WETLAND DELINEATION AND FUNCTIONAL EVALUATION

118 HAZARD AVENUE
ENFIELD, CONNECTICUT

Submitted To:
Bohler Engineering
16 Old Forge Road, Suite A
Rocky Hill, CT 06067

Prepared By:
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1.0 INTRODUCTION

The applicant, Kaplan Development Group, LLC is proposing to construct an assisted living facility in the northeast portion of a 19.44± acre parcel of land at 118 Hazard Avenue, Enfield, CT. Davison Environmental, LLC soils and wetland scientists conducted site investigations on August 4, 2019 and January 15, 2020 in order to delineate the wetland boundaries, evaluate the characteristics of the wetlands and watercourses, and identify potential Project impacts to these resources.

2.0 EXISTING ENVIRONMENT

2.1 General Site Description

The Site is a nearly level, undeveloped parcel of land that lies between Hazard Avenue on the north and Middle Road on the south (see Figure 1). The southern half (more or less) is currently in agriculture, and the northern portion is wooded (see Figure 2). Examination of historical aerial photographs indicates the entire site was used for row crops in the past. The site grades downward slightly to the northwest toward Hazard Avenue. A system of ditches was apparently constructed to facilitate drainage in that direction, with flows eventually directed toward Freshwater Brook. Site photographs are provided in Appendix A.

2.2 Surficial Geology and Watershed

The Site’s surficial geology is comprised of sands overlying fines (glacial-fluvial derived soil types). The Site lies within the Freshwater Brook subregional drainage basin (#4003).

2.3 Wetland Description

Davison Environmental, LLC soil scientists delineated the Site wetlands on August 14, 2019 and January 15, 2020. The Wetland Delineation Report is provided in Appendix B. The delineated wetlands generally lie in the north-central portion of the site and as noted above, generally drain slowly to the north and northwest. There are no defined watercourses at the site. Flows enter a ditch that leads to culvert in Hazard Avenue. On-site, the wetland is seasonally saturated and characterized by scrub-shrub and forested cover types. It has been subject to historic disturbance associated with the row crop agriculture.

2.4 Soil Types

Digitally available updated soil survey information was obtained from the Natural Resources Conservation Service and generally confirmed during the field investigation. Soil classifications present on the property are as follows:

Wetland Soils - Wetland soils on the site consist of the Walpole series. The Walpole series consists of very deep, poorly drained sandy soils formed in water-sorted glacial outwash and stratified drift. They are nearly level to gently sloping soils in low-lying positions on terraces and plains. Walpole soils have a water table within 1’ of the soil surface much of the year. Walpole soils are regulated inland wetland soils.
FIGURE 1
Topographic Map
118 Hazard Ave
Enfield, CT

Map Description: USGS topographic map showing parcel boundary. Parcel data taken from CT DEEP GIS data. This map is intended for general planning purposes only.
FIGURE 2
Aerial Map
118 Hazard Ave
Enfield, CT

Map Description: 2019 aerial photograph (source CT ECO) showing parcel boundary. Parcel data taken from CT DEEP GIS data. This map is intended for general planning purposes only.
Non-Wetland Soils - The non-wetland soils were not examined in detail, except as was necessary to determine the wetland boundary. Non-wetland soils consist of Ninigret and Tisbury soils, Haven and Enfield soils, and Windsor loamy sand.

The Ninigret and Tisbury map unit contains two soil series that are intermingled in a complex pattern on the landscape that is not practical or necessary to separate. The Ninigret series consists of very deep, moderately well drained soils formed in loamy over sandy and gravelly glacial outwash. They are nearly level to strongly sloping soils on glaciofluvial landforms, typically in slight depressions and broad drainageways. The soil has a seasonal high water table. The Tisbury series consists of very deep, moderately well drained loamy soils formed in silty eolian deposits overlying outwash. They are nearly level and gently sloping soils on outwash plains and terraces, typically in slight depressions and broad drainageways. The soil has a seasonal high water table at a depth of about 18-42”.

The Haven and Enfield map unit contains two soil series that are intermingled in a complex pattern on the landscape that is not practical or necessary to separate. Haven soils are nearly level to moderately sloping soils of glacial outwash plains, valley trains and water-sorted morainic deposits. The soil profile consists of 18 to 36 inches of water-sorted loamy material low in gravel over stratified gravel and sand. The Enfield series consists of very deep, well drained loamy soils formed in silty mantled glacial outwash. They are nearly level to sloping soils on outwash plains and terraces. Slopes range from 0 to 15 percent but are generally less than 8 percent. The soils formed in a silty mantle over stratified sandy and gravelly fluvial materials derived from a variety of acid rocks.

The Windsor series consists of very deep, excessively drained soils formed in sandy glacial outwash. They are nearly level to very steep soils on glaciofluvial landforms.

Although not mapped separately, the on-site investigations identified and area that would be classified as Udorthents. This is a miscellaneous land type used to denote moderately well to excessively drained earthen material which has been so disturbed by cutting, filling, or grading that the original soil profile can no longer be discerned (see photo 2).

