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## **Environmental Review and Comments**

### **East Maxwell Drive Subdivision, West Hartford, CT**

Date: December 18, 2013

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### **SCOPE OF INVESTIGATION**

At the request of the Town of West Hartford Planning and Zoning Commission / Inland Wetlands Agency, an independent environmental review was conducted of the permit application for regulated activities east of East Maxwell Drive and rear of 137 North Street.

Application materials reviewed included the set of plans labeled “Proposed 12-Lot Single Family Residential Subdivision” prepared by Alford Associates, Inc., stamped “Received October 25, 2013”; “Wetlands Assessment” by Rema Ecological Services, LLC dated 8/12/13 and amended, stamped “Received October 25, 2013”, and other documents in the file provided by Town staff. Site visits were conducted on 12/3/13 and 12/6/13.

The following comments are offered for the consideration of the Commission.

## 1.0 Landscape Context

A 12 lot subdivision is being proposed on a 5.53 acre wooded parcel adjacent to a wide floodplain and watercourse system located off site.

The parcel is entirely upland. The wetland boundary, located off site, parallels the eastern property line. Distance from the property boundary to the wetland boundary ranges from 30 feet to less than 1 foot.

The parcel is entirely forested and is surrounded by suburban residential development on its north, west, and south sides. The wetlands and watercourse areas bound the parcel on the east side. Most of the parcel (approximately 4 acres) is either level or gently slopes down to the west. The remaining portion of the parcel (approximately 1.53 acres) slopes moderately to very steeply down towards the wetland resources.

The wetland resources located closely off site were characterized by Rema Ecological Services in their report of 8/12/13 (as amended) and consist basically of Trout Brook and its floodplain. The wetland resources include two channels of an impounded section of Trout Brook, a large wet meadow island, other wet meadow and island areas, and a backwater area to the channel.

A qualitative description and qualitative assessment of the wetland resources under existing conditions, was presented in the Rema report. An independent review of site and that review were conducted and it was determined that this portion of the Rema report was substantially accurate, though it should be noted the independent review was limited by winter vegetation dormancy. The quantitative measurements submitted within the Rema report were not assessed, but based upon the site visit and analysis of the landscape context, there is no reason to believe that they are inaccurate.

## 2.0 Landscape Level Impacts

The greatest impact to the landscape will be due to the removal of the forest cover.

**Regulatory context:** Pursuant to Subdivision Regulations Section A184-20, specimen trees and wooded areas are required to be depicted on a map, or submitted as part of supporting data. The applicant is also required to state the relative importance to the site or the environs of this natural resource pursuant to Section A184-20.1.

The applicant did submit a sheet with all trees exceeding 30 inches in caliper at ground level, along with a very brief characterization of the forest. Included with that brief characterization was a very limited assessment of the forest's ecological role within the site and the community. There was no information submitted regarding the existing limits of the wooded area, perhaps because the entire site is wooded. Post- development wooded limits were depicted on the site plan.

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Section A184-20.1(B) additionally stipulates that “The subdivision shall be designed to reduce the adverse impacts on such areas, sites and objects as much as is possible.”

More can be done to reduce the adverse impacts on the forest. Recommendations towards that goal will be presented later in this section.

**Magnitude of impact:** Assuming that the proposed limits of disturbance are respected, the existing forest land cover type will be reduced by 86% (from 5.53 acres of forest cover pre-development, to 0.77 acres of forest cover post-development). This represents a considerable conversion of land cover type, and is of sufficient magnitude to significantly disturb the existing ecological function of the forested upland.

It should be noted in the applicant’s analysis of impervious cover, only 1.25 acres of the 5.53 acre site will be impervious post-development (a 23% reduction of pervious surface). Although this appears to be a serious attempt to maintain pre-development hydrology to the wetland resources, the impervious analysis still masks the ecological impact of the reduction in forest land cover.

**Forest condition:** The Rema report portrays the condition of the existing forest in a negative light. I do not share this opinion for the following reasons discussed below:

The Rema report states that the forest “supports mature, diverse trees but the understory is patchy and has been marred by past vandalism and dumping”, and that “the forest has relatively low ecological value, due in part to the vandalism and dumping, but also due to the developed landscape setting, and the small size of the upland woodlot, only 5.6 acres...”.

