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19-037  
March 13, 2020

Dirigo Engineering  
Attention: Randy Butler, P.E.  
2 Dirigo Drive  
Fairfield, ME 04937

Subject: Freshwater Wetland Classification  
L/A Properties, LLC Countryside Mobile Home Park Expansion  
West River Road and Webb Road  
Waterville, Maine.

Dear Randy,

This letter is to provide clarification regarding the classification of freshwater wetlands located on the L/A Properties, LLC Countryside Mobile Home Park Expansion properties on West River Road and Webb Road in Waterville, Maine. We understand this clarification is needed for the purpose of determining if the proposed project meets City of Waterville Zoning Ordinance performance standards for location of a mobile home park.

### **Waterville Ordinance Review**

Burman Land & Tree, LLC (BLT) reviewed the City of Waterville Zoning Ordinance (effective January 28, 2020, as amended: January 7, 2020), Article 3, Section 2. Additional Definitions and Article 4. Section 3.17.E. and E.(1)(b) of the Mobile home park requirements.

Article 3, Section 2. Additional Definitions defines a Wetland as "*any swamps, marshes, bogs and similar areas*".

Article 4, Section 3.17.E. states that "*no mobile home park shall be so located as to be*" (1)(b) "*close to swamps or other potential breeding places for insects or rodents*".

**William H. Burman**  
*Licensed Professional Forester*  
*Master Arborist*  
*Master Pesticide Applicator*

**Aleita M. Burman**  
*Certified Wetland Scientist*  
*Certified Soil Scientist*  
*Licensed Site Evaluator*



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The term “Wetland” is also defined in the City of Waterville Zoning Ordinance as “*Any swamps, marshes, bogs and similar areas*” and with Criteria 1. “*Wetlands are areas inundated or saturated by surface or ground water at a frequency and for a duration sufficient to support, and which under normal circumstances do support, a prevalence of wetland vegetation typically adapted for life in saturated soils.*” The Criteria 1. part of this definition is the same as the Maine Department of Environmental Protection’s (MDEP) definition of a “freshwater wetland”.

We did not find a definition in the Waterville Ordinances of a “swamp”.

### **Clarification of Wetland Classification**

BLT conducted identification and delineation of Protected Natural Resources (including wetlands) on the site in 2019, reported in March of 2020. Using the U.S. Fish and Wildlife Service’s Cowardin classification system<sup>1</sup>, we classified three types of wetlands on the site including:

1. PFO1E or palustrine, forested, broad-leaved deciduous wetlands with a seasonally flooded / saturated water regime;
2. PSS1E or palustrine, scrub-shrub, broad-leaved deciduous wetlands with a seasonally flooded / saturated water regime; and
3. PEM1E or palustrine, emergent, persistent (agricultural field) wetlands with a seasonally flooded / saturated water regime.

Photographs of each wetland type, as well as observed streams, are attached to the end of this letter.

We were not on the site in the spring, when evidence of hydrology is generally most visible due to precipitation and snowmelt conditions. However, our observations during the fall and early winter of 2019 were that most of the site wetlands had little or shallow organic matter accumulation, no water or drift lines, no drainage patterns, and had dense wetland vegetation that is typically not adapted to long-term water inundation. We also observed during these visits that most of the wetlands did not contain standing water and saturation was limited to interior wetland areas. These observations indicate

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<sup>1</sup> Cowardin, et al. 1979. United States, Fish and Wildlife Service, “Classification of Wetlands and Deepwater Habitats of the United States”. Biological services program ; FWS/OBS-79/31) FWS/OBS-79/31 . QH76.U54a 79/31 [QH104] 574.5'0973s [574.5'2632] 79-607795

that most of the wetlands on the site likely contain some shallow surface water, a water table to the soil surface, or saturated soils in the early growing season, but saturated or drier conditions from late spring to fall/early winter. Further evidence of this anticipated hydrology is that the wetlands are located on sloped land (minimum 1% grades) which is conducive to water movement through the wetlands without ponded standing water for longer time periods.

