

## **Wetland Delineation Sheets**

# DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: \_\_\_\_\_ Prepared by: B & C Associates Inc. Project location: Athens Street, Stow DEP File #: \_\_\_\_\_

Check all that apply:

- ☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only  
☒ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II  
☐ Method other than dominance test used (attach additional information)

**Section I. Vegetation** Observation Plot Number: 1 Transect Number: A Date of Delineation: 4/24/2019

A. Sample Layer and Plant Species (by common/scientific name)			B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category *	
Herbaceous:	Hayscented Fern	<i>Dennstaedtia punctilobula</i>	85.5	72%	Yes	UPL	
	Canada Mayflower	<i>Maianthemum canadense</i>	20.5	17%	No	FAC-	
	Spinulose Woodfern	<i>Dryopteris spinulosa</i>	10.5	9%	No	FAC+	*
	Poison Ivy	<i>Toxicodendron radicans</i>	3.0/119.5	3%	No	FAC	*
Shrubs:	Shagbark Hickory	<i>Carya ovata</i>	3.0	50%	Yes	FACU-	
	White Oak	<i>Quercus alba</i>	3.0/6.0	50%	Yes	FACU-	
Saplings:	None						
Lianas:	Oriental Bittersweet	<i>Celastrus orbiculatus</i>	10.5/10.5	100%	Yes	UPL	
Overstory:	White Pine	<i>Pinus strobus</i>	5113.7	96%	Yes	FACU	
	Red Maple	<i>Acer rubrum</i>	218.0/5321.7	4%	No	FAC	*

\* Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

## Vegetation conclusion:

Number of dominant wetland indicator plants: 0 Number of dominant non-wetland Indicator plant: 5

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? NO

## Section II. Indicators of Hydrology

### Hydric Soil Interpretation

#### 1. Soil Survey

Is there a published soil survey for this site? YES

title/date: Middlesex County 9/07/2018

map number: 23

soil type mapped: Merrimack fine sandy loam

hydric soil inclusions:

Are field observations consistent with soil survey? YES

Remarks:

#### 2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	0-4"	10 YR 3/2	
B	4-16"	10 YR 4/6	

Remarks:

3. Other: 17' 2" to Wetland Flag # 108  
23' 0" to Wetland Flag # 109

Conclusion: Is soil hydric? NO

#### Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: \_\_\_\_\_
- ☐ Depth to free water in observation hole: \_\_\_\_\_
- ☐ Depth to soil saturation in observation hole: \_\_\_\_\_
- ☐ Water marks: \_\_\_\_\_
- ☐ Drift lines: \_\_\_\_\_
- ☐ Sediment deposits: \_\_\_\_\_
- ☐ Drainage patterns in BVW: \_\_\_\_\_
- ☐ Oxidized rhizospheres: \_\_\_\_\_
- ☐ Water-stained leaves: \_\_\_\_\_
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other):  
\_\_\_\_\_
- ☐ Other: \_\_\_\_\_

#### Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ number of non-wetland indicator plants	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Wetland hydrology present: hydric soil present	<input type="checkbox"/>	<input checked="" type="checkbox"/>
other indicators of hydrology present	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Sample location is in a BVW</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Submit this form with the Request for Determination of Applicability or Notice of Intent

# DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: \_\_\_\_\_ Prepared by: B & C Associates Inc. Project location: Athens Street, Stow DEP File #: \_\_\_\_\_

Check all that apply:

- ☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☒ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ☐ Method other than dominance test used (attach additional information)

**Section I. Vegetation** Observation Plot Number: 2 Transect Number: A Date of Delineation: 4/24/2019

A. Sample Layer and Plant Species (by common/scientific name)			B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category *	
Herbaceous:	Canada Mayflower	<i>Maianthemum canadense</i>	20.5	34%	Yes	FAC-	
	Spinulose Woodfern	<i>Dryopteris spinulosa</i>	10.5	17%	Yes	FAC+	*
	Jack-in-the-Pulpit	<i>Arisaema atrorubens</i>	10.5	17%	Yes	FACW-	*
	Poison Ivy	<i>Toxicodendron radicans</i>	10.5	17%	Yes	FAC	*
	Sensitive Fern	<i>Onoclea sensibilis</i>	3.0	5%	No	FACW	*
	Star Flower	<i>Trientalis borealis</i>	3.0	5%	No	FAC	*
	Sedges	<i>Carex sp.</i>	3.0/61.0	5%	No	FACW+	*
Shrubs:	Spicebush	<i>Lindera benzoin</i>	20.5	77%	Yes	FACW-	*
	White Oak	<i>Quercus alba</i>	3.0	11%	No	FACU-	
	Black Birch	<i>Betula lenta</i>	3.0/26.5	11%	No	FACU	
Saplings:	Black Birch	<i>Betula lenta</i>	20.5/20.5	100%	Yes	FACU	
Lianas:	Oriental Bittersweet	<i>Celastrus orbiculatus</i>	20.5/20.5	100%	Yes	UPL	
Overstory:	White Pine	<i>Pinus strobus</i>	2785.0	86%	Yes	FACU	
	Red Maple	<i>Acer rubrum</i>	438.3/3223.3	14%	No	FAC	*

\* Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

## Vegetation conclusion:

Number of dominant wetland indicator plants: 4 Number of dominant non-wetland Indicator plant: 4

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? YES

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent.

BC 1904-01

MA DEP;3/95

## Section II. Indicators of Hydrology

### Hydric Soil Interpretation

#### 1. Soil Survey

Is there a published soil survey for this site? YES

title/date: Middlesex County 9/07/2018

map number: 23

soil type mapped: Scarboro mucky fine sandy loam

hydric soil inclusions:

Are field observations consistent with soil survey? YES

Remarks:

#### 2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	0-12"	10 YR 2/2	
O <sub>A</sub>	12-16"	10 YR 2/1	

Remarks:

3. Other: 20' 0" to Wetland Flag # 108  
6' 6" to Wetland Flag # 109  
22' 1" Downgradient from A1

Conclusion: Is soil hydric? YES

#### Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: \_\_\_\_\_
- ☐ Depth to free water in observation hole: \_\_\_\_\_
- ☒ Depth to soil saturation in observation hole: 8"
- ☐ Water marks: \_\_\_\_\_
- ☐ Drift lines: \_\_\_\_\_
- ☐ Sediment deposits: \_\_\_\_\_
- ☒ Drainage patterns in BVW: \_\_\_\_\_
- ☐ Oxidized rhizospheres: \_\_\_\_\_
- ☒ Water-stained leaves: \_\_\_\_\_
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other):  
\_\_\_\_\_
- ☐ Other: \_\_\_\_\_

#### Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ number of non-wetland indicator plants	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wetland hydrology present: hydric soil present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
other indicators of hydrology present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample location is in a BVW	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Submit this form with the Request for Determination of Applicability or Notice of Intent

April 23, 2020

Goshen Lane LLC  
148 Park St  
North Reading, MA 01854

Re: Wetland Border Report  
Athens Road, Stow, MA

Dear Goshen Lane LLC:

During the month of March and April 2020 during no snow and un-frozen ground conditions the wetland resources were delineated on land located at the above referenced site (refer to enclosed locus maps). The wetland border was flagged using the criteria in the most recent edition of MA Wetland Protection Act (WPA) and Regulations 310 CMR 10.00 et al and the local Wetland Protection Bylaw. Hydric soil indicators, vegetation changes, hydrological indicators, and topography were all considered for delineation purposes.

The resources located on/near the site consist of four Bordering Vegetated Wetlands (BVWs), two Isolated Vegetated Wetlands (IVWs) and a perennial stream flowing through the southern portion of the site.

The largest on-site wetland is located in the southern section of the site. This wetland was flagged with series GC 1-151, C1-64 and D1-14 and is dominant in red maple, yellow birch, sedges, rushes, ferns, highbush blueberry, buckthorn, and sweet pepperbush. The adjacent upland is dominant in oak, white pine, rose, cherry, Canada Mayflower and poison ivy. Department of Environmental Protection BVW field data forms were documented at wetland flag # GC-108 and C43 (see attached forms). A mapped perennial stream flows through this wetland/ponded area. The Mean Annual High Water (MAHW) for this river was flagged using top of Bank and bankful indicators with series MAHW 1-65 and MAHW 100-154 (which is the start of the 200-ft Riverfront Area).

A second BVW was flagged in the southern section of the site with series A1-30. This wetland is dominant in sedges, rushes, cattail, steeplebush and red maple and continues off site to the east.

A third BVW was flagged in the northeastern section of the site with series F1-8. This wetland is dominant in red maple, highbush blueberry and yellow birch and continues off-site to the north. The USGS map shows a perennial stream within this wetland. The first 300-ft of this wetland was inspected for the start of a river. No river, no channel and no

flow was observed within 300-ft of the property line; however flooded conditions due to beaver activity was observed.