2.5 Rare Species Habitat

Based on a review of the most recently updated (January 2020) Connecticut Department of Energy and Environmental Protection Natural Diversity Database mapping, no State-listed species or critical habitats are located on, or in close proximity to the Site.

3.0 WETLAND FUNCTIONS AND VALUES

3.1 Wetland Functions and Values

The functions and values of the wetland and watercourse which would be subject to filling or enhancement are summarized in Table 1 and discussed in Sections 4.2 and 4.3. The Highway Methodology recognizes 13 separate wetland functions and values, including: groundwater recharge/discharge, floodwater storage, fish and shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline
stabilization, wetland wildlife habitat, recreational value, educational/scientific value, uniqueness, visual/aesthetic quality and threatened and endangered species habitat.

The degree to which a wetland provides each of these functions is determined by one or more of the following factors: landscape position, substrate, hydrology, vegetation, history of disturbance, and size. Each wetland may provide one or more of the listed functions at significant levels. The determining factors that affect the level of function provided by a wetland can often be broken into two categories. The effectiveness of a wetland to provide a specified function is generally dependent on factors within the wetland whereas the opportunity to provide a function is often influenced by the wetland’s position in the landscape as well as adjacent land uses. For example, a depressed wetland with a restricted outlet may be considered highly effective in trapping sediment due to the long residence time of runoff water passing through the system. If this wetland is located in gently sloping woodland, however, there is no significant source of sediment in the runoff therefore the wetland is considered to have a small opportunity of providing this function.

The functions and values potentially provided also vary depending on the ecological system present in the wetland. At this site, most of the flagged area is a seasonally saturated, deciduous forested wetland, typically classified in southern New England as a red maple swamp (see photos 1 & 3). This plant community has multiple strata, dominated by trees 20’ or taller. At the project site, the trees are typically red maple, pin oak 8-12” in diameter at breast height (dbh) with scattered specimen trees 18-24” dbh. The understory was relatively open, with spicebush and silky dogwood common and some Japanese barberry present. Persistent herbaceous species included cinnamon fern, evergreen Woodfern, sensitive fern sedges, club moss, and sphagnum moss.

Table 1: Summary of Wetland Functions and Values

<table>
<thead>
<tr>
<th>Wetland Functions and Values</th>
<th>Groundwater Recharge/Discharge</th>
<th>Sediment/Shoreline Stabilization</th>
<th>Floodflow Alteration</th>
<th>Fish &amp; Shellfish Habitat</th>
<th>Sediment/Toxicant/Pathogen Retention</th>
<th>Nutrient Removal/Attenuation</th>
<th>Production Export</th>
<th>Wildlife Habitat</th>
<th>Recreation</th>
<th>Educational/Scientific Value</th>
<th>Uniqueness/Heritage</th>
<th>Visual Quality/Aesthetics</th>
<th>Listed Species Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onsite Wetland</td>
<td>P</td>
<td>S</td>
<td>P</td>
<td>N/A</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>S</td>
<td>*</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
</tr>
</tbody>
</table>

**Suitability**
P = principal function
S = secondary function
U = function unlikely to be provided at a significant level
N/A = not applicable
3.2 Functions and Values of Onsite Wetland

A brief description of the on-site wetland’s principal functions and values is provided below.

**Groundwater Recharge / Discharge** functions are provided at a principal level. The wetland is a low-gradient system underlain by glacial-fluvial derived soils which promote groundwater recharge (effectiveness). Some groundwater is also discharged and conveyed to the downgradient watercourse (off-site) via diffuse surficial flows.

**Floodflow Alteration** functions are provided at a principal level. This wetland area is a low-gradient system (effectiveness) that exists in a low-lying area and captures and detains stormwater runoff from surrounding uplands (opportunity), which includes actively farmed areas.

**Sediment/Toxicant/Pathogen Retention and Nutrient Removal/Attenuation** functions are provided at a principal level. This wetland area exists in a low-lying area and captures and detains stormwater runoff from surrounding uplands, which includes farmed areas (which provides an opportunity to promote this function). This wetland is low gradient and adequately vegetated to promote pollutant attenuation.

**Wildlife Habitat** function is potentially provided at a principal level due the presence of potential vernal pools. However, this cannot be determined at this time, but requires additional surveys be conducted from March through June. During our initial field investigations in August 2019, we identified portions of the wetland that were enclosed depressions that exhibited the morphological characteristics of vernal pools. During our January 2020 work, some of these localized depressions were ponded to a depth of 6-18” and therefore possess the hydrological characteristics of vernal pools (see photo 4). In order to accurately assess the **wildlife function** of the wetland system, these additional investigations are required to conduct egg mass surveys for vernal pool indicator amphibians and determine if/where amphibian breeding is occurring.

