LEC WETLANDS WILDLIFE WATERWAYS

March 28, 2024

Email (Janelle.snider@intertek.com)

Ms. Janelle Snider
Intertek-PSI
17 British American Boulevard
Latham, NY 12110

Re: Wetland Resource Area Analysis
34 Eskow Road and 224 SW Cutoff
Worcester, Massachusetts

[LEC File #: IPSI\24-101.04]

Dear Ms. Snider:

Pursuant to your request, LEC Environmental Consultants, Inc., (LEC) conducted a site evaluation and Wetland Resource Area Analysis determination at 34 Eskow Road and 224 SW Cutoff in Worcester, Massachusetts. The purpose of the evaluation was to determine Wetland Resource Area boundaries within the property. The site evaluation was conducted in accordance with the *Massachusetts Wetlands Protection Act* (M.G.L. c. 131, s. 40, the *Act*) and its implementing Regulations (310 CMR 10.00, the *Act Regulations*), the *City of Worcester Wetlands Protection Ordinance* and *Wetlands Protection Regulations* (the *Ordinance*), and the *Federal Clean Water Act* (33 U.S.C. 1344, s.404, the *CWA*) and its *Regulations* (33 CFR and 40 CFR, the *CWA Regulations*). LEC also employed the criteria provided in *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act* (September 2022) and the *Field Indicators for Identifying Hydric Soils in New England* (Version 4, June 2020). The following report provides a general site description, wetland delineation methodology, and a description of the Wetland Resource Areas.

General Site Description

The approximately 30.8-acre, partially developed site is located north of Southwest Cutoff (Route 20), east of Massasoit Road, south of McClintock Road within the southeastern portion of Worcester (Attachment A, Figure 1). Residential development occurs to the north and west, while dense industrial and commercial development occur to the south and east (Attachment A, Figure 2). An unpaved gravel driveway with associated stormwater management features provides access to the site from Eskow Road. The western half of the site is mostly undeveloped other than the driveway and stormwater features, while the eastern half is mostly developed: graded and devoid of most natural vegetation other than fringing forest along the northern and eastern edges.

RECEIVED
By Mattie VandenBoom at 4:56 pm, May 07, 2024

The main hydrologic features associated with the site include an intermittent stream and associated Bordering Vegetated Wetland (BVW) system. The stream flows southward from the northwest corner of the site, along the western property boundary, and ultimately enters a culvert near the southwest corner of the property. Stormwater management features, associated with the access driveway, are located on either side of the road. Drainage from the east of the road is conveyed toward the stream by a culvert which directs drainage westward.

Vegetation within forested uplands include a canopy of northern red oak (*Quercus rubra*), black birch (*Betula lenta*), and red maple (*Acer rubrum*) with scattered individuals of white oak (*Quercus alba*) and black gum (*Nyssa sylvatica*). The understory includes saplings from the canopy, witch-hazel (*Hammamelis virginiana*), black huckleberry (*Gaylusaccia baccata*), and low bush blueberry (*Vaccinium angustifolium*). Due to observations occurring outside the growing season, identification of ground cover was limited to clubmoss (*Lycopodium* sp.) and seedlings from the canopy and understory.

According to the Natural Resource Conservation Service (NRCS) Soil Survey (Web Soil Survey and Worcester County, Northeastern Part, Massachusetts), the site is largely comprised of Chatfield-Hollis-Rock Outcrop complex, 0 to 15 percent slopes soils. LEC inspected soil conditions within the forested uplands using a hand-held, Dutch-style soil auger and observed a loam topsoil layer (A horizon) measuring 6 inches thick with a soil matrix color of 10YR 2/1. This A horizon is directly underlain by fine sandy loam subsoil (B horizon) with a soil matrix color of 10YR 3/4. No redoximorphic features or other indicators of hydrology were observed within the upland soil profile, and therefore, does not qualify as 'hydric' in accordance with the *Field Indicators Guide*.