The fourth BVW is located in the northeast section of the site. This wetland is dominant in red maple, highbush blueberry, sweet pepperbush and sphagnum moss and was flagged with series G1-11. This wetland continues off site to the east.

The first IVW is located in the south portion of the site and is dominant in sweet pepperbush, highbush blueberry, poison ivy, sedges, rushes and sphagnum moss. This wetland was flagged with series B1-10. This area is not large enough to qualify as the state protected resource area Isolated Land Subject to Flooding (ILSF; able to hold  $\frac{1}{4}$  acre foot of water at a minimum depth of 6-inches).

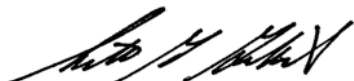
The second IVW is located in the rear of the site to the northwest. This ponded wetland was partially flagged with series E1-5 and is vegetated with sphagnum moss, highbush blueberry, sweet pepperbush and red maples. This area should be analyzed to see if it qualifies for the resource area ILSF.

Since the wetland delineation was performed during vernal pool season, each ponded area on and/or near the site was inspected for vernal pool species and egg masses. No vernal pool species or egg masses were observed within wetland "GC", "A", "B", "D", "E" and/or "G"; however; within a finger-like projection within wetland "C" more than 5 amphibian egg masses were observed. Wetland "F" also contained more than 5 amphibian egg masses and therefore qualifies as a vernal pool area.

According to the Mass GIS data layers for NHESP, this site is not located within Estimated and/or Priority Habitat of Rare Wildlife and has no mapped certified or potential vernal pools. The site is not located in an ACEC or zone II area; however, is located in a jurisdictional FEMA Flood Zone; so that the resource area Bordering Land Subject to Flooding is located from the wetland line up to the 100-year FEMA flood elevation.

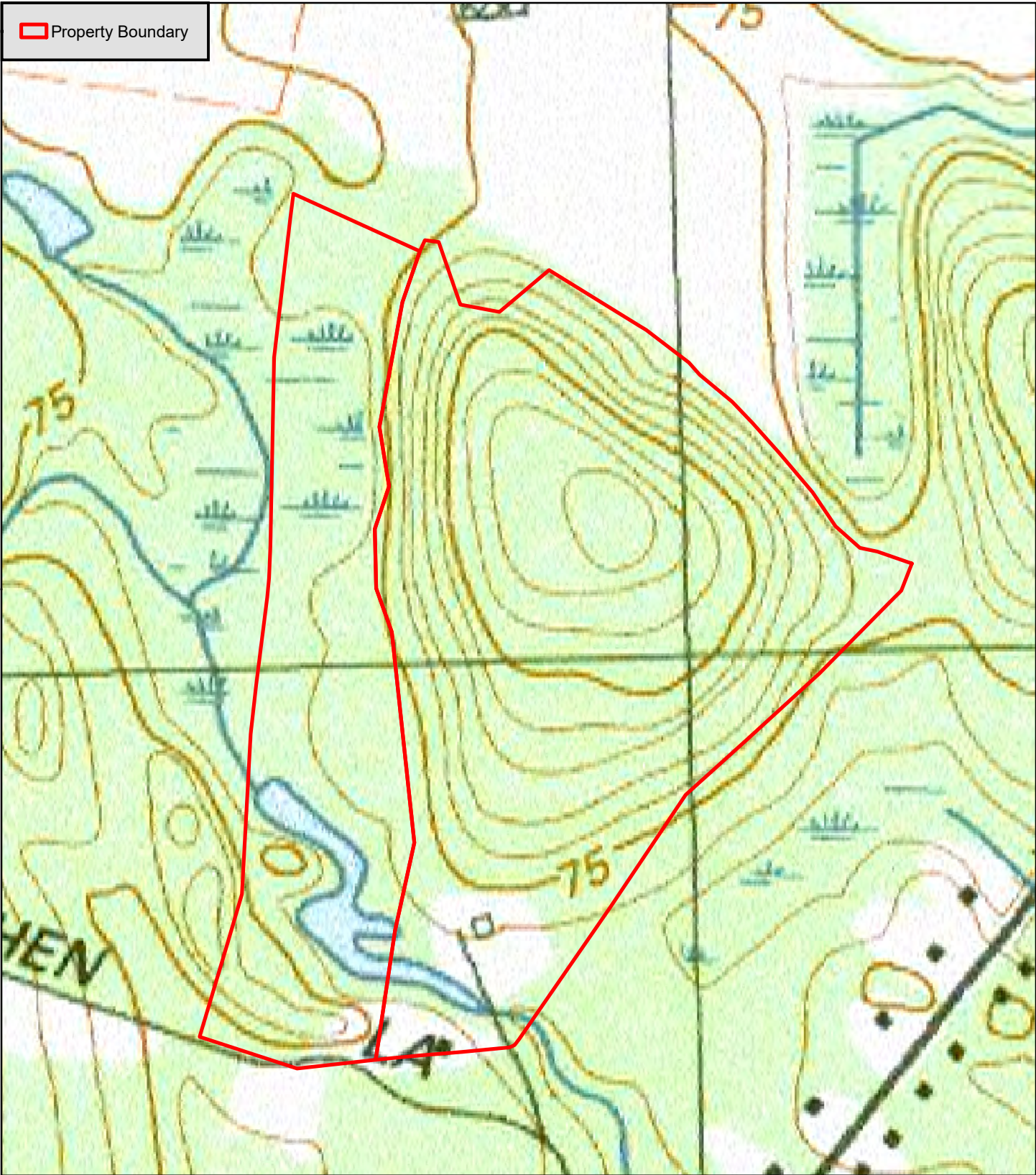
The Stow Wetland Protection Bylaw and the MA Wetlands Protection Act takes jurisdiction over BVW resources. In addition, these resource areas have a jurisdictional 100-foot Buffer Zone. Any work within the resource areas (BVW, BLSF, ILSF, and the 200-ft Riverfront Area requires a Request for Determination (RDA) or Notice of Intent (NOI) be filed with the Conservation Commission.