4.0 REGULATED ACTIVITIES

The proposed assisted living facility has been located in the northeast portion of the site, in an area that has been disturbed by deposition of earthen materials. However due to the needs of the Project and the location and proximity of surrounding wetland and watercourse resources, some activities are proposed in Site wetlands and their associated regulated upland review areas. Approximately 4878 square feet (±0.11 acres) of permanent wetland impact (filling) is required to accommodate the site driveway and a very small portion of the building. Approximately 112,733 square feet (±2.59 acres) of additional activity is required in the upland review area, associated with the access driveway, stormwater management facilities, grading and landscaping. The amount of work within regulated areas has been minimized by the use of a retaining wall.

5.0 RECOMMENDATIONS

5.1 Impact Assessment

Evaluation of the ecological impacts of the proposed work at the site requires additional biological surveys in late winter and early spring to determine if any of the depressions
embedded in the wetlands support breeding populations of vernal pool indicator amphibians, such as wood frog (lithobates sylvaticus) and mole salamanders.

5.2 Mitigation

As noted above, the project requires filling of approximately 4,878 square feet (±0.11 acres) of the wetland along its eastern edge. Typically, permanent wetland losses such as these are mitigated by construction of compensatory wetlands. The project site is generally favorable for compensatory mitigation due to the presence of soils that typically have a seasonal high-water table within the upper 2-3 feet and that do not support mature significant vegetation types. Development of detailed plans and specifications requires additional subsurface investigations to verify the depth and thickness of the various soil horizons and the actual location of the seasonal high-water table. Such work also can be conducted in the late winter/spring time frame. Based on these results, we can develop grading and planting recommendations, a construction sequence, and monitoring plan.

6.0 REFERENCES

Connecticut Environmental Conditions Online (CTECO) (http://www.cteco.uconn.edu/)


APPENDIX A - WETLAND PHOTOS, TAKEN JANUARY 31, 2020
Photo 1: Red Maple Swamp at site; view to northwest towards Hazard Avenue.

Photo 2: Edge of disturbed area with historic fill slope; east side of wetland.
Photo 3: Red Maple Swamp looking north; note overall saturated wetland condition.

Photo 4: Example of potential vernal pool with seasonally flooded hydrology near hazard Avenue.
IDENTIFICATION OF WETLANDS AND WATERCOURSES RESOURCES

Wetlands and watercourses present on property?  Yes ☒  No ☐

Wetlands:
- Inland Wetlands ☒
- Tidal Wetlands ☐

Watercourses:
- Perennial Streams ☐
- Intermittent Watercourses ☐

Identification Method:
- Auger and Spade ☒
- Backhoe Pits ☐

Numbering Sequences:
- 1-13
- 14-154
- 1X-14X
- 15X-20X

Wetland Plant Communities Present:
- Forest ☒
- Sapling/Shrub ☒
- Wet Meadow ☐
- Marsh ☐
- Pond ☐

Definitions and methodology for identification of state regulated wetlands & watercourses

Wetlands and watercourses are regulated in the State of Connecticut General Statutes, Chapter 440, sections 22a-28 to 22a-45. The Statutes are divided into the Inland Wetlands and Watercourses Act (sections 22a-36 to 22a-45) and the Tidal Wetlands Act (sections 22a-28 to 22a-35). Inland Wetlands “means land, including submerged land, not regulated pursuant to sections 22a-28 to 22a-35, inclusive, which consists of any of the soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the National Cooperative Soils Survey, as may be amended from time to time, of the National Resources Conservation Service (NRCS) of the United States Department of Agriculture” section 22a-38(15). Watercourses “means rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private which are contained within, flow through or border upon this state or any portion thereof, not regulated pursuant to sections 22a-28 to 22a-35, inclusive. Intermittent watercourses shall be delineated by a defined permanent channel and bank and the occurrence of two or more of the following characteristics: (A) Evidence of scour or deposits of recent alluvium or detritus, (B) the presence of standing or flowing water for a duration longer than a particular storm incident, and (C) the presence of hydrophytic vegetation” section 22a-38(16). Tidal Wetlands are defined as “those areas which border on or lie beneath tidal waters, such as, but not limited to banks, bogs, salt marsh, swamps, meadows, flats, or other low lands subject to tidal action, including those areas now or formerly connected to tidal waters, and whose surface is at or below an elevation of one foot above local extreme high water; and upon which may grow or be capable of growing some, but not necessarily all of the following” (includes plant list) section 22a-29(2).
WETLAND SOIL TYPES

Wetland soils on the site consist of the Walpole series. The Walpole series consists of very deep, poorly drained sandy soils formed in water-sorted glacial outwash and stratified drift. They are nearly level to gently sloping soils in low-lying positions on terraces and plains. Walpole soils have a water table within 1’ of the soil surface much of the year. Walpole soils are regulated inland wetland soils.

NON-WETLAND SOILS

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NOTES:
Wetlands were delineated in the wooded, northern portion on August 4, 2019. An additional soils investigation was conducted on January 15, 2020, in a 50’-75’ wide strip running north south along the eastern property line, to assess the feasibility of providing access to the south. No additional wetland soils were identified during the January, 2020 field work.

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Registered Soil Scientist

Attachment: Wetland Sketch Map