Natural Heritage and Endangered Species Program (NHESP) Designation

According to the 15th Edition (August 1, 2021) of the Natural Heritage Endangered Species Program (NHESP) *Massachusetts Natural Heritage Atlas*, the site is not located within *Estimated Habitat of Rare Species* or *Priority Habitat of Rare Species*. In addition, there are no mapped certified vernal pools on or in proximity to the site (Attachment A, Figure 2).

Floodplain Designation

According to the July 4, 2011 Federal Emergency Management Agency Flood Insurance Rate Map for Middlesex County, Massachusetts (Map No: 25027C807E), the property is located within Zone X [unshaded]: Areas determined to be outside the 0.2% annual chance floodplain (Attachment A, Figure 3).

Intermittent Stream Status

According to the *Act Regulations* [310 CMR 10.58(2)(a)(1)(b and c)], b. *A river or stream shown as intermittent or not shown on the current USGS map or more recent map provided by the Department, that has a watershed size greater than or equal to one square mile, is perennial. c. A stream shown as intermittent or not shown on the current USGS map or more recent map provided by the Department, that has a watershed size less than one square mile, is intermittent unless: i. The stream has a watershed size of at least ½ (0.50) square mile and has a predicted flow rate greater than or equal to 0.01 cubic feet per*

second at the 99% flow duration using the USGS Stream Stats method. The issuing authority shall find such streams to be perennial…

The current USGS map (USGS Worcester South Quadrangle, 2021) shows the unnamed stream as intermittent.

In accordance with 310 CMR 10.58(2)(a)(1)(c), in order to confirm the intermittent status of the stream, LEC utilized the USGS Water Resources Web Application, StreamStats, to calculate the contributing watershed area and 99% flow duration. The StreamStats Application determined a 0.1 square mile watershed and a predicted flow rate less than 0.01 cubic feet per second at the 99% flow duration (Attachment B), which does not meet the criteria for a perennial stream status. As such, LEC confirms the intermittent status of the onsite portions of the unnamed stream.

Wetland Boundary Determination

LEC conducted a site evaluation on March 20, 2024 to identify and characterize protectable Wetland Resource Areas and to delineate the Bordering Vegetated Wetland (BVW) associated with the stream. Based on our observations, LEC determined that the Wetland Resource Areas associated with the site include BVW, Bank, and Isolated Vegetated Wetland (IVW). The extent of Wetland Resource Areas was determined through observations of existing plant communities, and hydrologic indicators, in accordance with the *Act*, the *Act Regulations*, the *Ordinance*, the *CWA*, and the *CWA Regulations*. LEC delineated the BVW and IVW boundaries with sequentially numbered, blaze orange surveyor's tape with the words "LEC Resource Area" printed in black. LEC flagging stations A1 through A21, B1 through B78, and D1 through D7 delineate the BVW boundaries as they relate to the site. Flagging stations E1 through E5 and F1 through F12 delineate IVW boundaries as they relate to the site. Stream Bank interior to the BVW was not delineated.

Bordering Vegetated Wetland

BVW is defined in 310 CMR 10.55(2) as *freshwater wetlands which border on creeks, rivers, streams, ponds, and lakes. In these areas soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The boundary of BVW is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist.*

The *Ordinance* defers to the above definition in the *Act Regulations*, with the addition of the following phrase: *except that where vegetation has been altered, the presence of hydric soils shall be considered in determining the boundary of a bordering vegetated wetland.*

A forested wetland borders the stream and contains a canopy of American elm (*Ulmus americana*) and red maple (*Acer rubrum*). The understory contains black gum saplings, and shrubs including highbush blueberry (*Vaccinium corymbosum*), speckled alder (*Alnus incana*), northern arrowwood (*Viburnum recognitum*), spicebush (*Lindera benzoin*), winterberry (*Ilex verticillate*), and saplings from the canopy.

The herbaceous layer was sparse due to the time of year; however, sensitive fern (*Onoclea sensibilis*) and skunk cabbage (*Symplocarpus foetidus*) could be seen emerging within the wetland soils.