There is no acknowledgement in the Rema report of the relatively varied structural diversity of the forest (in particular - the emerging Beech midstory within the northern portion of the site), or that the dumping appears to be mainly limited to the periphery of the property.

The Rema report states that the forest has relatively low ecological value and is well suited to the conversion to homes. I question the report’s frame of reference regarding “low ecological value”. There are major disturbance events more significant than vandalism and dumping that have impacted this forested parcel, and none of these disturbances appear to impact this forest any more than most other forests in this region.

The major disturbance forces that appear to impact this forest include storm events and deer browse. Relatively recent storm events have resulted in abundant dead fall on the forest floor. Deer have selectively browsed the understory, favoring fern species and other less palatable species. Both of these are common disturbances within both large

sized forests and smaller urban forests in our region. As such it not believed that the condition of this parcel is any worse than most other tracts of forests in Connecticut.

**Relative importance of the forest to the site or environs:** The forest currently offers at least three ecosystem services that will be significantly impaired by this development.

First, the forest serves as a refuge for wildlife and flora. This forest tract is the last remnant of natural cover type within the surrounding neighborhood, a situation that increases rather than decreases its ecological value. Second, the forest canopy serves to maintain positive air quality and minimizes the effect of pollution. Third, the abundant forest biomass serves to thermally buffer the neighborhood and the region from temperature and other climatic extremes. It would be expected that the function of all three of these services will be significantly impaired if 86% of the existing forest cover type is removed.

**Reducing adverse impact:** More of an effort can be made to preserve the existing forest cover and therefore lessen the impact on these ecosystem services. Specifically;

- Development and grading can be pulled back farther up the slope in the northeast portion of the site (lots 6 and 7).
- More of the wetland buffer can be preserved by expanding the width of the Conservation Easement around lots 8 and 9.
- The subdivision design can be reconfigured to reduce density, which might also allow for the detention basin to be reduced in size and/or be pulled back farther from the wetland boundary, preserving more wooded buffer. A reduction of density could also potentially result in the preservation of open space (currently lacking) which would be of obvious benefit to the local community and environment.
- Individual trees can be marked for preservation within the front and rear yard areas in an effort to think out and minimize unnecessary tree removal during the site development process.

### 3.0 Stormwater System and Detention Basin

**Hydrological impacts:** As mentioned previously, the applicant provided analyses to determine the pre-development hydrology. The hydrology report indicates the rate of runoff will be reduced post-development as compared to existing conditions.

It would be expected that the deforestation would increase volume of runoff from the site due to the tree removals and the subsequent lack of functioning biological processes such as evapotranspiration (i.e. water loss into the atmosphere due to the tree's metabolism and evaporative surfaces) which represent a significantly large component of a forest's pre-development natural hydrology. However, the stormwater system would detain this extra runoff. At worst, the Trout Brook floodplain system would receive the extra volume. The Trout Brook system in this area is an artificially impounded system (i.e. a river system whose downstream rate of release is regulated by a dam structure), and judging from the terrain, it would be expected that there would be a surplus storage capacity within the immediate river floodplain to handle these extra volumes if generated.

The effect of reconfiguring the site into new post-development subwatersheds on the wetland resources was examined. The backwater channels (labeled as "sloughs" in the Rema report) represent the more sensitive and biologically unique of the wetland resources near to the site. The backwater channels primarily depend upon overflow from the brook for recharge. Therefore, as long as the brook continues to overflow, the backwater channels will not be significantly impacted. The reconfiguration of the site into new subwatersheds would not be expected to significantly affect the capacity of Trout Brook to continue to overflow at times into the back channels.

**Ecological impacts (deforestation):** At least sixteen trees (as indicated on the application materials) will need to be removed to construct the detention basin. The trees range from 14 to 21 inches Diameter Breast Height (DBH).

It should be noted that more trees will be removed from the site than are specified in the plan, since the requirement was to only depict those trees 30 inches or more at ground line.

Furthermore, more trees than the above cited 16 will likely need to be removed (or their roots adversely damaged) to accommodate the piping to the basin.