Very truly yours,  
GODDARD CONSULTING, LLC



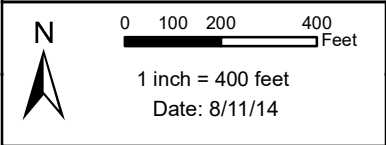
Scott Goddard,  
Principal & PWS





# USGS Site Locus

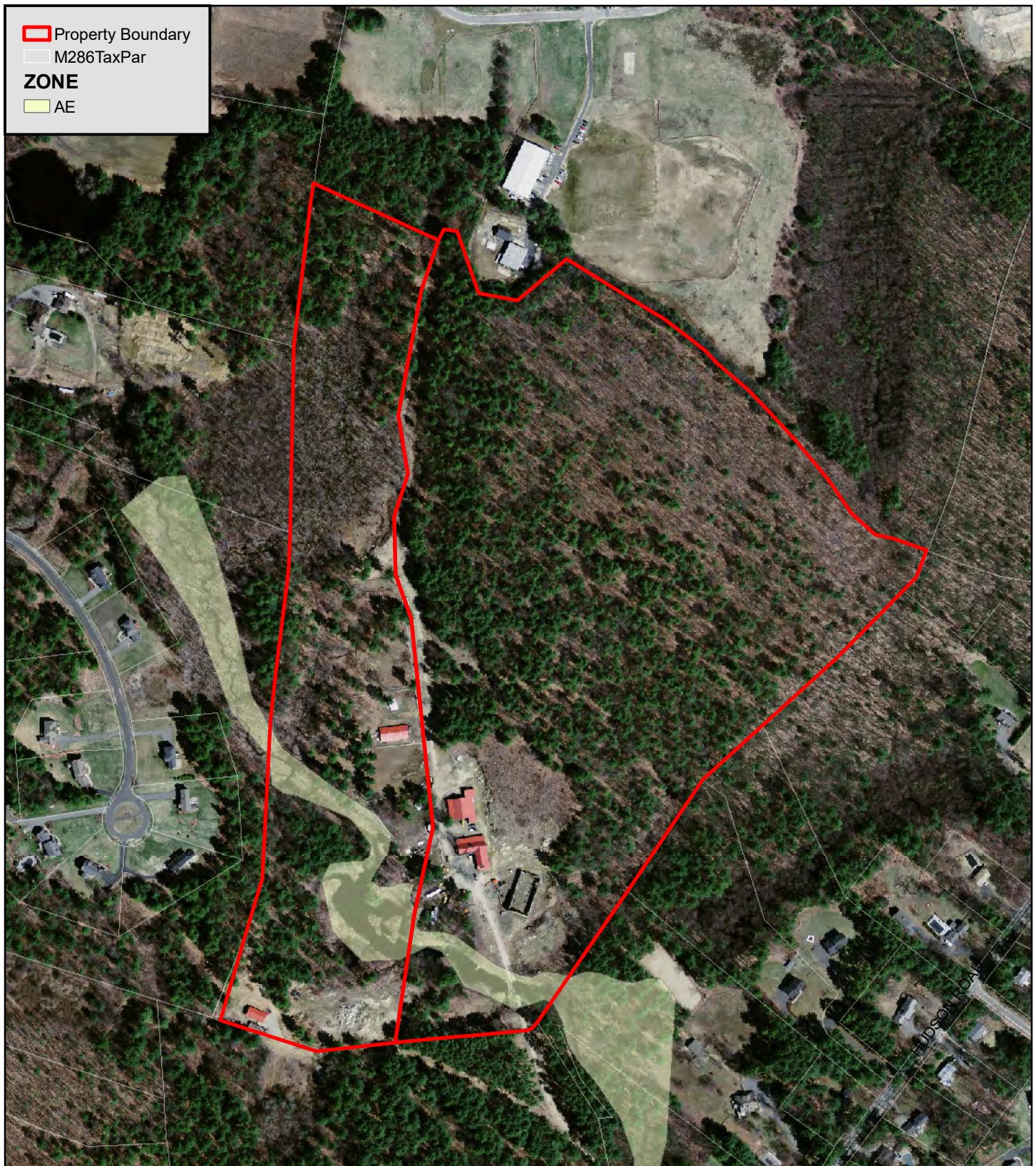
Athens Road - Stow, MA



GIS Data Source: "Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division"







## Orthophoto View of Site

Athens Road - Stow, MA



0 100 200 400  
Feet

1 inch = 400 feet  
Date: 8/11/14

GIS Data Source: "Office of Geographic Information  
(MassGIS), Commonwealth of Massachusetts Information  
Technology Division"





# DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant:
Prepared by: Goddard Consulting LLC
Project location: Stow Athens Road
DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only  
☒ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II  
☐ Method other than dominance test used (attach additional information)

Section I. Vegetation		Observation Plot Number: <b>GC108</b>	Transect Number: <b>Upgradient</b>		Date of Delineation: <b>1-Apr-20</b>
Sample Layer and Plant Species	Scientific name	% Cover	% Dominance	Dominant Plant (yes or no)	Wetland Indicator Category*
<u>Tree Layer</u>					
White pine	<i>Pinus strobus</i>	36%	47.4%	Yes	FACU
Red Oak	<i>Quercus rubra</i>	20%	26.3%	Yes	FACU
Yellow Birch	<i>Betula alleghaniensis</i>	20%	26.3%	Yes	FAC*
<u>Sapling Layer</u>					
White pine	<i>Pinus strobus</i>	10%	100.0%	Yes	FACU
<u>Shrub Layer</u>					