LEC inspected soil conditions using a hand-held, Dutch-style soil auger within wetland areas proximate to the BVW boundary and generally observed a 10-inch thick, mucky topsoil (O horizon) with a soil matrix color of 10YR 2/1. The topsoil is generally underlain by a weathered, silt loam subsoil (C horizon) with a soil matrix color of 5Y 4/1. Redoximorphic concentrations, soil saturation, and free water within the observation holes often were observed. The soil profiles within the BVW are considered 'hydric' in accordance with the *Field Indicators Guide.* DEP Field Data Forms for a representative transect across LEC flagging station B51 are included in Attachment C.

Non-Jurisdictional Isolated Vegetated Wetlands

Two non-jurisdictional IVWs occur on site. The E series appears to be natural in origin, while F-series wetland appears to have been created by discharges from a stormwater basin immediately north of the wetland. The IVWs are not protected under the *Act* or *Ordinance* unless they qualify as Isolated Land Subject to Flooding (ILSF). However, IVWs may be federally protected under the *Clean Water Act* (33 U.S.C. § 1251 et seq.). As such, LEC identified and delineated the IVW boundaries.

The E-series IVW is located within the northeastern portion of the site within a topographic depression west of the terminus of Balis Avenue. At the time of LEC's site evaluation, up to 2± inches of standing water was observed within the IVW. The IVW is densely vegetated with speckled alder and winterberry.

The F-series IVW is located on the northern property boundary, north of a large stormwater basin. At the time of the site evaluation, no standing water was observed within the IVW, but evidence of periodic inundation was observed. The IVW contains red maple saplings throughout its interior, and gray birch saplings (*Betula populifolia*) and willow (*Salix* sp.) shrubs along its periphery.

Isolated Land Subject to Flooding

According to the *Act Regulations* [310 CMR 10.57 (2) (b)], ILSF is defined as *an isolated depression or closed basin without an inlet or an outlet. It is an area which at least once a year confines standing water to a volume of at least ¼ acre-feet and to an average depth of at least six inches.*

The *Ordinance* defines ILSF as *an isolated depression or closed basin without an inlet or an outlet which at least once a year confines standing water to a volume of at least 1/8 acre-feet*.

The E- and Fseries IVWs described above appeared to be too small in volume and, based on topography, unlikely to hold the minimum volume of water to be considered ILSFs under the *Act* or more restrictive *Ordinance*; however, engineering calculations of their respective volumes should be performed to confirm such status.

Summary

LEC conducted a site evaluation and wetland delineation on March 20, 2024 to determine the extent of Wetland Resource Areas subject to jurisdiction under the *Act* and *Act Regulations*, the *Ordinance,* the

CWA, and the *CWA Regulations*. Based on our site evaluations and review of pertinent maps, LEC determined that the Wetland Resource Areas associated with the site include BVW, Bank, and IVW. Any proposed alteration within the Wetland Resource Areas or the associated 100-foot Buffer Zone, and any work within 100 feet of a catch basin, may require filing the necessary permit applications with the Worcester Conservation Commission and/or the Massachusetts Department of Environmental Protection. Any proposed fill within any of the Wetland Resource Areas may require filing the necessary permit application with the Department of the Army Corps of Engineers.