The exceptions to this are areas along the streams in the western and eastern portions of the site, where the intermittent streams likely overtop their banks seasonally and create wetter conditions in riparian areas, with a longer inundated hydroperiod. The wetland along the easternmost portion of the easternmost wetland has indications of a longer hydroperiod seasonally.

In either situation, the inundation hydroperiod is likely variable on a yearly basis in the wetlands based on precipitation amounts and duration, snowpack and air temperature.

### **Assessment and Findings**

The Waterville Zoning Ordinance states that mobile home parks cannot be located “close to swamps or other potential breeding places for insects or rodents”. The Ordinance does not define “swamps” or any of the other mentioned wetland types in the Wetland definition such as “marshes”, “bogs” or “similar areas”. It also does not define the term “close to”. The MDEP also does not specifically define the term “swamp” except that it is included in their wetland definition, similarly to the Waterville Zoning Ordinance.

The U.S. Environmental Protection Agency (EPA) definition of a “swamp”<sup>2</sup> is “any wetland dominated by woody plants”, and “swamps are characterized by saturated soils during the growing season and standing water during certain times of the year. The highly organic soils of swamps form a thick, black, nutrient-rich environment for the growth of water-tolerant trees such as Cypress (*Taxodium spp.*), Atlantic White Cedar (*Chamaecyparis thyoides*), and Tupelo (*Nyssa aquatica*). Some swamps are dominated by shrubs, such as Buttonbush or Smooth Alder. Plants, birds, fish, and invertebrates such as freshwater shrimp, crayfish, and clams require the habitats provided by

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<sup>2</sup> U.S.EPA Classification and Types of Wetlands, Types of Wetlands, Swamps tab. Accessed on-line on March 06, 2020 at <https://www.epa.gov/wetlands/classification-and-types-wetlands#swamps>.

*swamps. Many rare species, such as the endangered American Crocodile, depend on these ecosystems as well. Swamps may be divided into two major classes, depending on the type of vegetation present: shrub swamps and forested swamps.”*

*Also in the U.S. EPA definition is that forested swamps “are often inundated with floodwater from nearby rivers and streams. Sometimes, they are covered by many feet of very slowly moving or standing water. In very dry years they may represent the only shallow water for miles and their presence is critical to the survival of wetland-dependent species like Wood Ducks (*Aix sponsa*), River Otters (*Lutra canadensis*) and Cottonmouth Snakes (*Agkistrodon piscivorus*)” ... “forested and shrub swamps are often found adjacent to one another. The soil (in shrub swamps) is often water logged for much of the year and covered at times by as much as a few feet of water because this type of swamp is found along slow moving streams and in floodplains.”*

While the U.S. EPA definition of a swamp includes “*any wetland dominated by woody plants*”, which is most of the type of wetland observed at the site, upon further reading they are also described as being located in floodplains and along slow-moving (assumably perennial) streams and rivers and are inundated for a sufficient hydroperiod to support aquatic animal species such as fish, crayfish, clams, wood ducks, and otters. The wetlands observed on the site are dominated by woody plants, but do not appear to contain a permanent or semi-permanent hydroperiod which would support the diversity of aquatic macro-species as are indicated in the U.S. EPA definition.

In reviewing the Ordinance, as it pertains to location of mobile home parks, it would appear that the larger concern is that mobile home parks not be located near areas that contain ponded water for a duration sufficient to allow for the breeding of “*insects or rodents*”. In this, it is assumed that the City is referring to biting insects that require an aquatic environment to complete their life cycle, such as mosquitos and black flies; and to rodents such as brown rats which can become a nuisance in man-made environments. It should be noted that “insects” come in many varieties, and breed in many different environments including uplands and wetlands; and as well, the term “rodents” includes mice, moles, voles, rats, and squirrels, none of which (in Maine) require an aquatic environment to complete their life cycle.

Mosquitos generally lay their eggs in calm or stagnant water. The duration of completion of the aquatic phase of their life cycle (egg to larva to pupa to biting adult) is generally between about 10 to 20 days, depending on the species and water temperatures<sup>3</sup>.

Black flies lay their eggs in flowing water. The duration of completion of the aquatic phase of their life cycle (egg to larva to pupa to biting adult) is generally between about 38 to over 200 days, depending on the species and water temperatures<sup>4</sup>.