White pine	<i>Pinus strobus</i>	63%	100.0%	Yes	FACU
<u>Climbing Woody Vine</u>					
<u>Ground Cover</u>					
Princess-pine	<i>Dendrolycopodium obscurum</i>	10%	50.0%	Yes	FACU
Canada mayflower	<i>Maianthemum canadense</i>	10%	50.0%	Yes	FACU
Remarks: * An asterisk after common plant name indicates stunted growth; ** indicates extremely stunted growth					
Morphological Adaptations: 0		Description:			
* An asterisk after indicator status denotes wetlands plants: plants listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; or plants listed as FAC, FACW, or OBL.					
Vegetation conclusion:					
Number of dominant wetland indicator plants: 1			Number of dominant non-wetland indicator plants: 6		
Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? no					

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? ☒ yes ☐ no  
title/date: Soil Survey of Bristol County, Northern Part - 1978  
map number: \_\_\_\_\_  
soil type mapped: Windsor fine sandy loam  
hydric soil inclusions: \_\_\_\_\_

Are field observations consistent with soil survey? ☒ yes ☐ no  
Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Soil Description

<u>Horizon</u>	<u>Depth (inches)</u>	<u>Matrix Color</u>	<u>Mottles Color or Texture</u>
A	0-6"	10YR2/2	
B	6-20	10YR5/4	

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Conclusion: Is soil hydric? ☐ yes ☒ no

Other Indicators of Hydrology: (check all that apply and describe)