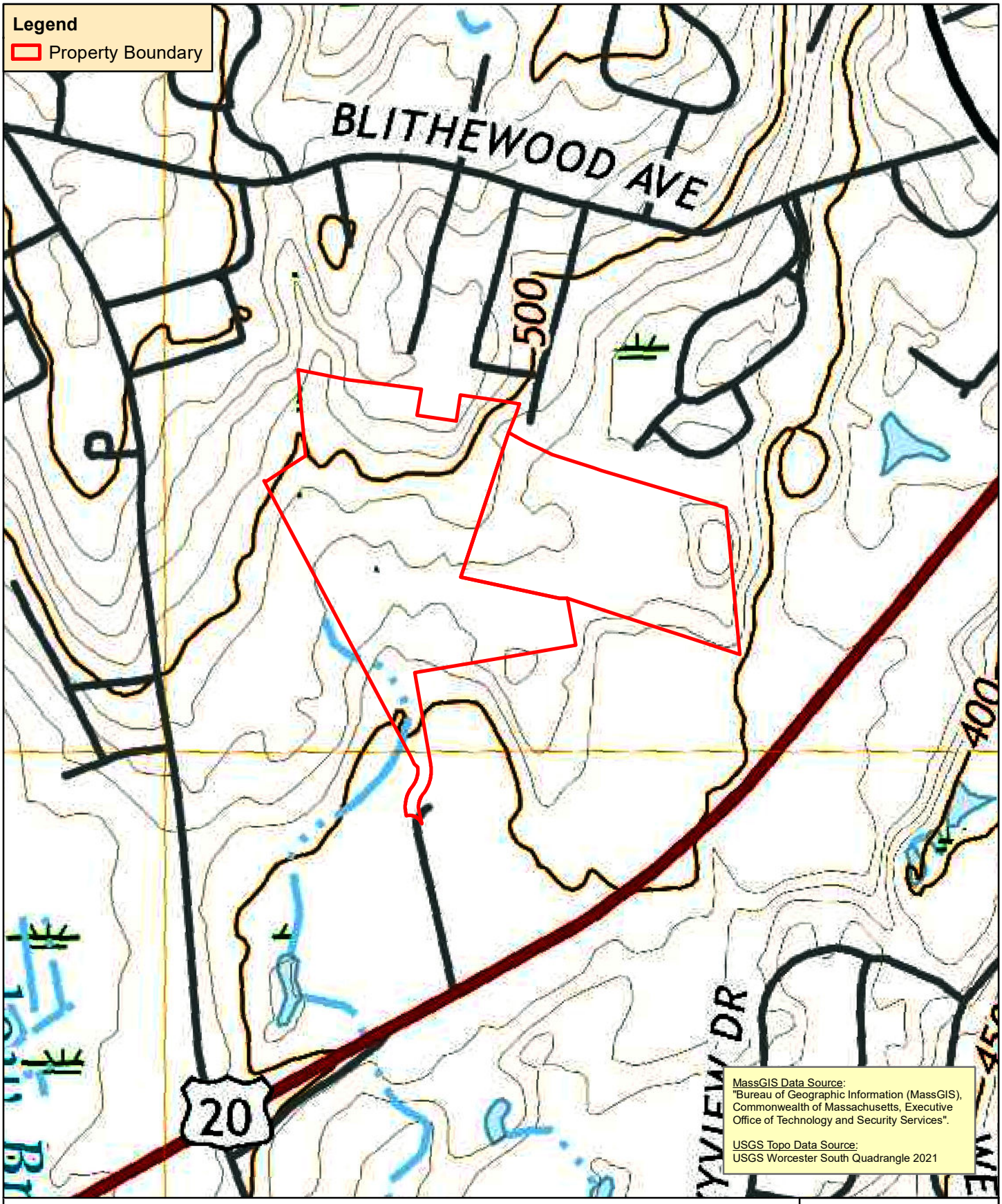
Sincerely,

LEC Environmental Consultants, Inc.

Dan Wells
Senior Wildlife/Wetland Scientist

Attachment A

Figure 1: USGS Topographic Map
Figure 2: Orthophoto View of Site
Figure 3: National Flood Hazard Layer FIRMette



LEC Environmental Consultants, Inc.
Wakefield, MA 781.245.2500
www.lecenvironmental.com