These tree removals represent a significant loss of woody buffer canopy cover within proximity to the wetlands, and a significant conversion of habitat type from natural forest to a managed and urban developed habitat. It is debatable whether locating an engineered stormwater structure at the expense of eradicating currently functioning wetland buffer is worthwhile from an ecologic point of view. Forested upland habitat adjacent to wetlands is scarce in this suburban area, and will be more scarce post-development. However, this practice is not uncommon, in my experience.

**Minimizing impacts:** The Rema report (p16) suggests several recommendations to minimize indirect impacts to wetland functions and to improve the water quality function and habitat quality of the detention basin. It appears that none of these recommendations were incorporated into the plan materials evaluated.

- The Rema recommendations should be incorporated, pursuant to Section 10.2(d) of the Inland Wetland Regulations, since they involve the proposed activity's future ability to protect, enhance or restore the wetland resources.

Additionally, pursuant to Section 10.2(d), there are several ways to reduce and reconfigure the detention basin size, and therefore reduce the amount of tree removal and over all habitat disturbance. These include:

- The detention basin shape could be reconfigured to be more tailored to the existing site conditions without loss of volume. The proposed shape is "cookie-cutter" rather than proscribed for the terrain.
- The subdivision design could be reconfigured to reduce density, which might also allow for the detention basin to be reduced in size and/or be pulled back farther from the wetland boundary, preserving more wooded buffer.

## 4.0 Development of Lot 9

**Erosion impacts:** A Conservation Easement is being proposed to protect the steep slope above the wetland resources. This will afford some level of habitat protection to the resources below by preserving direct disturbance to the slope and preserving its over hanging tree canopy. However, it is my view that the Conservation Easement can be improved upon to offer a better level of protection with regard to preventing erosion and sedimentation into the wetlands below.

As proposed, the lot is configured so as to allow development (e.g. the removal of trees and installation of lawn) up to the edge of the slope. The site plan depicts at least 3 trees adjacent or below elevation 134 (i.e. 10-15 feet from the crest of the slope) that are not protected and as such will be assumed to be removed for lawn. There is also an abundance of woody and herbaceous groundcover near the edge of the slope that will also need to be removed to install the lawn.

Under existing conditions, these trees and the native groundcover provide an uneven ground surface which serves to slow down stormwater runoff and which promotes infiltration before the stormwater flows down the slope. Under proposed conditions, detention and infiltration will be significantly reduced if the area immediately adjacent to

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the slope is converted to lawn. This will create a situation in which runoff will concentrate and increase velocity as it flows over the lip of the slope, and likely result in erosion of the slope below, resulting in deposition of sediment into the wetland areas below, triggering Sections 2.1 jj (1,4,6) of the Inland Wetland Regulations (Significant Impact).

To see what the impact of developing this close to the slope will be, it is instructive to view the slope behind the residences located downstream, along the eastern side of Cliffmore road. Most of these existing residences have developed back yard areas which extend all the way to the top of the slope above the Brook, similar to what is being proposed on this site. According to the NRCS soils map, the underlying Manchester soils in these residential areas are the same soils as in the proposed backyard area of Lot 9. When viewed from below, it appears that there are significant levels of erosion on the upper reaches of the slopes below these Cliffmore residences. In contrast, there is little to no erosion on the slopes below proposed Lots 6-9 under existing undisturbed conditions.

- A practical approach to remedy these impacts would be to increase the width inland of the Conservation Easement to the 134 elevation line, as depicted on the site plan. This will afford a level of protection to the steep slope from the impact of erosion and still allow for a backyard for the proposed residence.
- If the Applicant wants to continue to maximize backyard under the current lot line configuration, the alternative also exists to apply for zoning relief to pull the houses closer to the proposed road.

It should be noted that the Rema report (p16) similarly recognizes this issue, and recommends a “vegetative screen” as a related measure to protect the slope. It is my opinion that due to the unique site topographical constraints, a more aggressive preservation approach is needed than what is recommended in that report, pursuant to the language of Sections 10.2(d) and 10.3 of the Inland Wetland Regulations.

**Footing drain:** The footing drain outlets are proposed on the steep slope. No outlet protection to dissipate expected flow velocities is specified. There is no quantification or even mention of trees or other vegetation that may need to be displaced for the piping or for the outlet. The footing drain should be depicted on a plan identifying which, if any, trees will be impacted or removed. Outlet protection for the footing discharge should be provided. Under proposed conditions, erosion and sedimentation into the wetlands will occur.