☐ Site inundated: \_\_\_\_\_

☐ Depth to free water in observation hole: \_\_\_\_\_

☐ Depth to soil saturation in observation hole: \_\_\_\_\_

☐ Water marks: \_\_\_\_\_

☐ Drift Lines: \_\_\_\_\_

☐ Sediment deposits: \_\_\_\_\_

☐ Drainage patterns in BVW: \_\_\_\_\_

☐ Oxidized rhizospheres: \_\_\_\_\_

☐ Water-stained leaves: \_\_\_\_\_

☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other):  
\_\_\_\_\_

☐ Other: \_\_\_\_\_

Vegetation and Hydrology Conclusion for Upgradient of GC108		
	<u>yes</u>	<u>no</u>
Number of wetland indicator plants >= number of non-wetland plants		X
Wetland hydrology present:		
hydric soils present		X
other indicators of hydrology present		X
Sample location is in a BVW		X

Submit this form with the Request for Determination of Applicability or Notice of Intent

# DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: \_\_\_\_\_ Prepared by: Goddard Consulting LLC Project location: Stow Athens Road DEP File #: \_\_\_\_\_

Check all that apply:

<input type="checkbox"/>	Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
<input checked="" type="checkbox"/>	Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
<input type="checkbox"/>	Method other than dominance test used (attach additional information)

Section I. Vegetation		Observation Plot Number: <b>GC108</b>	Transect Number: <b>Downgradient</b>	Date of Delineation: <b>1-Apr-20</b>	
Sample Layer and Plant Species	Scientific name	% Cover	% Dominance	Dominant Plant (yes or no)	Wetland Indicator Category*
<b><u>Tree Layer</u></b>					
Red Maple	<i>Acer rubrum</i>	20%	100.0%	Yes	FAC*
<b><u>Sapling Layer</u></b>					
Red Maple	<i>Acer rubrum</i>	10%	100.0%	Yes	FAC*
<b><u>Shrub Layer</u></b>					
highbush blueberry	<i>Vaccinium corymbosum</i>	10%	100.0%	Yes	FACW*
<b><u>Climbing Woody Vine</u></b>					
Horsebrier	<i>Smilax rotundifolia</i>	3%	23.1%	Yes	FAC*
Eastern poison ivy	<i>Toxicodendron radicans</i>	10%	76.9%	Yes	FAC*
<b><u>Ground Cover</u></b>					
Cattail	<i>Typha latifolia</i>	20%	40.0%	Yes	OBL*
Purple loosestrife	<i>Lythrum salicaria</i>	20%	40.0%	Yes	OBL*
Tussock sedge	<i>Carex stricta</i>	10%	20.0%	Yes	OBL*
<b>Remarks:</b> * An asterisk after common plant name indicates stunted growth; ** indicates extremely stunted growth					
<b>Morphological Adaptations:</b> 0		<b>Description:</b>			
* An asterisk after indicator status denotes wetlands plants: plants listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; or plants listed as FAC, FACW, or OBL.					
<b>Vegetation conclusion:</b> <b>Number of dominant wetland indicator plants: 8</b> <b>Number of dominant non-wetland indicator plants: 0</b> <b>Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? yes</b>					

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? ☒ yes ☐ no

title/date: Soil Survey of Bristol County, Northern Part - 1978

map number: \_\_\_\_\_

soil type mapped: Swansea muck

hydric soil inclusions: \_\_\_\_\_

Are field observations consistent with soil survey? ☒ yes ☐ no

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. Soil Description

<u>Horizon</u>	<u>Depth (inches)</u>	<u>Matrix Color</u>	<u>Mottles Color or Texture</u>
O	0-10"	10YR2/1	
C	10-19	10YR6/1	

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. Other: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Conclusion: Is soil hydric? ☒ yes ☐ no

Other Indicators of Hydrology: (check all that apply and describe)

☐ Site inundated: \_\_\_\_\_

☐ Depth to free water in observation hole: \_\_\_\_\_

☐ Depth to soil saturation in observation hole: \_\_\_\_\_

☐ Water marks: \_\_\_\_\_

☐ Drift Lines: \_\_\_\_\_

☐ Sediment deposits: \_\_\_\_\_

☒ Drainage patterns in BVW: \_\_\_\_\_

☒ Oxidized rhizospheres: \_\_\_\_\_

☒ Water-stained leaves: \_\_\_\_\_

☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): \_\_\_\_\_

☐ Other: \_\_\_\_\_

Vegetation and Hydrology Conclusion for Downgradient of GC108		
	<u>yes</u>	<u>no</u>
Number of wetland indicator plants >= number of non-wetland plants	X	
Wetland hydrology present:		
hydric soils present	X	
other indicators of hydrology present	X	
Sample location is in a BVW	X	

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