Considering the type of wetlands observed on the site, and anticipated springtime hydroperiod, it is possible that mosquitos could successfully breed in the eastern portion of the easternmost wetland area, where it is flooded along the intermittent stream, and where standing water may occur for a long enough duration to support mosquito development. This area is within the narrow area of the property where it is along West River Road, and continues off-site downslope towards West River Road. It is unlikely that black flies could develop in the streams observed on the site as they are intermittent streams.

Mice, moles and voles live in a variety of environments and it is likely that at least mice and moles currently live on the site and in the adjacent mobile home park developments. Squirrels were observed on the site, and it is likely the adjacent developments are also part of their habitat. Wooded uplands are common habitat for mice, squirrels and moles in Maine. These species can become a nuisance when in proximity to man-made environments, however, their existence in the man-made environment is more likely due to easy access to food, water and shelter than proximity to the types of wetlands observed on the site.

Brown rats naturally prefer damp environments such as riverbanks<sup>5</sup>, but can become a nuisance when in proximity to man-made environments. As with the other rodents discussed, their existence in the man-made environment is more likely due to easy access to food, water and shelter than proximity to the types of wetlands observed on the site.

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<sup>3</sup> <http://www.vdci.net/mosquito-biology-101-life-cycle>

<sup>4</sup> <https://extension.entm.purdue.edu/publichealth/insects/blackfly.html> and <https://extension.unh.edu/resource/black-flies-fact-sheet>

<sup>5</sup> Amori, G. & Cristaldi, M. (1999). Mitchell-Jones, Anthony J. (ed.). *The Atlas of European Mammals*. London: Academic Press. pp. 278–279. ISBN 978-0-85661-130-8.



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### **Summary**

In summary, the wetlands and streams observed on the site, with the exception of the easternmost portion of the easternmost wetland where it is along the intermittent stream, likely do not contain sufficient hydroperiod to support development of mosquitos and/or black flies, the type of biting insects it is assumed the City of Waterville Zoning Ordinance is concerned about as to the siting and location of mobile home parks. The easternmost portion of the easternmost wetland may contain sufficient hydroperiod to support development of mosquitos, however, the actual conditions of this area in the spring are unknown.

It is unlikely that the wetlands observed on the site, in and of themselves, would be an attractor to brown rats, the assumed nuisance rodent the City of Waterville Zoning Ordinance is concerned about as to the location of mobile home parks. Rats, if present, may be attracted to the site due to the proximity of potential food, shelter and water sources in man-made environments, and not solely on the existence of the types of wetlands observed on the site.

### **Closure**

We appreciate the opportunity to provide this clarification of wetland classification to you. If you have any questions, please contact us.

Sincerely,

**Burman Land & Tree, LLC**

A handwritten signature in cursive script, appearing to read "Aleita M. Burman". The signature is written in black ink on a white background.

Aleita M. Burman, C.W.S., C.S.S., L.S.E.  
Soil and Wetland Scientist

## **Appendix A**

### **Limitations**

## **Appendix A – Limitations**

The scope of Burman Land & Tree Company, LLC services has been limited to clarification of the classification of wetlands and streams delineated and classified on the L/A Properties, LLC Countryside Mobile Home Park Expansion properties on West River Road and Webb Road in Waterville, Maine, for the purpose of comparison to the City of Waterville Zoning Ordinance as it pertains to the siting of mobile home parks. This Report has been prepared for the exclusive use of L/A Properties, LLC and Dirigo Engineering. No warranty, expressed or implied, is made. The conclusions made in this report are based on the data obtained from the documents reviewed and the areas explored at the time of services.



**Photo 1:** Typical forested wetland. Photograph taken October 16, 2019.



**Photo 2:** Typical scrub-shrub wetland. Photograph taken October 16, 2019.



**Photo 3:** Typical emergent (bush hogged field) wetland. Photograph taken October 16, 2019.



**Photo 4:** Stream in eastern portion of site. Photograph taken October 22, 2019.



**Photo 5:** Stream in western portion of site. Photograph taken October 16, 2019.



**Photo 6:** Wetter portion of easternmost wetland. Photograph taken October 22, 2019.