Figure 1
USGS Topographic Map

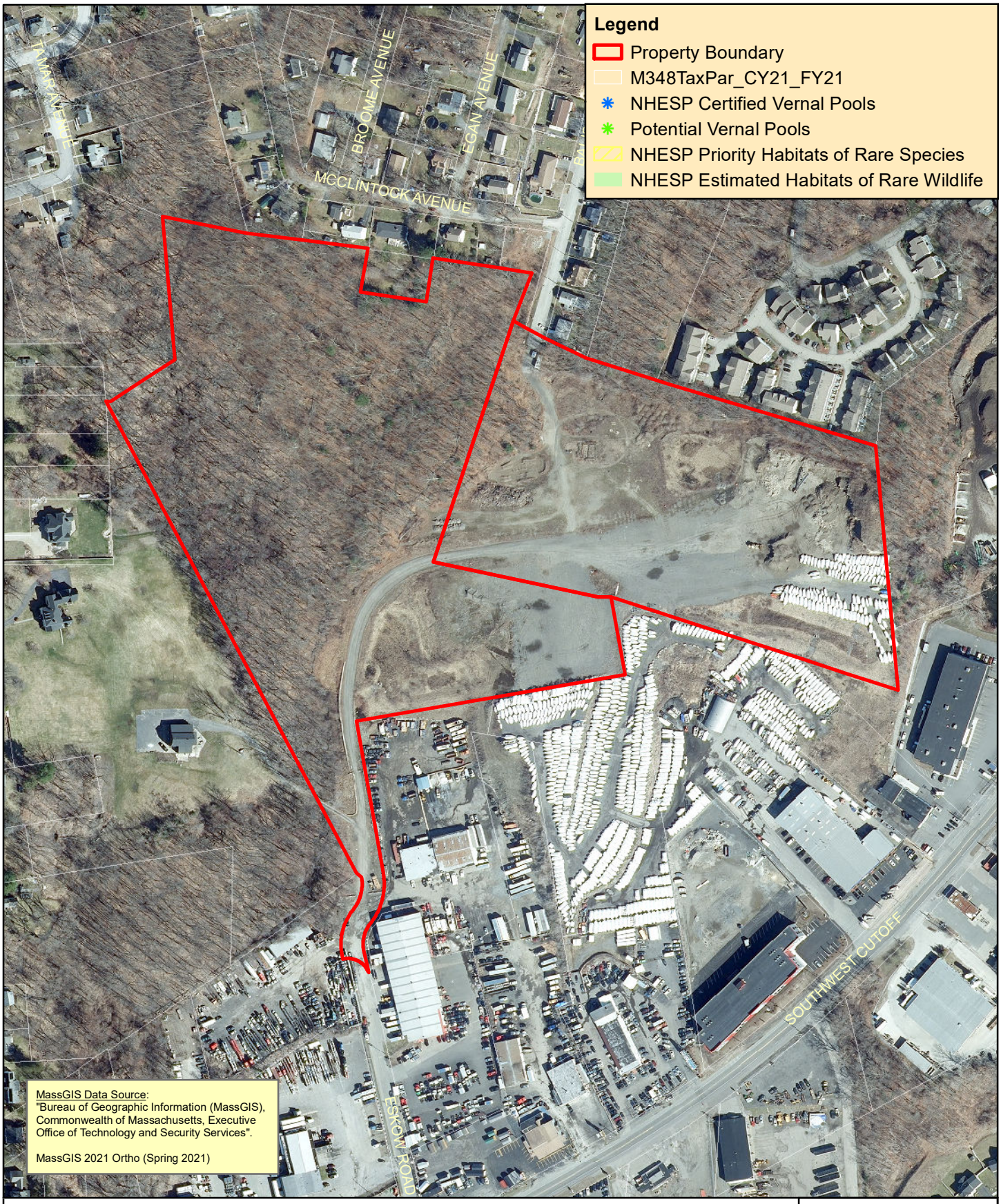
34 Eskow Road and 224 SW Cutoff
Worcester, MA

Date: 3/28/2024

N

1 inch = 500 feet

0 125 250 500 Feet



LEC Environmental Consultants, Inc.
Wakefield, MA 781.245.2500
www.lecenvironmental.com

