

WETLAND DELINEATION REPORT

Date: June 17, 2025

Purpose: Resource Area Evaluation pursuant to the Massachusetts Wetlands Protection Act, M.G.L. c. 131, s. 40

Location: Map R-19 Parcel 18
64 Beaver Brook Road
Littleton, Massachusetts

Prepared For: Michael & Hannah Gruar

Prepared by: Seth Donohoe, Wetland Specialist
Dillis & Roy Civil Design Group, Inc.

Site Description:

The property (referred to herein as “the site”) is located on the westerly side of Beaver Brook Road in Littleton, Massachusetts. The site contains an existing dwelling with improved landscape areas. The site is abutted by a condominium development to the south, vacant woods to the west and a developed residential lot to the north. The Westford Town Line is located on the eastern part of the site.

Wetland Resource Areas:

A site visit was conducted on December 19, 2023 and in May 21, 2025 to evaluate the above referenced portion of the site with regard to the presence of Wetland Resource Areas, as defined by the Massachusetts Wetlands Protection Act (M.G.L. c. 131 s. 40) and Regulations (310 CMR 10.00) and by the Federal Clean Water Act (Section 404).

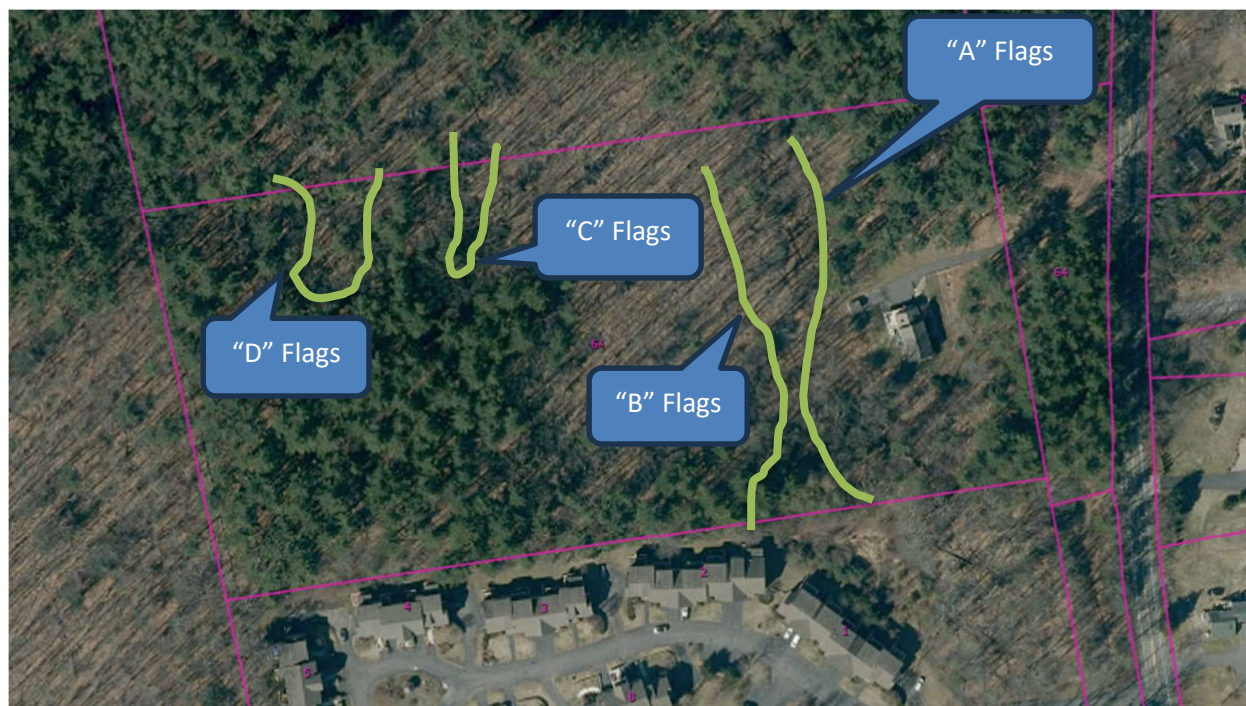
Soil observation points and vegetation were examined in areas where “saturated or inundated” conditions were noted and transects were run perpendicular to slope until upland soils and vegetation were encountered. The information gained from the observation points was then used to interpret soil borings and observations of vegetation made at flag locations along the wetland boundary. “the boundary of Bordering Vegetated Wetland is the line with which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist”.

