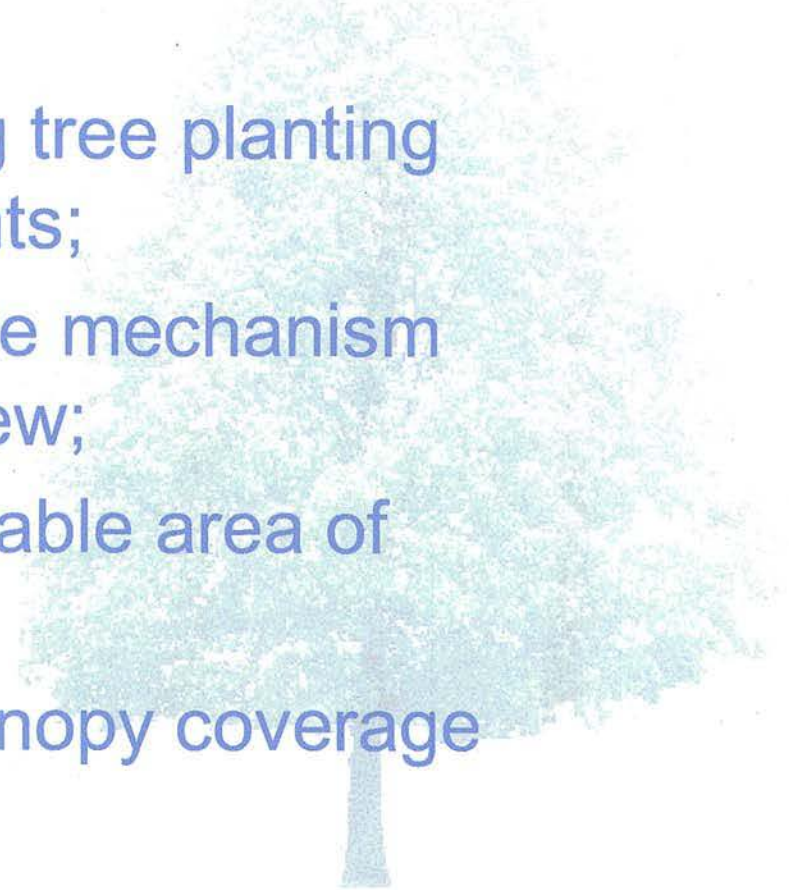
- ★ Summary of Comments Included:
 - The need for a tree plan: (minor as opposed to major home repair)
 - Canopy Percentage Justification
 - Control of Subdivision
 - A Solution to Clear Cutting
 - Enforcement, Shared Trees and List of Replacement Trees



WHAT DOES THIS DO?

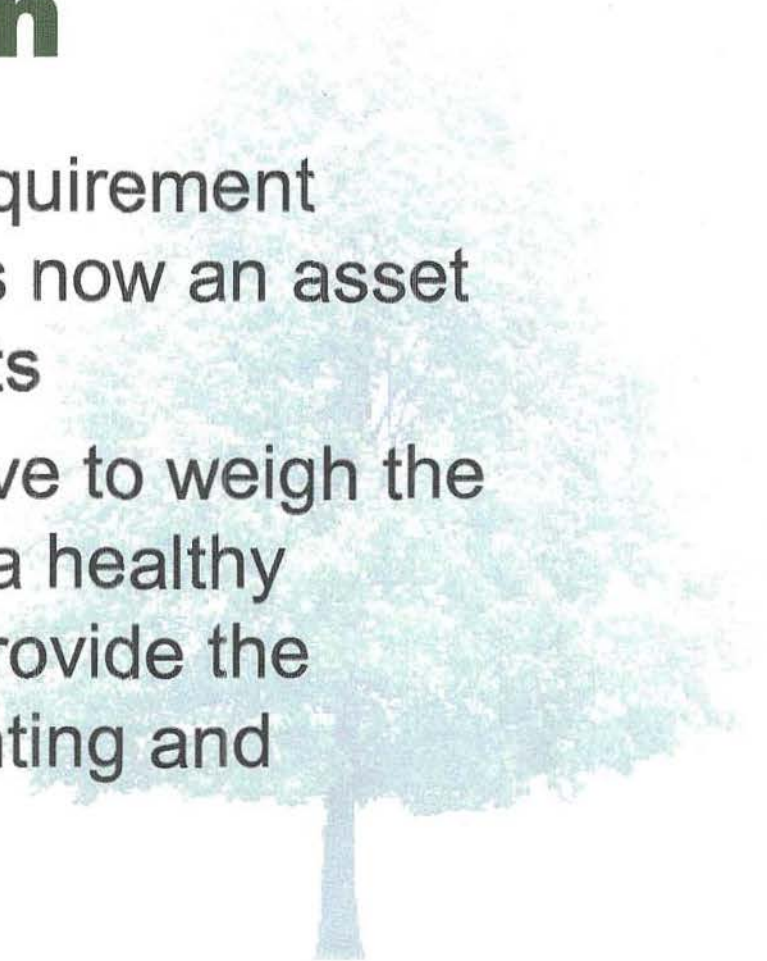
In comparison to the original proposal, this recommendation:

- ✱ Provides flexibility in meeting tree planting and preservation requirements;
- ✱ Creates an easily enforceable mechanism that incorporates UFA's review;
- ✱ Reduces impact on the buildable area of lots; and
- ✱ Maintains a characteristic canopy coverage for Forest Hills.



In Addition

- ★ OP believes that a canopy requirement gives a tree value – canopy is now an asset in meeting a lot's requirements
- ★ Also, a homeowner would have to weigh the opportunity cost of removing a healthy mature tree(s) which would provide the necessary canopy with replanting and maintaining younger trees.



Next Steps

- ★ ZC may approve, reject, or approve any of the published proposals with changes.