Figure 2
Orthophoto View of Site

34 Eskow Road and 224 SW Cutoff
Worcester, MA

Date: 3/28/2024

N

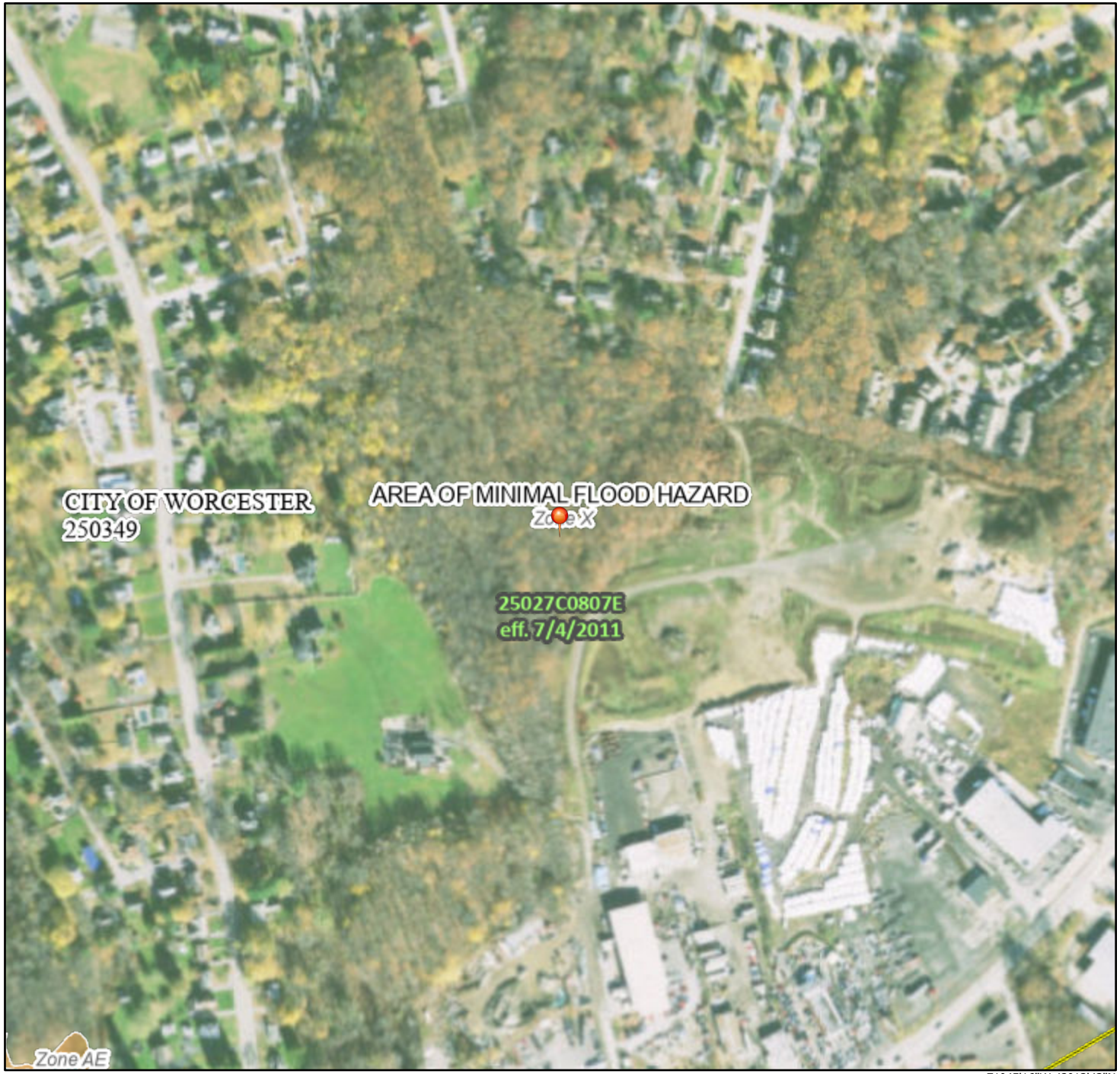
1 inch = 300 feet

0 75 150 300 Feet

National Flood Hazard Layer FIRMette

FEMA

71°45'53"W 42°14'9"N



71°45'16"W 42°13'43"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/28/2024 at 11:16 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