The Department of Environmental Protection Publication: Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act provides further clarification for the methods used to establish the above referenced boundary. Vegetation and soils as well as indicators of groundwater hydrology were observed to establish that conditions on this site are “saturated or inundated”. The table below identifies wetland flags that were placed in the field along the edge of resource areas on the site:

The table to below identifies wetland flags that were placed in the field along the edge of the BVW:

	<i>Flag ID</i>	<i>Flag Numbers</i>
Bordering Vegetated Wetland (BVW)	Blue Flags	A1 – A16
Bordering Vegetated Wetland (BVW)	Blue Flags	B1 – B-15
Bordering Vegetated Wetland (BVW)	Blue Flags	C1 – C15
Bordering Vegetated Wetland (BVW)	Blue Flags	D1 – D17

Numbered flags outlined above were used to mark the boundary of wetland resource areas at the site. Visual observations indicate that the BVW associated with all flag series continue off the property to a broader BVW north of the site. Below is an image of the site with general location of flag series detailed within this report:



2023 MassMapper Orthophoto with approximate locations of wetlands indicated

“A” series flags beginning with A-1 and ending with A-16 were set along the eastern edge of the BVW based upon analysis of vegetation and presence or absence of hydric soils. Flag A1 is located near the northerly property line of the site. The flag series continues to the south through a wooded area until it reaches the clearing rear of the existing dwelling. Landscaped areas were located upgradient of portions of the BVW in the vicinity of Flags A-6 through A-9. A Dutch auger was utilized to determine the absence of hydric soils within the landscaped areas. Soils upgradient of the BVW exhibited a high chroma “B” horizon of 10 YR 4/6 with redox absent to a depth of 24” confirming that a BVW was not located within the landscaped area. The flag series continues to the south and terminates at flag A-16 which near a culvert which appears to be a stormwater discharge associated with the condominium development to the south of the site. Flow from the discharge has resulted in an eroded channel within a portion of the BVW. This is most visible along flags A-10 through A-15 and B-11 through B-15. An image detailing the area defined by the “A” series flags is below:



Approximate edge
of BVW viewed
looking north from
flag A9

View looking north from flag A-9 on December 19, 2023.

“B” series flags are located on the westerly side of the BVW directly rear of the existing dwelling. Flag B-1 is located near the northerly property line of the site. This flag series continues through a wooded area to flag B-15 near the southerly property line. As noted above, erosion and channelization from culvert flows was observed in the vicinity of B-11 through B-15. The flag series is located within an area dominated by a dense red maple (*Acer Rubrum*, FAC) overstory which transitions to an white pine (*Pinus Strobus*, FACU) overstory in adjacent upland areas. Areas of standing water, buttressed roots and water stained leaves were present within the area flagged as BVW.

Bordering Vegetated Wetland Determination Forms have been included with this report.

“C” and “D” series wetlands are located within the wooded area on the northwesterly portion of the site. “D” series BVW was observed to be a seep at the toe of a slope with sensitive fern (*Onoclea sensibilis*, FACW) and gray alder (*Alnus incana*, FACW). This flag series was observed to connect to broader wetland north of the site. Similarly, the “C” series was observed to be a fingerlike extension of the broader wetland north of the site.

Based on the most recently available Flood Insurance Rate map for the Town of Littleton, the area subject to this delineation report does not contain areas subject to inundation during the 100-year frequency storm event, which would be considered Bordering Land Subject to Flooding. This information was obtained from Firm Panel 25017C0228E effective on June 4, 2010. The current USGS Map shows that there are no perennial streams or rivers located on the site.

