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SOIL SCIENCE
ECOLOGICAL SERVICES
LAND USE PLANNING
LANDSCAPE ARCHITECTURE

July 12, 2018

Attorney Daniel G. Johnson
Cummings & Lockwood LLC
6 Landmark Square
Stamford, CT 06901

Re: Wetland and Watercourse Delineation
13 Sunswyck Road, Stamford, Connecticut

Dear Attorney Johnson:

As requested, we visited the referenced property to determine the presence or absence of wetlands and/or watercourses, to demarcate (flag) the boundaries of wetlands and watercourses identified, and to identify onsite soil types. This letter includes the methods and results of our investigation, which we completed today, July 12, 2018. In summary, one inland wetland system was identified and delineated. The system, which is located in the central and southern portions of the property, is an isolated lawn wetland.

***Regulatory Definitions***

The Inland Wetlands and Watercourses Act (Connecticut General Statutes §22a-38) defines inland wetlands as "land, including submerged land...which consists of any soil types designated as poorly drained, very poorly drained, alluvial, and floodplain." Watercourses are defined in the act as "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 the state or any portion thereof." The Act defines Intermittent Watercourses as having 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.

The Tidal Wetlands Act (Connecticut General Statutes §22a-28) defines wetlands 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

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local extreme high water; and upon which may grow or be capable of growing hydrophytic vegetation as identified in the Statutes.

***Methodology***

A second order soil survey in accordance with the principles and practices noted in the USDA publication *Soil Survey Manual* (1993) was completed at the subject site. The classification system of the National Cooperative Soil Survey was used in this investigation. Soil map units identified at the project site generally correspond to those included in the *Soil Survey of the State of Connecticut* (USDA 2005).

Wetland determinations were completed based on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils and submerged land (e.g. a pond). Soil types were identified by observation of soil morphology (soil texture, color, structure, etc.). To observe the morphology of the property's soils, test pits and/or borings (maximum depth of two feet) were completed at the site.

Tidal wetland determinations were completed based on the presence of a predominance of tidal wetland vegetation and physical markings or water laid deposits resulting from tidal action.

Intermittent watercourse determinations were made based on the presence of a defined permanent channel and bank and two 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.

Wetland boundaries were demarcated (flagged) with pink surveyor's tape (hung from vegetation) or small flags (on wire stakes) labeled "William Kenny Associates" that are generally spaced a maximum of every 50 feet. Complete boundaries are located along the lines that connect these sequentially numbered flags. The wetland boundaries are subject to change until adopted by local, state, or federal regulatory agencies.

***Results***

The approximate 0.6-acre residential property is located at 13 Sunswyck Road in Darien, Connecticut. Sunswyck Road borders the northern property boundary. Property improvements include a single-family residence and an asphalt driveway. The primary vegetative cover at the property is lawn with other ornamentals and some shade trees. A broadleaved deciduous forest is present in the southeastern portion of the property. On the day of the review, the sky was clear and air temperatures were in the 80's ° F.

One inland wetland system was identified and delineated. The system, which is located in the central and southern portions of the property, is an isolated lawn wetland. Wetland soils are primarily poorly drained fine sandy loams that formed from glacial till deposits. The approximate location of the system is shown on the attached map. The boundary of the system was marked at the site with flags numbered 1 to 8.

Five soil map units were identified on the property (one wetland and four upland). Each map unit represents a specific area on the landscape and consists of one or more soils for which the unit is named. Other soils (inclusions that are generally too small to be delineated separately) may account

for 10 to 15 percent of each map unit. The mapped units are identified in the following table by name and symbol and typical characteristics (parent material, drainage class, high water table, depth to bedrock, and slope). These characteristics are generally the primary characteristics to be considered in land use planning and management. A description of each characteristic and their land use implications follows the table. A complete description of each soil map unit can be found in the *Soil Survey of the State of Connecticut* (USDA 2005), and at *http://soils.usda.gov/technical/classification/osd/index.html*. On the day of the review, the upland soil was dry to moist and wetland soil was moist.