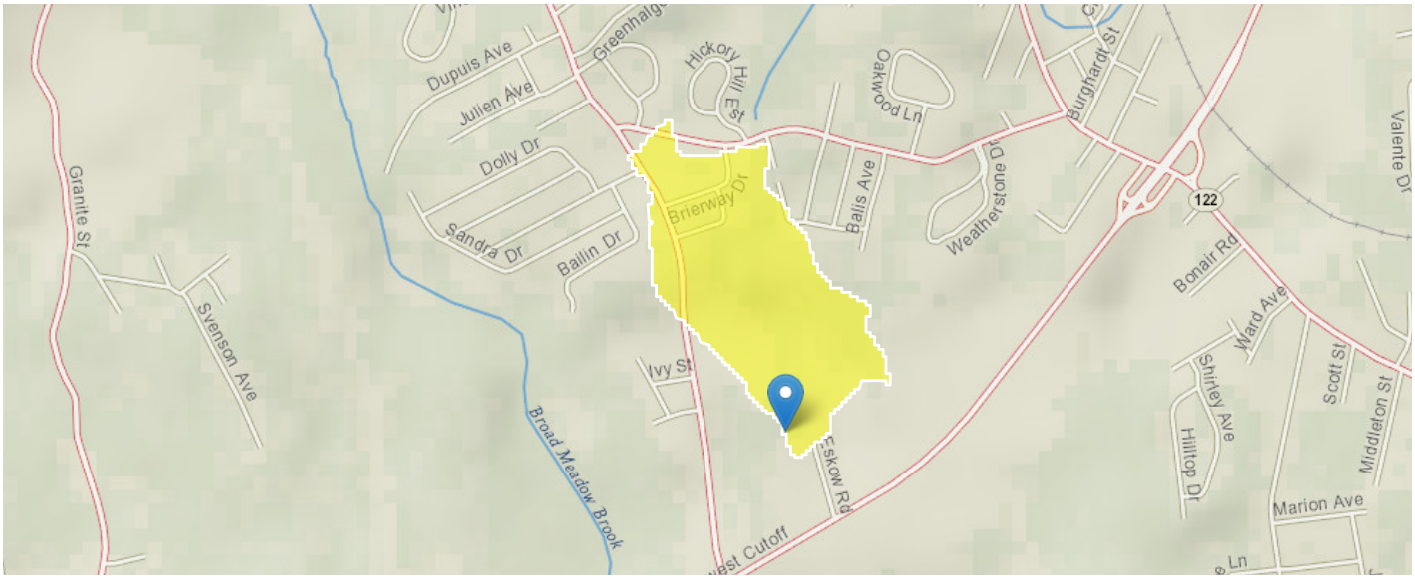
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment B

USGS StreamStats Report

StreamStats Report 34 Eskow and 224 SW Cutoff

Region ID: MA
Workspace ID: MA20240328144201123000
Clicked Point (Latitude, Longitude): 42.22943, -71.76027
Time: 2024-03-28 10:42:23 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLDEM250	Mean basin slope computed from 1:250K DEM	4.189	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0	square mile per mile
DRNAREA	Area that drains to a point on a stream	0.0994	square miles
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

Flow-Duration Statistics

Flow-Duration Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.0994	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	4.189	percent	0.32	24.6

Flow-Duration Statistics Disclaimers [Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Flow-Duration Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
50 Percent Duration	0.0906	ft^3/s
60 Percent Duration	0.0509	ft^3/s
70 Percent Duration	0.0226	ft^3/s
75 Percent Duration	0.0156	ft^3/s
80 Percent Duration	0.0117	ft^3/s
85 Percent Duration	0.0078	ft^3/s
90 Percent Duration	0.00496	ft^3/s
95 Percent Duration	0.00249	ft^3/s
98 Percent Duration	0.00144	ft^3/s
99 Percent Duration	0.000926	ft^3/s

Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.19.4
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment C

DEP BVW Field Data Forms

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: 34 Eskow Road & 224 SW Cutoff City/Town: Worcester Sampling Date: 3/20/24

Applicant/Owner: _____ Sampling Point or Zone: Upgradient of B53

Investigator(s): Dan Wells Latitude / Longitude: not recorded

Soil Map Unit Name: Chatfield-Hollis-Rock outcrop complex, 0-15% slopes NWI or DEP Classification: N/A

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	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[ ] Free water in a soil test hole	[ ] Drainage patterns
[ ] Iron deposits	[ ] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[ ] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[ ] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[ ] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[ ] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[ ] Geographic position (depression, toe of slope, fringing lowland
[ ] Hydrogen sulfide odor		

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.

