

Government of the District of Columbia
DDOT/Urban Forestry Administration

Memorandum

To: Chairman Geoffrey Griffis
Board of Zoning Adjustment

From: Earl Eutsler
Municipal Arborist

Date: October 25, 2006

Subject: BZA # 17309 – Application By Dorchester Associates, LLC.
DDOT/UFA Review of Recently Submitted Material & Statements

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Please find attached an analysis by DDOT's Urban Forestry Administration of the proposed theoretical lot subdivision by Dorchester Associates, LLC. Specifically, the following report focuses primarily on the submission of new material and oral testimony by the applicant on September 19, 2006. Please contact me immediately if there are any questions or concerns. Thank you.

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Washington, D.C. 20016

BOARD OF ZONING ADJUSTMENT
District of Columbia

CASE NO. 17309 Board of Zoning Adjustment
District of Columbia
EXHIBIT NO. 168 CASE NO. 17309
EXHIBIT NO. 168

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Preface

The following report has been prepared in response to the most recent submission of new information and verbal testimony by the applicant pursuant to the Board of Zoning Adjustment's case # 17309. This application is for the proposed theoretical lot subdivision by Dorchester Associates, LLC, and subsequent construction of thirteen (13) single-family detached homes. As with previous reports prepared in reference to this case by this administration, this review will speak directly to the plan to preserve existing mature trees on this property in relation to the proposed development within their vicinity and the protections provided them as outlined in *Chain Bridge/University Terrace Tree & Slope Overlay District [11 DCMR, Chapter 15]*. This report is intended to demonstrate ways in which the applicant is in violation of the overlay district's regulations, both stated and intended.

Quantity of Trees 38" and Larger to be Removed

Section 1568 of the overlay regulations outlines limitations on the removal of trees:

1568.1 Except as provided in § 1568.2, constructing a building, accessory building, or an additional building, creating any impervious surface area, subdividing any unimproved lot, or subdividing any improved lot so as to increase the number of principal structures thereupon, shall only be permitted as a matter of right subject to the following tree removal limitations:

(b) No more than three (3) trees that have a circumference of more than thirty-eight inches (38 in) at a height of four and a half feet (4.5 ft) above ground may be removed, cut down, or fatally damaged and none of these may be located within twenty-five feet (25 ft) of any building restriction line or lot line abutting a public street;

The section cited above allows for the removal of no more than three (3) trees between the sizes of thirty-eight (38) and seventy-four (74) inches of circumference per lot.

According to the applicant, this project is comprised of four distinct plots of land (Lot 827, Parcel 12/293, Parcel 12/294 & Parcel 12/63). Following from this, the applicant

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has proceeded under the impression that he was entitled to the removal of up to twelve (12) trees in this size class. Of trees in this category, the applicant has proposed the

removal of nine (9), citing “construction” as the reason. On its face, this proposal would appear to be within the amount permitted in 1568.1 (b). However there is a problem of distribution. The regulations insist that no more than three (3) trees of this size category be removed *per lot*. Close examination of applicant’s plan clearly shows that the proposed tree removal is not properly allocated among the distinct tracts of land. For instance, Lot 827 and Parcel 12/63 do not contain any trees proposed for removal. However, between Parcels 12/293 & 12/294 a total of nine (9) trees between thirty-eight (38) and seventy-four (74) inches in circumference are targeted for removal. This distribution is best captured in the following table:

Trees to Remove	Parcel 12/293	Parcel 12/294	Parcel 12/63	Lot 827	Total
38-74” circum.	2	7	0	0	9

This aspect of the proposal is in clear and direct violation of 1568.1 (b). The preceding calculations have been based on the applicant’s submission, which defines the property as four distinct plots of land. However, according to the records of the District the property at issue is actually comprised of only two lots: 822 & 827. Insofar as these records are accurate, the applicant would be entitled to the removal of three (3) trees on each lot, which would total six (6) trees. Based on this configuration the applicant’s proposal would have a tree removal distribution as follows:

Trees to Remove	Lot 822	Lot 827	Total-Proposed	Permitted
38-74” circum	9	0	9	6

Regardless of whose land perimeter records are accurate, the current proposal does not conform to the basic tree removal limitations set forth in 1568.1 (b).