| Map Unit Sym. | Map Unit Name | Parent Material | Slope (%) | Drainage Class | High Water Table Depth (ft) | High Water Table Kind | High Water Table Mos. | Depth To Bedrock (in) |
|---|---|---|---|---|---|---|---|---|
| | **Upland Soil** | | | | | | | |
| 50 | Sutton fine sandy loam | Loose Glacial Till | 3-8 | Moderately Well Drained | 1.5-3.5 | Apparent | Nov-Apr | >60 |
| 73 | Charlton | Loose Glacial Till | 0-50 | Well Drained | >6.0 | -- | -- | >60 |
| | Chatfield Fine sandy loam | Loose Glacial Till | 0-70 | Well Drained | >6.0 | -- | -- | 20-40 |
| 306 | Udorthents - Urban Land Complex | Excavated or Filled Soil (>2 feet) | 0-45 | Well Drained | >6.0 | -- | -- | >60 |
| | | Pavement & structures account for 85% or more of the area. Additional investigations required to determine characteristics | | | | | | |
| 308 | Udorthents, Smoothed | Excavated or Filled Soil (>2 feet) | 0-45 | Well Drained to Somewhat Poorly Drained | 1.5->6.0 | Apparent | Nov-May | >60 |
| | **Wetland Soil** | | | | | | | |
| 3 | Ridgebury | Compact Glacial Till | 0-8 | Poorly Drained | 0.0-1.5 | Perched | Nov-May | >60 |
| | Leicester | Loose glacial Till | 0-3 | Poorly Drained | 0.0-1.5 | Apparent | Nov-May | >60 |
| | Whitman extremely stony fine sandy loam | Compact Glacial Till | 0-3 | Very Poorly Drained | 0.0-1.5 | Perched | Sep-Jun | >60 |

Parent material is the unconsolidated organic and mineral material in which soil forms. Soil inherits characteristics, such as mineralogy and texture, from its parent material. Glacial till is unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice. Glacial outwash consists of gravel, sand, and silt, which are commonly stratified and deposited by glacial melt water. Alluvium is material such as sand, silt, or clay, deposited on land by streams. Organic deposits consist of decomposed plant and animal parts.

A soil's texture affects the ease of digging, filling, and compacting and the permeability of a soil. Generally sand and gravel soils, such as outwash soils, have higher permeability rates than most glacial till soils. Soil permeability affects the cost to design and construct subsurface sanitary disposal facilities and, if too slow or too fast, may preclude their use. Outwash soils are generally excellent sources of natural aggregates (sand and gravel) suitable for commercial use, such as construction sub base material. Organic layers in soils can cause movement of structural footings. Compacted glacial

till layers make excavating more difficult and may preclude the use of subsurface sanitary disposal systems or increase their design and construction costs if fill material is required.

Generally, soils with steeper slopes increase construction costs, increase the potential for erosion and sedimentation impacts, and reduce the feasibility of locating subsurface sanitary disposal facilities.

Drainage class refers to the frequency and duration of periods of soil saturation or partial saturation during soil formation. Seven classes of natural drainage classes exist. They range from excessively drained, where water is removed from the soil very rapidly, to very poorly drained, where water is removed so slowly that free water remains at or near the soil surface during most of the growing season. Soil drainage affects the type and growth of plants found in an area. When landscaping or gardening, drainage class information can be used to assure that proposed plants are adapted to existing drainage conditions or that necessary alterations to drainage conditions (irrigation or drainage systems) are provided to assure plant survival.

High water table is the highest level of a saturated zone in the soil in most years. The water table can affect the timing of excavations; the ease of excavating, constructing, and grading; and the supporting capacity of the soil. Shallow water tables may preclude the use of subsurface sanitary disposal systems or increase design and construction costs if fill material is required.

The depth to bedrock refers to the depth to fixed rock. Bedrock depth affects the ease and cost of construction, such as digging, filling, compacting, and planting. Shallow depth bedrock may preclude the use of subsurface sanitary disposal systems or increase design and construction costs if fill material is required.

***Conclusions***

Today, we visited the property at 13 Sunswyck Road in Darien, Connecticut and identified and delineated one inland wetland system. Thank you for the opportunity to assist you. If you should have any questions or comments, please do not hesitate to contact me.

Sincerely,

William L. Kenny, PWS, PLA
Soil Scientist

Enclosure

*Ref. No. 4015*