Form Revised July 2023

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30' radius

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Red oak	Quercus rubra	FACU	63.0	Yes	No
2. Black birch	Betula lenta	FACU	20.5	Yes	No
3.					
4.					
5.					
6.					
7.					
8.					
9.					

83.5 = Total Cover

Shrub/Sapling Stratum Plot size 15' radius

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Tupelo	Nyssa sylvatica	FAC	10.5	Yes	Yes
2. Witch-hazel	Mamamelis virginiana	FACU	10.5	Yes	No
3.					
4.					
5.					
6.					
7.					
8.					
9.					

21.0 = Total Cover

Herb Stratum Plot size none

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

0.0 = Total Cover

VEGETATION – continued.

Woody Vine Stratum	Plot size none				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1.					
2.					
3.					
4.					
		0.0 = Total Cover			

Rapid Test: Do all dominant species have an indicator status of OBL or FACW?				Yes ☐ No ☐
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species?
	4	1		Yes ☐ No ☑
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species		X 1	= 0.00
	FACW species		X 2	= 0.00
	FAC species		X 3	= 0.00
	FACU species		X 4	= 0.00
	UPL species		X 5	= 0.00
	Column Totals	(A) 0		(B) 0
Prevalence Index		B/A = 0.00		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 %

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Location[2]		
0-6	10YR 2/1	100.00					loam	
6-14	10YR 3/4	100.00					fine sandy loam	

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

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☐ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

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

Remarks:

Hydric Soils criterion met? **Yes** ☐ **No** ☑

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: 34 Eskow Road & 224 SW Cutoff City/Town: Worcester Sampling Date: 3/20/24

Applicant/Owner: _____ Sampling Point or Zone: Down-gradient of B53

Investigator(s): Dan Wells Latitude / Longitude: not recorded

Soil Map Unit Name: Chatfield-Hollis-Rock outcrop complex, 0-15% slopes NWI or DEP Classification: Wooded swamp deciduous

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	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[ ] Free water in a soil test hole	[✓] Drainage patterns
[ ] Iron deposits	[ ] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[ ] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[ ] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[ ] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[ ] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[ ] Geographic position (depression, toe of slope, fringing lowland
[ ] Hydrogen sulfide odor		

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.

Form Revised July 2023

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30' radius

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Red maple	Acer rubrum	FAC	63.0	Yes	Yes
2. American elm	Ulmus americana	FACW	20.5	Yes	Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					

83.5 = Total Cover

Shrub/Sapling Stratum Plot size 15' radius

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Tupelo	Nyssa sylvatica	FAC	3.0	Yes	Yes
2. Highbush blueberry	Vaccinium corymbosum	FACW	3.0	Yes	Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					

6.0 = Total Cover

Herb Stratum Plot size 5' radius

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Sensitive fern	Onoclea sensibilis	FACW	3.0	Yes	Yes
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

3.0 = Total Cover

VEGETATION – continued.

Woody Vine Stratum	Plot size none				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1.					
2.					
3.					
4.					
		0.0 = Total Cover			

Rapid Test: Do all dominant species have an indicator status of OBL or FACW?				Yes ☐ No ☐
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species?
	5	5		Yes ☑ No ☐
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species		X 1	= 0.00
	FACW species		X 2	= 0.00
	FAC species		X 3	= 0.00
	FACU species		X 4	= 0.00
	UPL species		X 5	= 0.00
	Column Totals	(A) 0		(B) 0
Prevalence Index		B/A = 0.00		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 %

Sampling Point Down-gradient of B53

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Location[2]		
0-10	10YR 2/1	100.00					sapric muck	
10-12	10YR 4/1	100.00					silt loam	

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

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☑ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☐ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

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

Remarks:

Hydric Soils criterion met? **Yes** ☑ **No** ☐