## 5.0 Development of Lot 8

**Erosion impacts:** Similar to Lot 9, the Conservation Easement only protects the slope habitat itself. It does not afford any protection from regulated activity such as the conversion of forest to lawn immediately adjacent to the top of the slope that will result in erosion of the slope. Similar to the discussion of Lot 9, the Conservation easement could be improved in this area pursuant to Section 10.2(d) of the Inland Wetland Regulations by slightly increasing its width inland.

- The Conservation easement could be expanded another 10 feet inland. This would result in the preservation of natural ground cover conditions and result in the protection of at least 4 more trees (as depicted on the site plan). This will afford a level of protection to the steep slope and therefore the wetland resources below (as discussed in previous section for Lot 9) and still allow for a backyard for the proposed residence.
- If the Applicant wants to continue to maximize backyard under the current lot line configuration, the alternative also exists to apply for zoning relief to pull the houses closer to the proposed road.

**Footing drain:** No outlet protection to dissipate expected flow velocities is specified. If flow is allowed to concentrate without velocity dissipation and then is allowed to traverse downgradient, there will be a reasonable likelihood that this will result in rill erosion on the slopes, and an impairment of the capacity of the soils to serve as an anchor for vegetation.

There is no quantification or even mention of trees or other vegetation that may need to be displaced for the piping or for the outlet. The footing drain should be depicted on a plan identifying which, if any, trees will be impacted or removed.

## 6.0 Development of Lot 7

Unlike the previous lots considered (Lots 9 and 8), the slope between the proposed development in Lot 7 and the wetland resources is relatively gentle. Erosion would not be anticipated as a major issue of concern as in Lots 9 and 8. The major issue of concern with developing this lot would be water quality and preservation of wetland buffer habitat.

It would seem logical to extend the Conservation Easement across the bottom of this lot, in order to preserve natural upland buffer to the wetlands and to provide maximum protection of the wetland resources from water quality impacts. An intact wetland buffer

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is important to remediate any nonpoint pollutants from the lawn areas above, as well as to provide canopy over the wetlands. It also provides natural upland habitat and discourages intrusion into the more sensitive wetland areas. Upland buffer habitat adjacent to the wetlands, discussed earlier, is scarce for this neighborhood region and will be more scarce post-development. Therefore efforts should be made to preserve as much of it as possible.

The Rema report made a finding (p14) that the risks of water quality from the development of this (and other lots) will be very low. However, their finding was also predicated (p14) on an approximately 50 foot wooded buffer being preserved between the graded slope and sensitive wetlands. The current site plan proposes no permanent protection for that wooded buffer, effectively rendering their finding moot. A Conservation Easement would provide that level of protection, and therefore validate Rema's conclusion.

- It is recommended that the Conservation Easement be extended along the bottom of this lot, 25 feet offset from the eastern lot line boundary, pursuant to Sections 10.2 c and d of the Wetland Regulations.

**Footing drain:** No outlet protection to dissipate expected flow velocities is specified. There is no quantification or even mention of trees or other vegetation that may need to be displaced for the piping or for the outlet. The footing drain should be depicted on a plan identifying which, if any, trees will be impacted or removed.

**Grading plan:** The slope in the area directly to the north of the proposed house is proposed to be reengineered. There appears to be no purpose to this elective land disturbance other than to perhaps transition the grades to meet the equally engineered lower proposed slope of Lot 6 next door. It is equally unclear why the slope is needed to be disturbed below the proposed residence in Lot 6, and this issue will be more fully examined in the next section. As such, the proposed grading seems to be an unnecessary and avoidable disturbance to the terrain.

## 7.0 Development of Lot 6

Both pre-development and post-development slopes within this lot are steep. The slope is currently stable, with abundant mature woody vegetation and natural ground covers including mature trees.

The Rema Report (p14) states “..a gently sloping approximately 50 foot wooded buffer is proposed between the graded slope and the sensitive wetlands..”.

This is not true. As measured on the site plan, the average distance between the graded slope and the sensitive wetland area appears to range between 35-40 feet. Taking into account that the limit of disturbance due to grading in the field really does not commence from the last grading line on the map, a more reasonable estimate of the distance between the graded slope and the wetlands would be 25-35 feet.