In accordance with regulation 310 CMR 10.59, no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species. Specified habitat sites of rare species have been identified by the Massachusetts Natural Heritage and Endangered Species Program of the Division of Fisheries and Wildlife. The Massachusetts Natural Heritage Atlas 15th Edition indicates that there are no portions of the site identified as habitat sites of rare species and wildlife. There are no certified vernal pools on or near the project site.

It is our opinion that the field delineation described above is a complete and accurate representation of the Wetland Resource Areas for the project site. This determination was based on observations of existing conditions evident as the time of the site evaluation. The regulatory authority for determining wetland jurisdiction rests with local, state, and federal authorities.

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: _____ City/Town: _____ Sampling Date: _____
 Applicant/Owner: _____ Sampling Point or Zone: _____
 Investigator(s): _____ Latitude / Longitude: _____
 Soil Map Unit Name: _____ NWI or DEP Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? (If yes, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes _____ No _____	Is the Sampled Area within a Wetland?	Yes _____ No _____
Hydric Soils criterion met?	Yes _____ No _____		
Wetlands hydrology present?	Yes _____ No _____		
Remarks, Photo Details, Flagging, etc.:			

HYDROLOGY

Field Observations:		
Surface Water Present?	Yes _____ No _____	Depth (inches) _____
Water Table Present?	Yes _____ No _____	Depth (inches) _____
Saturation Present (including capillary fringe)?	Yes _____ No _____	Depth (inches) _____
Wetland Hydrology Indicators		
Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
_____ Water-stained leaves _____ Evidence of aquatic fauna _____ Iron deposits _____ Algal mats or crusts _____ Oxidized rhizospheres/pore linings _____ Thin muck surfaces _____ Plants with air-filled tissue (aerenchyma) _____ Plants with polymorphic leaves _____ Plants with floating leaves _____ Hydrogen sulfide odor	_____ Hydrological records _____ Free water in a soil test hole _____ Saturated soil _____ Water marks _____ Moss trim lines _____ Presence of reduced iron _____ Woody plants with adventitious roots _____ Trees with shallow root systems _____ Woody plants with enlarged lenticels	_____ Direct observation of inundation _____ Drainage patterns _____ Drift lines _____ Scoured areas _____ Sediment deposits _____ Surface soil cracks _____ Sparsely vegetated concave surface _____ Microtopographic relief _____ Geographic position (depression, toe of slope, fringing lowland)
Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):		

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

VEGETATION – Use both common and scientific names of plants.

<u>Tree Stratum</u>		Plot size _____		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name	Scientific name						
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
				_____ = Total Cover			
<u>Shrub/Sapling Stratum</u>		Plot size _____		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name	Scientific name						
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
				_____ = Total Cover			
<u>Herb Stratum</u>		Plot size _____		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name	Scientific name						
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
				_____ = Total Cover			

VEGETATION – continued.

<u>Woody Vine Stratum</u>		Plot size _____			
		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name		Scientific name			
1.					
2.					
3.					
4.					
_____ = Total Cover					

<u>Rapid Test:</u> Do all dominant species have an indicator status of OBL or FACW? Yes _____ No _____				
<u>Dominance Test:</u>	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes _____ No _____
<u>Prevalence Index:</u>		Total % Cover (all strata)	Multiply by:	Result
	OBL species		X 1	=
	FACW species		X 2	=
	FAC species		X 3	=
	FACU species		X 4	=
	UPL species		X 5	=
	Column Totals	(A)		(B)
Prevalence Index		B/A =		Is the Prevalence Index ≤ 3.0? Yes _____ No _____
Wetland vegetation criterion met? Yes _____ No _____				

Definitions of Vegetation Strata

- Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height
- Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall
- Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall
- Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains ²Location: PL=Pore Lining, M=Matrix

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks:

Hydric Soils criterion met? Yes _____ No _____

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