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Critical Root Zones, Disturbance & the Movement of Soil Moisture

The applicant has outlined five types of disturbance¹ that they acknowledge and foresee.

These are:

1. Shoring Walls, due to their installation
2. Basement Footprints, resulting in the reduction of roots & rooting area
3. Overdig, due to the associated soil compaction
4. Roads, Drives & Walks, due to construction thereof & resultant increase in impervious surfaces
5. Storm Water Management Systems & Utilities, due to their installation

In an effort to minimize the above disturbances on the surrounding mature trees the applicant has proposed several construction techniques that have the potential to limit the amount of rooting area that is damaged, destroyed and/or lost. Perhaps the most widely used design element invoked by the applicant to achieve this goal has been the proposed use of un-excavated, pier-supported platforms. These platforms would be supported on widely spaced piers, and would appear to enable the construction of homes in very close proximity to many of the mature trees. While this technique does go a long way to ensure that large amounts of roots are not severed, and that potential rooting area is not converted into basements, it does not take into account the effect of placing an impervious structure directly above these zones. In his oral testimony the Applicant's arborist, Mr. Tom Bonifant, made the claim that this type of development would have little to no effect on the water resource availability in these soil zones. He states:

Water moves through the soil in every direction, not just up and down. So when a surface is covered, whether there are slats between the boards or not, moisture will move through the soil to that area. It moves much less slowly through clay. The upper layers of the soil are more porous. You actually have a lot of horizontal flow.²

The above statement seems to have provided the conceptual framework that justifies the use of unexcavated platforms as a means to avoid damaging the critical root zones of the adjacent mature trees. This statement, however, is not true. As a rule water, when

¹ September 19, 2006 Submission by Applicant; "Disturbance Area" Tab

² September 19, 2006 Oral Testimony (Bonifant); Official Transcript pp 250-251.

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introduced to a soil context, moves primarily in a downward direction. The following chart clearly depicts the behavior of water in soil over time:

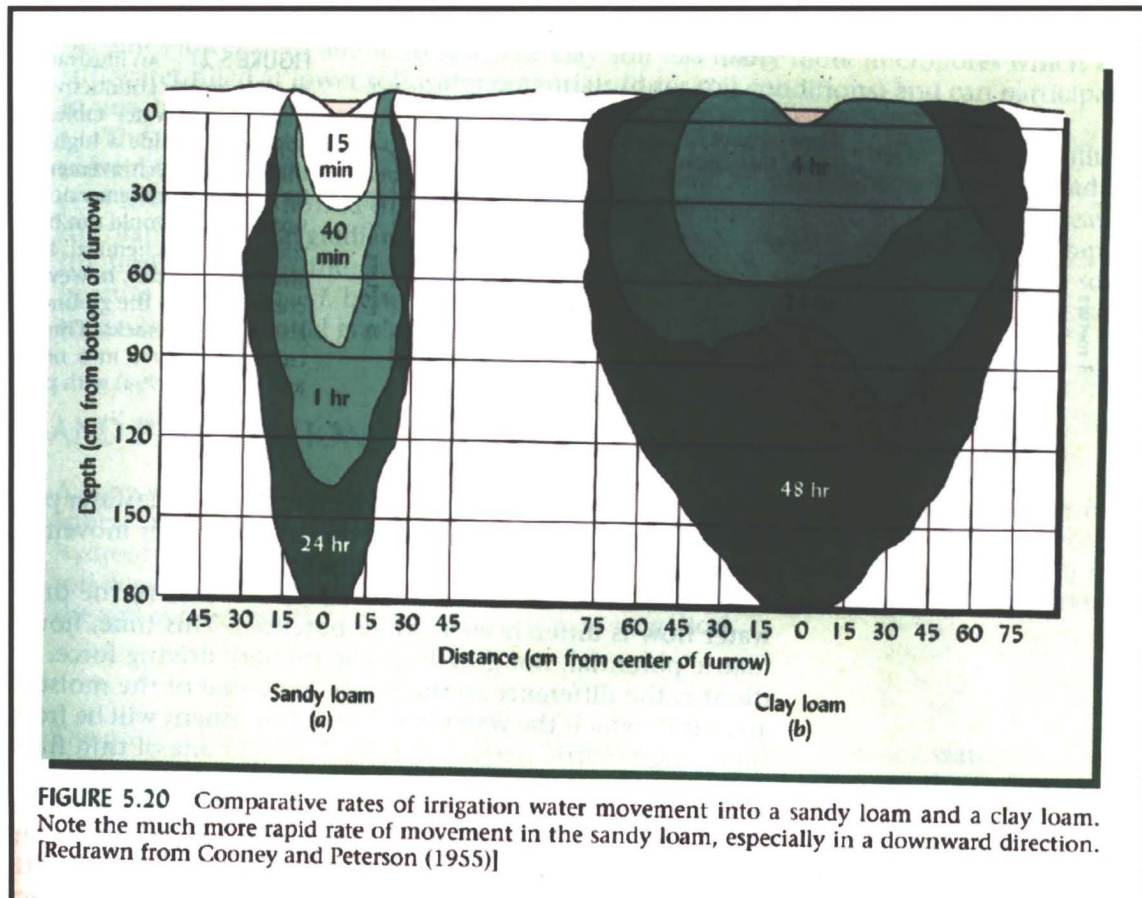


Figure 1 (Brady, Nyle C. and Ray R. Weil, 1999. *The Nature and Properties of Soils* – 12th edition. Prentice Hall, Upper Saddle River, NJ, 881 pp. page 193)

The lateral movement of water through soil is governed largely by two factors: the slope & the percentage of clay contained in the soil. Most of the areas where unexcavated platforms have been proposed are relatively flat. Hence, we are limited in the extent to which we could expect the natural topography to redistribute water which has fallen in one location to another, which presumably is no longer in a position to intercept natural precipitation due to its impervious cover. This leaves soil composition as the next most important factor in determining the level of lateral water movement through the soil.

While I have not conducted an actual soil test, nor seen the results of any, we do have some important information which tells us something regarding this soil's compositional

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characteristics. The applicant's storm water management consultant has claimed that all of the proposed lots have a relatively high permeability, and that the rate of percolation is sufficient to translocate surface water into the water table to a depth of five feet.³ (Water at this depth is no longer available to tree roots, which occupy a much less shallow horizon of the soil.) For this level of percolation to be possible, the soil is quite likely a silt-loam, which would put it right between the two soil scenarios charted in figure 1. As such, it is not plausible that water will be transported laterally through the soil on this site to the extent which these trees would require. A more likely scenario for this covered, but not excavated, zone would be rapid critical root zone desiccation.

Looking back at the different types of disturbance acknowledged by the applicant above, it seems clear that we must now include a new category to capture the extent to which this covered area will experience a reduction of soil moisture. This element of design should both be classified as a disturbance, and also be labeled accordingly on the applicant's tree protection plan as such. The following chart details each tree that will experience a reduction in soil moisture availability as a result of the implementation of this technique:

³ September 19, 2006 Oral Testimony (Afful); Official Transcript pp 221-246

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Tree #	Species	Circum	Rating % ⁴	Adj Lot	Disturbance % ⁵	Disturbance%-new ⁶
4	<i>Ulmus</i>	99	70	I	5.0	30.0 (25)
6	<i>Quercus</i>	114	80	I	7.2	12.2 (5)
7	<i>Quercus</i>	87	87	1	13.6	33.6 (20)
9	<i>Quercus</i>	77	70	2	5.6	40.6 (35)
10	<i>Quercus</i>	87	70	2	13.2	43.2 (30)
11	<i>Quercus</i>	117	65	2	18.3	48.3 (30)
15	<i>Fagus</i>	56	60	4	29.7	34.7 (5)
17	<i>Fagus</i>	61	45	C	2.6	7.6 (5)
25	<i>Lirion.</i>	70	70	4	0	10 (10)
26	<i>Lirion.</i>	74	75	4	1.5	26.5 (25)
27	<i>Quercus</i>	38	75	3	0	10 (10)
29	<i>Acer</i>	127	50	D/E	21	36 (15)
40	<i>Lirion.</i>	121	75	A	20	45 (25)
42	<i>Quercus</i>	42	65	B	0	15 (15)
43	<i>Quercus</i>	44	50	B	0	15 (15)
44	<i>Fagus</i>	87	75	B	13.2	18.2 (5)
46	<i>Fagus</i>	84	50	B	14.3	24.3 (10)
47	<i>Fagus</i>	65	60	B	3.2	18.2 (15)
48	<i>Fagus</i>	78	50	B/C	7.4	17.4 (10)
49	<i>Fagus</i>	77	50	B/C	12.6	27.6 (15)
50	<i>Fagus</i>	66	50	C	5.8	10.8 (5)
51	<i>Fagus</i>	62	60	C	6.2	16.2 (10)
52	<i>Fagus</i>	52	60	C	6.8	11.8 (5)
53	<i>Fagus</i>	102	65	C/D	21	26 (5)

⁴ June 30, 2006 Submission by Applicant; "All Trees" Tab

⁵ September 19, 2006 Submission by Applicant; This is the percentage reported as "Total Disturbance" in the 'Critical Root Zone' Tab, and does not account for the reduction of soil moisture resources which has been shown to be a disturbance.

⁶ This new percentage includes the percentage of each critical root zone that will be adversely impacted by this additional disturbance, and has been calculated by DDOT/UFA. Listed parenthetically is the percentage of the critical root zone which the proposal seeks to cover over with unexcavated platform construction, and represents the difference between the two disturbance figures.



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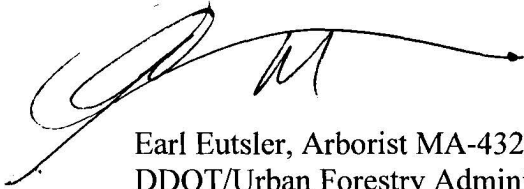
Summary and Recommendation

The *Chain Bridge/University Terrace Tree & Slope Overlay District* was created at the request of property owners in this area seeking to develop a zone of protection and preservation of and for an historic area that, in its current condition, is exceptionally rare within the District of Columbia. Together with the Office of Planning, they were able to create a set of requirements that mandate not only what sort of development could occur, but also to some extent the way in which it had to be performed. The regulations set forth very specific limits on development such as acceptable density, minimum lot size and acceptable levels of tree removal, to name just a few. Beyond that, the regulations describe a setting in which any proposed development must proceed with preservation as its primary principle, as evidenced in the following statement of purpose: 11 DCMR 1565.2 (a) [The regulations are intended to] “preserve the natural topography and mature trees to the maximum extent feasible in a residential neighborhood.” In the case of BZA case # 17309, the applicant has not credibly satisfied the stated requirement of mature tree protection, much less the preservation or enhancement of the park-like setting of the neighborhood. Furthermore, the proposal in its current state is in clear violation of 1568.1, which places firm limits on the total number of trees that are acceptable to remove. To the extent that the submitted plans are accurate, I do not feel as though the requirements described in 11DCMR 1565 have been accommodated. The extent of construction that is proposed will almost assuredly not allow for the preservation of the most sensitive trees called for by the applicable regulations. To allow an exception for this plan as it is currently proposed would seriously undermine the regulatory authority of the Tree and Slope Overlay District of the Chain Bridge Road and University Terrace area. As such, it is the recommendation of the Urban Forestry Administration that the Board of Zoning Adjustment not approve this proposal in its current state.

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Report Prepared by:

A handwritten signature in black ink, appearing to read 'E. Eutsler', with a long horizontal stroke extending to the right.

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October 25, 2006