Because of the thin width of this proposed wetland buffer, it would seem logical to stipulate that the Conservation Easement be extended across the bottom of this lot as well. All the previous considerations regarding the need for such an easement, discussed in the Lot 6 section of this report, are valid as well for this lot.

- It is recommended that the Conservation Easement be extended along the bottom of this lot, 25 feet offset from the eastern lot line boundary, pursuant to Sections 10.2 c and d of the Wetland Regulations.

**Slope issues:** An engineered fill slope is proposed around the eastern and northern sides of the house. The slope will be roughly 2:1 around the northeastern corner of the residence, and 3:1 in the vicinity of the Lot 6 and Lot 7 property boundary.

It is not clear why this area needs to be comprehensively reengineered. It appears to be a rather drastic and unnecessary disturbance to the existing steep slope. It is unclear why the residence can not be cantilevered to reduce disturbance to this slope, or why the proposed elevation grading lines 130 to 138 are even needed, as this area is mainly below the house.

A 2:1 slope poses unique challenges to stabilize. Neither the site plan nor the erosion control plan stipulates how the applicant specifically intends to do this. It should be noted that there is general language in the erosion control plan that all areas not paved or landscaped will be loamed with minimum of 4 inches top soil and seeded with grass seed. However, it is expected that due to the steepness, the use of grass seed and top soil will not be adequate to permanently stabilize the slope, leading one to question if a retaining wall will be necessary.

Without adequate design and stabilization, it would be expected that the fill slope would serve as a source of sediments that would migrate into the wetland area. The potential volume of sediments is large enough to result in damage to the resource, enough in my opinion to trigger Sections 2.1 jj 2 and 4 (Significant Impacts) of the Inland Wetland Regulations.

- It is recommended that the need for both slopes (the slope within the Lot 6 and Lot 7 property boundary AND the slope around the northeastern corner of the residence) be reassessed, and any unnecessary disturbance eliminated by leaving as much natural terrain intact as feasible. It is envisioned that the residence could still be located in the same place without the need for most, or all, of those slopes.

- Minimizing the need for these slopes would also result in the additional preservation of at least three trees on Lot 7 and at least two trees on Lot 6 that are slated for removal if these slopes are developed.

**Footing drain:** The footing drain outlets are proposed on the steep slope. There is no outlet protection to dissipate expected flow velocities specified. There is no quantification or even mention of trees or other vegetation that may need to be displaced for the piping or for the outlet. The footing drain should be depicted on a plan identifying which, if any, trees will be impacted or removed. Outlet protection for the footing discharge should be provided. Under proposed conditions, erosion and sedimentation into the wetlands will occur.

## 8.0 Additional Erosion Control Plan Comments

**Tree removal and construction sequencing:** Tree removal will arguably constitute the most significant and largest magnitude of disturbance to the site.

The only reference provided in the erosion control narrative as to how the developer intends to remove these trees in a manner that minimizes erosion and sedimentation is the statement: “Clear cut and remove unsuitable material in the area required for the proposed houses, the roadway, and detention basin.”

At least a hundred trees are expected to be removed (86% of the existing forest canopy).

- There needs to be more specificity as to the methods used (number and type of trucks, entrance and exit way through site, hours of operation, stockpile location of slash and timber, planned efforts to stabilize local areas, and especially the identification of sensitive areas and trees to be protected, along with avoidance strategies).
- A phasing plan is recommended. Clear cutting the entire site at once will lead to an unnecessary risk of accelerated erosion and sedimentation throughout the site.
- Tree protection is provided as a detail on Sheet 2, but yet no trees are specified for protection on any of the site plan sheets (G1 or otherwise). Individual trees should be marked on the site plan for preservation within the front and rear yard areas, in an effort to think out and minimize unnecessary tree removal during the site development process.

- A temporary swale is proposed but the detail is not provided. Without this detail, it is not possible to make a finding that the swale will prevent erosion and sedimentation, as intended.

**Landscaping and Site Restoration:** Despite the magnitude of tree removal, according to the site plan *only one tree is specified to be planted on site*, to be located on the cul de sac.

- A better effort can be made to comply with the spirit of Section A184-26 of the Subdivision Regulations. A landscaping plan which encourages tree preservation and which specifies replacement of trees can be developed.

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Thank you for the opportunity to comment.

Signed,



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